



**Development of Incentives for
Private Sector Investment in
Improved Watershed Management
in Jamaica**

Ridge to Reef Watershed Project

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Development of Incentives for Private Sector Investment in Improved Watershed Management in Jamaica

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Table of Contents

Preface	v
Acronyms	vi
Executive Summary	vii
Introduction	1
1.0 Jamaican approaches to incentives: The current situation.....	4
2.0 Valuation of Natural Resources	7
3.0 Legal tools for Watershed Management & Conservation	12
4.0 Tax incentives for Watershed Management & Conservation	17
4.1 Income Tax Deduction: Contribution of Land	17
4.2 Income Tax Deduction: Contribution of Conservation Easement	17
4.3 Income Tax Deduction: Contribution of Securities.....	18
4.4 Tax Deductions for Certain Types of Land Use.....	18
4.5 Tax Exemptions.....	18
4.6 Property Tax Exemptions and Reductions	18
4.7 Exemption from Estate Taxes	19
5.0 Other instruments to support watershed management	20
5.1 Tax Allocation.....	20
5.2 User Fees to Support Watershed Management and Conservation.....	20
5.3 Timber User Fees	21
5.4 Recreation User Fees.....	21
5.5 Controlling Access to Shared Resources	22
5.6 Tradeable Development Permits	22
5.7 Performance Bonds.....	23
5.8 Eco-labeling	23
5.9 “Biodiversity Prospecting” and Other Benefit-sharing Mechanisms	23
5.10 Elimination of “Perverse” Incentives	24
6.0 Review of incentive models in selected countries	25
6.1 New Zealand.....	25
6.2 Australia	26
6.3 Canada	27
6.4 USA	28
6.5 UK/European Union.....	30
6.6 Costa Rica.....	32
6.7 Brazil.....	32
6.8 Guatemala	33
6.9 Colombia.....	33
6.10 Ecuador	33
6.11 Chile	33
6.12 Germany	34

7.0	Conclusion, Recommendations and Implementation Strategies.....	35
7.1	Immediate or Short Term	36
7.2	Medium Term	37
7.3	Long Term.....	37
7.4	A Word on Implementation Strategies	38
	Appendix I – List of Persons Consulted	39
	Appendix II – Bibliography	41

Preface

The Ridge to Reef Watershed Project (R2RW) is a five year (with an optional sixth year) activity contributing to the achievement of USAID/Jamaica's SO2 – "improved quality of key natural resources in areas that are both environmentally and economically significant". R2RW comprises three Components contributing to the achievement of the results under SO2. Component 1 will assist targeted organizations identify and promote sustainable environmental management practices by resource users. Component 2 focuses on identifying and supporting solutions to improve the enforcement of targeted existing environmental regulations, primarily in the Great River and Rio Grande watersheds. Component 3 provides assistance to key organizations to support, coordinate, and expand watershed management efforts in Jamaica.

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Acronyms

CBO	Community Based Organization
CIDA	Canadian International Development Agency
DOC	Department of Conservation (New Zealand)
EFJ	Environmental Foundation of Jamaica
FAO	Food and Agriculture Organization
FD	Forestry Department
GOJ	Government of Jamaica
IBAMA	Brazilian Institute of Environment and Renewable Resources
IDB	Inter-American Development Bank
IICA	Inter-American Institute for Cooperation on Agriculture
IWMP	Integrated Watershed Management Programme
JAS	Jamaica Agricultural Society
NEPA	National Environmental and Planning Agency
NGO	Non-governmental Organization
NIWMC	National Integrated Watershed Management Council
NWC	National Water Commission
NPO	Non-profit Organizations (Canada)
NRCA	Natural Resources Conservation Authority
PEPA	Portland Environmental Protection Association
PIOJ	Planning Institute of Jamaica
R2RW	Ridge to Reef Watershed Project
RADA	Rural Agricultural Development Authority
RPPD	Rural Physical Planning Division
SSSI	Sites of Special Scientific Interest (European Union)
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
WRA	Water Resources Authority

Executive Summary

Development of Incentives for Private Sector Investment in Improved Watershed Management in Jamaica

This report reviews approaches to the design of economic and non-economic incentives for private sector participation in watershed management and conservation. Its focus for Jamaica is watershed management, which has today taken on critical importance in face of clear evidence that degradation of our watersheds poses present and continuing threats to the country's ability to provide for its needs. Improved watershed management can undoubtedly enhance provision of reliable and adequate supplies of water for agriculture, industry, tourism, and urban and rural populations. Currently there are major problems concerning the supply of water. These include both water quality problems and inadequate or insufficient supplies of water in addition to increasing cost of production of potable water.

Problems associated with watershed management have been one of Jamaica's major environmental concerns. Watershed degradation stems from a wide range of factors. These include population densities and population settlement location, low levels of environmental awareness amongst the populations using the watershed for various purposes, poverty and the exploitation of resources for profit, which have all caused severe watershed degradation. In addition, there are a number of specific activities that create severe detrimental impacts on the watershed including over-cultivation of steep slopes without proper cultivation practices, "slash and burn" land clearance methods, tree destruction by freely roaming livestock, and indiscriminate cutting of trees and mangroves for lumber etc.

The Government has used various methods to respond to these crucial watershed problems. These include the development of a national policy green paper, the establishment of the high level inter-agency National Watershed Management Council (NIWMC), the commencement of a USAID/Government of Jamaica five-year watershed improvement project and the strengthening of NEPA's Watershed Branch. A review of the Watershed Protection Act is also in progress.

Central to retention and improvement of the physical integrity of Jamaica's watersheds is appropriate behaviours of those who use them regardless of their purpose – be it recreation, exploitation of natural resources or residence, among other uses. Given the fact that the major proportion of lands which make up the watersheds is privately held, appropriate policies must be established to guarantee environmentally sustainable use. It is in this connection that there is a critical need to examine and implement strategies for both market and non-market incentives for watershed management.

1.0 Jamaican Approaches to incentives: The Current Situation

Currently in Jamaica, a scheme of incentives for private sector participation in environmentally sound watershed management is in its infancy. Further, what does exist has been created in an *ad hoc* manner without benefit of a coherent policy framework. In addition even where they do exist, they are neither properly administered nor generally as well known as they ought to be. They have, essentially, taken the form of mechanisms that, once an activity or inactivity for that matter, fulfils set criteria of watershed or environmental "friendliness", have the impact of reducing land owners' unavoidable expenditure to the degree that government policy can make a difference. The areas of policy have so far included property tax exemptions, income tax relief against profits derived from agricultural activities, including forestry, and zero rating of certain types of planting materials under the regulations of the General Consumption Tax Act.

2.0 Valuation of Natural Resources

Valuation of natural resources takes on especial significance in consideration of environmental and biodiversity issues. The simple fact is that from the beginning of discourse on value in the discipline of economics there have been controversies. Value may be thought of either as intrinsic or imputed by human beings in the form of a market or shadow price determined by “experts”. People’s perception of value of a shared resource differs markedly from that of privately held property, or commodities. For watershed management in Jamaica this has been understood to be a central problem.

Potable water flowing through pipes to the home is viewed as a right. Access to the river, streams and springs is also thought to be a right – unless contested by a private property owner. Furthermore, the value of the watershed is severely underestimated or worse, not at all considered, in its “services” that are essential for a continued adequate supply for the society. An understanding of the total economic value of a watershed which takes into consideration its resources that can be exploited by the society for its economic and social well being is required if one is to establish policies that can promote maintenance of its integrity.

Total economic value of the watershed may be viewed as made up of three components – **direct, indirect and option value**. These correspond to use of the resource in exploitation for say, timber, fuel wood, yam sticks etc., recreation, biodiversity and human settlement – this is direct value. Nutrient cycling, watershed protection and microclimate would correspond to indirect value. Option value refers to its future use both direct and indirect. Total economic value in this conception would be an entirely different concept from that of **existence value**. The latter would encompass the **intrinsic value** [however measured] of the watershed, concepts such as stewardship, gift to future generations, and the like.

Though imprecise, these concepts are useful as guiding principles in the search for economic incentives for private sector participation in watershed management.

Creating Incentives – Finding the Approach Most Likely to Succeed

A successful strategy that will encourage private sector investment in activities that sustain the integrity of the watersheds should target both positive and negative features of current practices. These practices include private forestry operations of which a few currently exist and appear to operate on a sound basis. These activities should be encouraged by incentives and generalized wherever possible.

Prevailing valuation [literally almost no value at all] of the intrinsic services provided by the watersheds require incentives for private sector participation in sound watershed management to satisfy at least three requirements:

- The outcome of the incentive must result in increased and readily observable private economic or financial benefit/gain
- The incentive must result in benefits that can be privately appropriated
- The modalities of the incentive must be simple to operate and monitor

If, or rather when, outreach and education efforts change perceptions as to the true value of the watershed, other, non-economic/financial incentives not amenable to private individual appropriation can be used to affect community behaviours that preserve the watershed. Such incentives must satisfy at least three requirements:

- The incentive must be credible, leading to readily observable community benefits

- The community must be involved in its determination
- Governance of its modalities must be transparent

The specifics of such incentives are not at the moment readily apparent but studies, surveys and the R2RW process itself will go a long way in determining these.

3.0 Legal Tools for Private Conservation

To provide incentives resulting in increased and readily observable private economic or financial benefit/gain there are several important legal tools that the state may use to predispose private actors to accomplish conservation in the watershed. Effectively the incentive must **either increase economic benefit or reduce economic cost**. The simplest and most obvious is a gift of privately owned land, money or securities to a conservation organization or government agency. Aside from an outright gift, a second approach is the “conservation easement”, a tool for permanently conserving land by restricting most forms of new development while still allowing landowners to use it for limited purposes that are consistent with conservation. A third tool is the conservation agreement, in which a landowner keeps full ownership of the land, but enters into a legal contract with a government agency or a conservation organization in which the owner commits to manage the land so as to ensure conservation. Finally, exchanges of public and private land can also involve the private sector in conservation and allow efficient use of government resources. To increase the likelihood of participation, the incentive for conservation, must be combined with tax policies that reduce financial cost to the landowner. The Government can design tax policies that reduce the tax burden on private actors who engage in environmental protection and biodiversity conservation or other activities for the public good.

The report outlines four basic legal mechanisms that private actors can use in support of watershed management and conservation:

1. **Donations:** a basic conservation tool for individuals, landowners and the private sector is donation of land, money or other assets to a conservation organization or other entity;
2. **Conservation Easements:** a second tool is the creation of conservation easements, which essentially allow landowners to retain ownership of land and to use it for limited purposes while permanently removing their right to use it for certain non-conservation purposes;
3. **Conservation Agreements:** a third tool allows a landowner to enter into a legal agreement to manage his or her property according to specific conservation terms, often in exchange for financial compensation. In contrast to easements, such agreements often have the disadvantage for conservation of not being permanent;
4. **Land Exchanges:** a fourth tool allows landowners to exchange, for example, property that is significant for conservation reasons with a different property that may be of equal economic value, but lesser conservation reasons with a different property that may be of equal economic value, but lesser conservation significance.

4.0 Tax Incentives for Watershed Management and Conservation

Tax law is crucial to implementing the legal tools described above because it can provide important incentives to private actors to use those options where they are available. In this connection the report outlines three broad categories of tax incentives that may be combined with the above legal tools to encourage better watershed management practices.

1. **Income Tax Deductions for Contributions:** a wide range of tax deductions are examined including deductions for contributions of land, conservation easements, money or other assets used for watershed management and conservation purposes;
2. **Tax Deductions for certain types of land use:** government can provide deductions for certain expenses incurred by landowners or the private sector while supporting conservation on private property such as, for example, through use of low impact agricultural techniques;
3. **Tax exemptions:** with a variation on the idea of tax deductions, government can exempt from taxation certain types of activities or properties devoted to watershed management and conservation. Such exemptions include both estate duty as well as property tax.

5.0 Other Instruments to Support Watershed Management

While we earlier focused on government policies specifically designed to create incentives for private actors to enhance their activities for watershed management and conservation. There is also a broad array of less direct options capable of encouraging behaviour change with resultant positive impact on watersheds with respect to their conservation and sustainable use. The type of incentive we discuss below is meant to deal with the problem of differential spatial or regional impact of conservation activities. If the region avoiding exploitation of an area of its watershed loses directly in the benefit-cost impact, that region can be compensated by differential treatment in the law. In this section, we present a subset of these additional options that appear to be most directly related to our effort at watershed management and conservation.

Seven promising approaches to economic incentives for conservation in addition to the basic legal tools and tax incentives:

1. **Tax allocation:** government may choose to allocate national – or parish-level tax revenues to jurisdictions in a manner that rewards conservation (i.e., giving proportionally greater resources to those jurisdictions that have set aside significant land in protected areas);
2. **User fees to support watershed management and conservation:** one potential source of revenue for conservation is a fee for use or extraction of natural resources like timber or minerals;
3. **Controlling access to shared resources:** government can use a combination of regulation and designation of limited ownership rights to provide incentives for conservation of shared “common” resources such as fisheries, birds or waterfowl;
4. **Tradeable Development Permits:** government can use market incentives for conservation by creating a set of tradeable permits for development of a given area to be used in conjunction with “credits” for conservation activities;
5. **Eco-labeling:** consumers and government alike can promote “green” products through use of a system of labeling that allows purchasers of a given product to evaluate its impact on the environment;
6. **“Biodiversity Prospecting” and other benefits-sharing mechanisms:** incentives for conservation can be created by resource use agreements, an example exists in the pharmaceutical industry, which provides that a portion of revenues generated is returned to the country, region or community in which the raw material resource is found and exploited;
7. **Elimination of “Perverse” incentives:** conservation is often inhibited by subsidies or other incentives that encourage overexploitation of resources. Eliminating such negative or “perverse” incentives actually create new incentives for conservation.

6.0 Review of Incentive Models in Selected Countries

While incentives were initially developed in the USA, their relative success has led to their use in a wide range of both developed and developing countries. The review reveals a number of commonalities as well as differences. Property tax exemption for example, is widespread. It is found in Costa Rica, Brazil, Guatemala and Colombia among other countries. Conservation easements are found in Costa Rica, Canada and the USA. In New Zealand and Australia tradeable development rights are common.

In general the tax mechanisms operated in the selected countries seemed of broad relevance or most applicable to the Jamaican situation. In addition the general use of the conservation easements and the growing use of tradeable development permits indicate mechanisms that could usefully be deployed in Jamaica, once tailored to our conditions.

7.0 Conclusion, Recommendations and Implementation Strategies

Our study demonstrates that incentives can and must be an important component of watershed management approaches. No single approach will be successful and action needs to be taken at both the local and national levels. Our discussion of valuation methods indicated the complexity of any scheme that may be used to value environmental assets, regardless of how it may be designed. It also clearly pointed to the fact that controversy over methods and values arrived at, may possibly be unavoidable. There is no question however, about the absolute necessity of protecting Jamaica's watersheds if we intend to move into the future with adequate supplies of water for all the uses a modern society requires. Our study required perusal of policies and practices of other countries as well as their regulations and initiatives here reviewed. This, along with a reading of the working papers of R2RW as well as our interviews with a wide cross section of stakeholders has suggested various possibilities in determining the way forward.

Immediate or Short Term

1. **Conservation Fee:** A fee dedicated to use in watershed management should be added to the water bill of all Jamaica - \$50 to \$100 could go a long way
2. **Ridge-to-Reef Donation Programme:** Hotels, Restaurants and other downstream users are encouraged to support middle and upper watershed management activities, perhaps in the case of hotels by contributing funds saved through their conserve water initiatives with guests. This would be carried out in conjunction with the Ministry of Tourism's efforts to increase the industry's support to the community and with WFJ's Forest program which would provide recognition to the contributors. International tourism certification schemes increasingly recognize such efforts in a positive light in their assessments. This recommendation is based on an ongoing arrangement between Sandals Resorts and local farmers in the Mafoota area.
3. **Eco Labeling:** Branding and marketing of horticultural, fresh and processed agricultural products, as well as bottled water based on agreed and applied standards of practice (the Great River brands idea). There are several possible incentives, apart from the obvious market-led incentives from sales to discriminating markets. They include streamlining government procedures for allocating rights and for planning development control.
4. **Grants:** The National Water Commission or other chosen body will create a scheme of grants for the establishment of community mini-dams and household water storage tanks to reduce supply reliability problems and reduce the NWC's delivery costs. These will be associated with standards for their construction and use. The process will be combined with an appropriate public education campaign and community endorsement of the scheme.

5. **Awards:** Promote awards aimed at building the notion of stewardship of the water cycle through competitions aimed at finding the winning example of community based best practice and behaviours. The award would include a monetary element and be featured in the public relations campaign.
6. **Deduction for Contributions:** The Income Tax Act should be amended to provide deductions for contributions of land, money or other assets to watershed management and conservation purposes. Appropriate forms and other administrative directions will need to be devised and implemented.
7. **Deduction for Land Use:** The Income Tax Act should be amended to allow certain types of expenses incurred by private landowners to be deducted for the determination of taxable income. Such expenses must have been incurred for watershed management and conservation purposes such as low impact agricultural techniques.
8. **Property Tax Exemption or Rebate:** Government should allow tax exemptions or rebate in respect of properties devoted to watershed management and conservation.
9. **Estate Duty Rebate:** Where property is transferred upon death to be maintained in a manner that preserves the spatial integrity of the property for purposes of watershed management and conservation a rebate would be allowed. The modalities of this provision would have to be worked out and arrangements for negotiation established.
10. **User Fees:** Establish user fees to support watershed management and conservation. These fees should be imposed for the extraction of the watershed's economic resources.

Medium Term

11. **Public Awareness Programme:** A public awareness programme should be implemented in the medium term using results of current surveys and perceptions of watershed services to develop non-market incentives for behaviour alteration. The programme should also seek to tap into community-based schemes in areas of settlement in which poverty and the simple "need to survive" make negative behaviours perhaps the inevitable norm.
12. **Eliminating Perverse Incentives:** Create new positive incentives for watershed management and conservation by eliminating subsidies or other negative "incentives" that promote over-utilization of natural resources.
13. **Promote Watershed-friendly Technologies:** Mechanisms that promote the use of technologies that have a positive impact on watershed management should be implemented. This would include disincentives to discourage for instance, the practice of using chain as opposed to circular saws for harvesting of wood. This could be implemented by differential tax imposition either at the point of sale or of importation.
14. **Jamaica Forest Management and Conservation Fund:** Seek funding for the protection of forest reserves critical to upland watershed services to be managed by the Forestry Department or the NWC. This could include a percentage, even if initially a very small one, out of water abstraction licence fees, as suggested in the National Forest Management and Conservation Plan, as well as user fees on construction projects in watersheds which have been considered by government.
15. **Conservation Easements:** These should be established early to allow landowners to retain ownership of their land but to use it for limited purposes while permanently removing their right to use it for certain non-conservation purposes.

16. **Land Exchanges:** Implement a scheme of land exchange which would allow landowners to exchange, for example, property that is significant for watershed management and conservation reasons with a different property that may be of equal economic value.

Long Term

17. **Tax Allocation:** Government should consider allocating national or municipal taxes to specific areas of great importance to watershed management.
18. **Conservation Agreements:** This should be facilitated to allow a landowner to enter into a legal agreement to manage his or her property according to specific conservation terms, in exchange for financial compensation.
19. **Tax Incentives for Improved Land Use:** Create tax mechanisms to assist upper watershed landowners to engage in reforestation, fruit tree growing based on good land use standards.
20. **Improve Land Tenure Arrangements:** Establish mechanisms for settled land tenure arrangements for farmers and residents in the watershed, tying security of tenure to meeting watershed friendly land use standards. (With the possibility of loans or Social Investment Fund grants to assist poorer farmers meet those standards).
21. **Controlled Access to Shared Resources:** Controlling access to shared resources: governments can use a combination of regulation and designation of limited ownership rights to provide incentives for conservation of shared “common” resources such as fisheries or birds.
22. **Tradeable Development Permits:** Government can use market incentives for conservation by creating a set of tradeable permits for development of a given area that can be used in conjunction with “credits” for watershed management and conservation activities;
23. **Biodiversity Prospecting and other benefits-sharing mechanisms:** Incentives for watershed management and conservation can be created by resource use agreements, for example, in the pharmaceutical industry, that provides a portion of revenues generated to return to the country, region or community where that resource is found.

A Word on Implementation Strategies

It is a truism that all life forms resist change. It is also true however, that only those that adapt well to inevitable change do survive and prosper. For us these imperatives do exist and are binding. Key government agencies, environmental NGOs and various categories of persons and some within the private sector are convinced or rather, are seized of the immediate necessity to protect our watersheds. Beyond this commitment there is a clear and present need for its translation into a generalized concern among those who inhabit and or use our watersheds. Further, and this is the hard step, we need concrete actions to give impact to this realization.

By their very nature, the initiatives considered here require changing relationships between members of the various communities, between government and the communities as well as between the private sector and government. In broad terms the strategies will have to be directed at three main groups – government, the communities and the private sector. Looking for instance at the proposals we define as immediate or short term, it is considered that the Ridge to Reef donation programme could get off the ground within six to nine months. Major hotels and other parties would have to be contacted immediately. Support of the Ministry of Tourism would also be critical. Select communities would be targeted and the process initiated for their participation. This particular project is already grounded in that it exists between Sandals and farmers in the

Mafoota area. Clearly it can be replicated elsewhere - there are clear benefits for all parties involved.

In relation to our recommendations for tax-based incentives, we consider these to be of central importance. Clearly these incentives would require government approval and public acceptance of their usefulness. We consider that a Cabinet submission should be prepared to obtain broad governmental approval of these types of incentives. But before this, there must be a process of consultation with the private sector for streamlining the proposals. This should be followed by the amendment of the income tax legislation to incorporate the necessary changes. Along with the legislative changes the mechanisms for administration - which we insist must be simple and readily accessible - will have to be identified and organized. The proposals do not necessarily require a new and complex set of bureaucratic arrangements.

Introduction

In Jamaica twenty-six (26) watershed management units cover all lands from the mountains to the sea. Each watershed has three physical and management subdivisions, namely upper watershed, beginning at mountain tops and characterized by steep slopes often in excess of 20 degrees, the lower watershed consisting of gently undulating foothills and flat lands ending on the coast, and the middle watershed which separates the upper and lower areas. The upper and middle watersheds (lands 305m or 1000 ft and above) occupy almost three quarters of the island, accounting for the habitat of 40% of its population, including most of its small farmers, producing a major portion of Jamaica's non-traditional agricultural crops. Because of the topography of the land, environmentally detrimental activities in the upper and middle watersheds pose a serious threat to downstream communities, especially in relation to water quality and production. In fact, because of watershed degradation there has been more frequent and intensive downstream flooding, resulting in loss of life, property, livestock, crops and infrastructure. Watershed degradation also results in increased sedimentation of rivers and higher turbidity levels resulting in lower and more sediment-laden water flows to dams and reservoirs, thereby reducing their carrying capacities and increasing water production costs.

Increasingly, policymakers in most developing countries have recognized the fundamental role of the private sector in economic development. At the same time, public concern about environmental issues like clean drinking water, over-consumption of natural resources and worldwide loss of tropical forests has grown explosively, leading policymakers to devote more attention to these issues. To reconcile these seemingly conflicting agendas, governments, the private sector and the public at large are seeking ways to advance natural resource conservation and economic development as partners. This report explores the use of economic incentives to achieve that goal. Investments in biodiversity conservation and watershed management are increasingly recognized as investments in avoiding disease, maintaining global climatic systems, protecting agriculture, and reducing political and social stresses caused by populations that lack natural resources and viable livelihoods. These considerations are of particular importance to developing countries rich in biological diversity.

Jamaica faces a particularly urgent problem with respect to its capacity over time to fulfill the needs of its population for adequate and reliable supplies of clean water for agriculture, industry, urban and rural settlements and the growing tourism sector. This situation is rendered the more difficult as population grows with the resultant range of activities that are decidedly inimical to proper watershed management. Proper watershed management is a clear and present imperative not only because of the need for water but also because current practices and behaviour lead to impacts that despoil the environment, create a predisposition to flooding, coastal/beach destruction, loss of topsoil and land slippage and of course costly disasters.

Internationally there is growing awareness of the importance of sustainable watershed management. The result of this has been agreement that ignoring these issues is no longer a rational economic choice for the private sector. Business must address the link between economic and environmental issues, not only because governments may force the private sector to do so, but also because consumers demand it. In the face of these trends, blending conservation and development has become increasingly important.

In the early days of environmental protection, partnerships accommodating the goals of private business interests and that of environmental maintenance were usually forced. Governments and environmental activists viewed strict regulation as the only way to achieve environmental goals. In the conservation field, the aim was to place certain critical natural areas outside the reach of development and carefully monitor resource use like mining, logging and agriculture. While these approaches remain a cornerstone of conservation policy, there is a growing movement toward using economic incentives to help accomplish environmental goals. The

challenge now is to craft such incentives in a manner that enables and encourages the private sector to conserve resources while still achieving sustainable economic development.

Economic incentives often can accomplish major conservation actions at a lower cost than traditional approaches. Government expenditures for strict regulation of land use or the purchase and management of protected areas can be prohibitively high especially in developing countries. While tax incentives for conservation may in the short run reduce government revenues, in the long run, the economy in general benefits. For example, conservation incentives can promote sustainable economic activities such as ecologically sound tourism and recreation that might otherwise be impossible.

Bass and Geoghegan, indicate for Jamaica that:

“There is general agreement that – for cultural, political, and economic reasons – fully-fledged market-based approaches being employed in other countries do not offer promise for Jamaica at this stage. In the search for solutions, however, non-market, and pre-market, incentives for improved watershed management have been highlighted, but there has been little progress to date in identifying effective incentives and putting them in place. Nonetheless, there are a number of positive developments that can create a context for testing incentive-based approaches.”
[p.1]

That their view is correct is not in dispute. Among other socio-economic and cultural features of the Jamaican environment, levels of poverty, elements of the land tenure system, the prevalence of “family land” with neither clear title nor succession, squatting and land capture, practices such as hillside burning to prepare the land for cultivation on steep slopes and the like, all militate against the use of purely market-based incentives to sustainable watershed management. In addition, the lure of tax incentives presupposes that those likely to benefit do indeed in the normal course of events pay taxes.

This paper seeks to recommend “financial incentives that will encourage private sector investment in improved watershed management activities.” [SOW p.5] It is intended as an introduction to economic incentives that can be used for the conservation of biodiversity and creation of practices and behaviours fostering sound watershed management and preservation. It is intended for use both by government and private sector representatives who wish to design and implement policies that encourage private sector participation in conservation activities. More specifically:

- Investigates and recommends ways to get greater input from the Private Sector for watershed management initiatives;
- Reviews and recommends schemes to reward best practices in watershed management;
- Review and analyze the financial feasibility of private sector investment in watershed management;
- Reviews and recommends existing and new incentives to be implemented for watershed management.

To begin with, Section 1 provides an outline of existing arrangements in Jamaica regarding incentives to the private sector for its involvement in sound watershed management activities. Section 2 looks at the complex issue - competing views or methods - of valuation of natural resources that result in numbers that can literally be what one chooses them to be! Section 3 outlines the required legal mechanisms that can allow private actors to support watershed management and conservation. Section 4 reviews tax incentives for watershed management and

conservation. Section 5 discusses several other economic incentive instruments in support of watershed management. These include elements such as user fees, performance bonds and tradeable development permits. It also notes opportunities to eliminate “perverse” incentives that actually encourage destruction of biodiversity. Section 6 reviews incentive models in selected countries. Finally section 7 contains conclusions, recommendations and implementation strategies in respect of proposed new incentives.

While the issue of enforcement of environmental legislation falls outside the scope of our terms of reference, we consider that a holistic approach to proper watershed management must balance effective environmental enforcement on the one hand with the award of appropriate incentives on the other. For both to be effective, there must be broad public awareness and agreement on the normative values to be achieved by watershed management and conservation. This means a commitment of the whole society. While some matters may be achievable in the short term, there must be a long-term vision of the broad objectives desired as well as the varying or competing means of achieving them. Although the problem may appear very difficult, success can build on success starting with small achievable projects or concrete proposals readily implemented which will assist in creating a momentum and ultimately mass support in the long run.

1.0 Jamaican Approaches to incentives: The Current Situation

Currently in Jamaica, a scheme of incentives for private sector participation in environmentally sound watershed management is in its infancy. Further, what does exist has been created in an *ad hoc* manner without benefit of a coherent policy framework. In addition even where they do exist, they are neither properly administered nor generally as well known as they ought to be. They have, essentially, taken the form of mechanisms that, once an activity or inactivity for that matter, fulfils set criteria of watershed or environmental “friendliness”, have the impact of reducing land owners’ unavoidable expenditure to the degree that government policy can make a difference. The areas of policy have so far included property tax exemptions, income tax relief against profits derived from agricultural activities, including forestry, and zero rating of certain types of planting materials under the regulations of the General Consumption Tax Act.

In addition to already existing and functioning schemes there is an approved Cabinet submission supporting incentives for forestry conservation including improved watershed management by the private sector in the form of the “National Forest Management and Conservation Fund”, a financing mechanism elaborated in the National Forest Management and Conservation Plan of March 2001. We discuss these specific mechanisms below.

Property Tax Relief under the Forest Act, 1996

There are three incentives that have been promulgated under the forestry legislation:

- (a) Section 25 of the Forest Act (remission of taxes)
- (b) Regulation 49 of the Forest Regulations (certification as a forest grower)
- (c) Regulation 52 of the Forestry Regulation

Regulation 52 Provides

The Minister may promote reforestation and sustainable forest development projects on private land using incentive schemes, on the recommendation of the Conservator, to include:

- (a) The provision of technical advice;
- (b) The availability of tree seedlings at special rates;
- (c) The encouragement of privately run tree seedling nurseries to supply the forest sector as a whole;
- (d) Duty free concessions at the level applicable to the agricultural sector;
- (e) Remission of property tax pursuant to section 25 of the Act.

Regulation 46 specifically provides that the Conservator shall encourage and promote the preparation of the adherence to management plans for the protection of forests and forestry activities on private landholdings. There are also provisions enabling the Conservator of Forests to certify forest growers. Regulation 49 provides:

“Every person whose land is declared a forest estate, forest management area or protected area may be certified by the Conservator as a forest grower with approved farmer status”

A person may also be certified as a forest grower if he:

- (a) Is the owner or lessee with a tenure of not less than 10 years on a forest area or approved agro-forestry area of not less than two hectares in a single block;
- (b) Registers on the form provided by the Conservator, the area owned or leased by the person with the boundaries clearly marked and supported by a pre-checked plan prepared by a commissioned land surveyor;
- (c) Agrees to implement a forest management plan approved by the Conservator.

The Forest Act, 1996, contains provisions for granting incentives for forestry activities. In this connection section 25 of the Forest Act provides:

“25. If, and for long as, the owner of private land in a protected area or a forest management area declared forest reserve complies with the regulations or decisions under this Act in relation to that land –

(a) he shall in each financial year, an application to the Conservator, be granted a certificate to that effect; and

(b) be entitled to remission of property tax in respect of that land in that financial year”.

While section 25 of the Forest Act “Remission of Property Tax” contains useful provisions, the precise framework for its operation needs to be clearly set out, it would apply only to three categories of land: (a) protected area, (b) forest management area, (c) forest reserve. It is understood that some of these areas have not yet been declared. In addition the applicant for remission of property tax must comply with the regulations or directions in regard to the land. This will be difficult to establish unless there are clearly enunciated rules embodied in regulations or directions. Thus while section 25 is a useful provision additional detail is necessary in order to make it more useful to persons who wish to apply under this section and desirous of avoiding unnecessary bureaucratic red tape. Indeed at least two landowners canvassed have already applied for remission of taxes under this section.

Relief under the Income Tax Act

Under section 36 d (1) of the Income Tax Act any person engaged (or who proposes to engage) in a prescribed agricultural activity may be granted tax relief in respect of such activity. In order to obtain relief the Minister of Agriculture would have to designate the person (both individuals and companies are eligible) as an approved farmer. By section 36 d (7) an approved farmer may set off any loss incurred in connection with a prescribed agricultural activity against profits or gains arising from any other trade, business, profession, employment or vocation carried out by him. Forestry has been designated a prescribed agricultural activity pursuant to section 36 d (14). Qualifying agricultural activities including horticulture, the growing of food crops and tobacco, seed growing, livestock breeding, fishing or fish farm and the growing of trees for timber.

General Consumption Tax (GCT)

Under the General Consumption Tax Act, 1991 and the General Consumption Tax Regulations, 1991, the following items are zero-rated:

“Planting materials including cereal and seeds in their natural state, dormant flavour bulbs, corns, roots and tubers, nursery stock which the Commissioner is satisfied is

intended for commercial purposes. Vegetable plants and live trees which the Commissioner is satisfied are intended for commercial purposes”.

Jamaica Forest Management and Conservation Fund

To fill the funding gap for forest management and conservation statutory provisions have been enacted for the establishment of the Forest Management and Conservation Fund. In this connection, sections 44 and 45 of the Forest Regulations, 2001, provide that the Minister may establish a Forestry Management and Conservation Fund, which is a potential source of funds to finance some of the watershed management incentives. The Fund would be used to support activities and projects identified in section 19 of the Forest Act, 1996.

The Fund may be capitalized from local and international sources by a combination of:

- (a) Bilateral and multilateral funds;
- (b) Debt reduction agreements;
- (c) Recreation and nature tourism fees and charges;
- (d) Contribution from individuals and companies;
- (e) Income from the sale of forest products;
- (f) Annual government grants;
- (g) Water user fees;
- (h) Carbon credits.

2.0 Valuation of Natural Resources

Economists have debated the meaning of value from the very beginning of discourse on the subject as a discipline. Latterly, however, the debate has taken on perhaps greater significance, certainly in the area of our endeavour – the interface between economic value, ecological economics and efforts to preserve biodiversity in the quest for sustainable economic development. The problem of effective watershed management in Jamaica cannot be effectively tackled without clear understanding of how stakeholders relate to the watershed and its value to their economic and social life, both in the present and their understanding of its importance as a system for sustenance of their future existence – not to mention that of future generations.

Much of the early literature on this subject initially concentrated on the industrialized countries when the idea of limits to growth alarmed the pundits and the consumer society. Soon thereafter attention switched to what was called perhaps euphemistically, the “developing world”. For it is here, the last stand for nature, that people generally agree that biodiversity and large ecosystems are in most danger and are also most valued – tropical rain forests, ecologically precious wetlands and mountain regions along with a significant number of endangered species. [Pearce, p.40] But even though we go through this exercise, it is clear that it is a work in progress at the most general level, yet possessing the feature of allowing us to reveal otherwise hidden insights.

Goodwin makes the case cogently:

“The failure by economists to elevate the concept of well-being to an importance equal to that given to wealth is related to the loss ... of an appreciation of the salience of moral issues to economic behavior. It may be said that the basis of human morality is human values – our identification of what matters. In the mainstream neoclassical economics paradigm the single value admitted is efficiency. Efficiency, however, is only a means. When pressed to name the end to which efficiency is a means, neoclassical economists offer the maximization of utility. In practice, most economic writings admit that utility is undefinable [sic] (or at least, unobservable and immeasurable). They therefore use as a proxy goal the maximization of consumption – and thus of production – within feasibility constraints. The growing recognition that the feasibility constraints must include such ecological issues as carrying capacity and sustainability has not succeeded in changing neoclassical economics’ orientation to growth in production and consumption. That orientation can only be affected by a much deeper alteration in our appreciation of what constitutes human well-being, with renewed attention to both the individual and the societal goals whose realization promotes well-being.” [Krishnan, Harris and Goodwin, p.xxxvi, emphases in the original]

Goodwin is absolutely correct and his observations highlight for us an even more basic problem for watershed management in Jamaica. The efficiency that neoclassical economics admits to generally does not exist in economic production in most of Jamaica’s watersheds! The primary objective in many cases is survival - coal burning, harvesting of yam sticks, inappropriate cultivation on steep hillsides, routine disposal of solid waste and the like are performed most inefficiently. Large scale farming often completely ignores its negative downstream impacts.

With these problems admitted, we must yet review the process of economic valuation to which we now turn. The source of value in one schema or paradigm of the economist derives from the importance that people place on a commodity or service. This is revealed by the preferences people indicate - measured by willingness to pay. Economic value can therefore be determined by summing the individuals’ willingness to pay for, in our case, a healthy watershed. Thus if there were a set of land owners in the watershed who were willing to forego logging and yam stick collection to say, a value of a million dollars a year, in order to preserve the watershed, this

concept of economic value would place the value of a million dollars on that particular watershed maintenance activity.

But there are critics of this approach. They suggest that what is here being valued – preferences - cannot be identical to the intrinsic value of the watershed. This view holds that the watershed has an intrinsic value *qua* environmental asset. But basing policy on intrinsic value has its own problems, which we explore further on. Essentially, determining economic valuation means finding the demand curve for the goods and services that the watershed produces or, can possibly produce. For instance, if rafting on the Great River or Rio Grande costs US\$45 per trip per person, we can readily compute the value of this service at the height of the tourist season. This is one of the simpler procedures precisely because there is an **existing market** for the service. Clearly the economic value must turn out to be a **variable**, if as is likely, in discerning the demand curve we find that the price of the service varies depending on the robustness or otherwise of particular tourist seasons. **The enormous problem of this approach is encountered when there is either no market for the service or a particularly imperfect market.** Solution to this problem requires use of shadow prices or some other imputed value related to a definition of intrinsic value acceptable to policy makers.

Total Economic Value

Suppose we take the Rio Grande watershed as our example, we can separate the value of our watershed into component parts. Conversion of a large area of the uplands into coffee plantations means private benefits will accrue to coffee producers, those who supply labour, transport etc. Conceptually the benefit, both internal (private) and external (deriving from the operation but not within the enterprise) is calculable. But there may be a value attributed to conservation of the area in natural forest. This could be absolute non-use or preservation i.e. no economic use, or conservation, i.e. use in such a manner as to maintain sustainability. The decision rule here would simply be to allow the economic use if the benefit-cost equation 'works' – conversion or development benefits less development costs are **greater than** conservation benefits less conservation costs.

While this may appear a fairly simple exercise, it is in reality, fraught with difficulties. The coffee plantation development will have associated with it, cash flows providing an easily computable money income precisely because a market exists for the final product. On the other hand, the non-market benefit - preservation of the watershed - is uncertain. A tendency for bias toward the development option will usually prevail. In addition, as long as there are no **incentives that can be internalized** into the land use choice, conservation benefits will, in reasonable perception, be automatically devalued. **The fact is, potential coffee producers cannot appropriate to or for themselves or consume the benefits of the conservation option!** Finally there is also a **regional dimension** to the problem. Inhabitants or settlements of the upper reaches of the valley who may lose the possibility of wages and other direct benefits are to be compared to those in its lower reaches and much further afield, who benefit from the use of clean, reliable water supplies. We may view this problem as that of the **local cost-benefit impact** versus the **regional or national cost-benefit impact**. Usually this will revolve around the concept of the watershed's intrinsic value.

Suppose we attempt to arrive at the total economic value of the watershed, economics provides us with a mechanism to accomplish this.

$$\text{Total Economic Value} = \text{value in use} + \text{value from non-use}$$

Use Value is made up as follows:

- Direct Value**
1. Timber, fuel wood, yam stick harvesting
 2. Recreation
 3. Biodiversity – plant genetics etc.
 4. Human settlement

+

- Indirect Value**
1. Nutrient cycling
 2. Watershed protection/maintenance
 3. Micro-climate

+

- Option Value**
1. Future uses in both direct and indirect value

Non-Use Value is made up as follows:

- Existence Value**
- Intrinsic value of the watershed
Responsibility
Stewardship
Gift to future generations
The list can go on!

Direct **use value** is not a difficult concept but its measurement is not necessarily simple. The value of yam sticks etc., even recreation, can be readily ascertained. But that of biodiversity and plant genetics present problems. Indirect **use value** covers all the functions the watershed performs to maintain the integrity of water supplies, soil maintenance, avoidance of siltation and flooding, etc. **Option value** is akin to insurance. It reserves the resource for future use and maintenance of the watershed's integrity. **Existence value** is unrelated to use value; it simply captures the feeling of people that an environmental asset is intrinsically valuable. Wildlife

societies, groups that provide funding for preservation of flora and fauna etc. without themselves ever enjoying the resource personally, clearly demonstrate the reality of this component of total economic value. Indeed empirical evidence collected from surveys suggests this is an important element in overall valuation. The clearest evidence of the latter is to be found in the concept of the **debt-for-nature-swap** of which Jamaica is currently a beneficiary.

Another element in the approach to economic valuation of the watershed encompasses the need to determine the cost of degradation, for instance the destruction of coral reefs and loss of topsoil. This would obviously be necessary for a complete appraisal of impacts. While such an comprehensive appraisal is beyond the scope of this exercise, it should be noted that a World Bank study of the Montego Bay Marine Park estimated a value of US\$750 million – a considerable value if lost through degradation. **The fact is that in the final analysis the true value of such a resource may best be described as incalculable!**

In the same vein, following the floods of 1979 in the area of Portland, a report (get source) that looked at mitigation plans made an attempt to deal with what may be called “regular costs” without establishing an actual dollar value. It did however, lead to the important question – “How do we balance potential and real value?” These are all issues of importance that come to the fore particularly in the event of occurrence of a disaster – minor or major!

The foregoing discussion of economic value highlights several features of importance for any approach to providing economic/financial incentives for watershed management in Jamaica. The first of these is that although valuation procedures present some difficulty, they have been the subject of both theoretical analysis and efforts to arrive at empirical measurement using the concepts discussed. Yet even with these approaches to valuation, one overriding problem is surely, as Bass and Geoghegan note [emphasis added], the fact that “ **a large percentage of the rural population lives in poverty and behaviour and decisions are entirely predicated on day-to-day survival**”. To create workable incentives for these groups of the population in the watersheds, or for that matter, for those who use the watersheds for economic survival but do not necessarily inhabit the watershed is a difficult task. To provide incentives that target the individual in this type of settlement appears to be a strategy that will face tremendous obstacles. The preferred mechanism, it appears, would target community-based organizations.

Creating Incentives – Finding the Approach Most Likely to Succeed

A successful strategy that will encourage private sector investment in activities that sustain the integrity of the watersheds should target both positive and negative features of current practices. These practices include private forestry operations of which a few currently exist and appear to operate on a sound basis. These activities should be encouraged by incentives and generalized wherever possible.

The form of land tenure known variously as “family land” or “land settlement” holdings, act as disincentives to investment for the same reason – no clear title to the land. A pervasive problem in all the watersheds, it was evident from our field visits in particular in discussions with the Mafoota farmers, that this situation constituted a major impediment to long-term commitment by small farmers. This problem cannot be readily solved by incentives. For many communities with similar characteristics as those of Mafoota, no long-term solution will be achieved unless land titling issues are settled within a timely framework. On the other hand, although the land titling issue is pervasive and apparently intractable, there are conditions and a set of negative practices that should be readily amenable to change once the “right” incentive is found and the beneficiary is the community. Some of these conditions and practices inimical to the watershed include:

- Improper garbage and solid waste and sewage disposal
- Poor management of pesticide use and other agricultural chemicals

- Indiscriminate harvesting of trees
- Non-contour farming on steep hillsides
- Improper technologies for watershed health
- Persistence of crop types non-resistant to pests

Incentives to avoid these are discussed in the next section.

Given the prevailing valuation [literally almost no value at all] of the intrinsic services provided by the watersheds, an incentive for private sector participation in sound watershed management must satisfy at least three requirements:

- The outcome of the incentive must result in increased and readily observable private economic or financial benefit/gain
- The incentive must result in benefits that can be privately appropriated
- The modalities of the incentive must be simple to operate and monitor

If, or rather when, outreach and education efforts change perceptions as to the true value of the watershed, other, non-economic/financial incentives not amenable to private individual appropriation can be used to affect community behaviours that preserve the watershed. Such incentives must satisfy at least three requirements:

- The incentive must be credible, leading to readily observable community benefits
- The community must be involved in its determination
- Governance of its modalities and administration must be transparent and simple

The specifics of such incentives are not at the moment readily apparent but studies, surveys and the R2RW process itself is meant to determine these.

3.0 Legal Tools for Watershed Management and Conservation

Here, we outline four basic legal mechanisms that private actors can use for watershed management and conservation:

1. **Donations:** a basic tool for individuals, landowners and the private sector is donation of land, money or other assets to a conservation organization or other entity;
2. **Conservation Easements:** a second tool is the creation of conservation easements, which essentially allow landowners to retain ownership of land and to use it for limited purposes while permanently removing their right to use it for certain non-conservation purposes inimical to watershed management;
3. **Conservation Agreements:** a third tool allows a landowner to enter into a legal agreement to manage his or her property according to specific conservation terms often in exchange for financial compensation. For watershed management, the terms would have to include specific details designed to enhance sound watershed management practices. In contrast to easements, however, such agreements often have the disadvantage of not being permanent;
4. **Land Exchanges:** a fourth tool allows landowners to exchange, for example, property that is significant for watershed conservation reasons for a different property of comparable equal economic value, but less significant for watershed protection.

Tax Incentives for Watershed Management and Conservation

Three broad categories of tax incentives may be combined with the above legal tools to encourage watershed management and conservation:

1. **Income Tax Deductions for Contributions:** a given tax code can be structured to provide deductions for contributions of land, money or other assets to conservation purposes;
2. **Tax Deductions for certain types of land use :** government can allow deductions for certain expenses incurred by landowners or the private sector while supporting conservation on private property such as, for example, through use of low impact agricultural techniques;
3. **Tax exemptions:** with a variation on the idea of tax deductions, government can exempt from taxation certain conservation activities or properties devoted to conservation, such as land used for private nature reserves.

Other Instruments

We identify below, six promising approaches to economic incentives for watershed management and conservation in addition to the basic legal tools and tax incentives previously discussed:

1. **Tax allocation:** government can choose to allocate national tax revenues to regions in such a manner as to reward sound watershed management (i.e., giving proportionally greater resources to those areas that have set aside significant land in protected areas);
2. **User fees to support Watershed Management and Conservation:** one potential source of revenue for conservation is a fee for use or extraction of natural resources such as is already being done for timber, from the watershed;

3. **Controlling access to shared resources:** government can use a combination of regulation and designation of limited ownership rights to provide incentives for conservation of shared “common” resources – in this case bird habitat;
4. **Tradeable Development Permits:** government can use market incentives for conservation by creating a set of tradeable permits for development of a given area that can be used in conjunction with “credits” for conservation and watershed management activities;
5. **Eco-labeling:** consumers and government alike can promote “green” products through use of a system of labeling that allows purchasers of a given product to evaluate its impact on the environment;
6. **“Biodiversity Prospecting” and other benefits-sharing mechanisms:** incentives for conservation can be created by resource use agreements, for example, in the pharmaceutical industry, that provides a portion of revenues generated to return to the country, region or community where that resource is found;
7. **Elimination of “Perverse” incentives:** conservation is often inhibited by subsidies or other incentives that encourage overexploitation of resources. New incentives for conservation can be created by eliminating such negative, or “perverse” incentives.

Watershed Management and Conservation: Incentives requiring legal tools

To provide incentives resulting in increased and readily observable private economic or financial benefit/gain there are several important legal tools that the state may use to predispose private actors to accomplish conservation in the watershed. Effectively the incentive must **either increase economic benefit or reduce economic cost**. The simplest and most obvious is a gift of privately owned land, money or securities to a conservation organization or government agency. Aside from an outright gift, a second approach is the “conservation easement”, a tool for permanently conserving land by restricting most forms of new development while still allowing landowners to use it for limited purposes that are consistent with conservation. A third tool is the conservation agreement, in which a landowner keeps full ownership of the land, but enters into a legal contract with a government agency or a conservation organization in which the owner commits to manage the land so as to ensure conservation. Finally, exchanges of public and private land can also involve the private sector in conservation and allow efficient use of government resources. To increase the likelihood of participation, the incentive for conservation, must be combined with tax policies that reduce financial cost to the landowner. The Government can design tax policies that reduce the tax burden on private actors who engage in environmental protection and biodiversity conservation or other activities for the public good. We review these in turn below.

Donations

Gifts of land to conservation organizations or government agencies committed to protecting the land in perpetuity are an obvious way for private parties to support watershed management and conservation. Such support, inclusive of donations of money or securities can be made attractive by incentives. To make this technique meaningful, the recipient of a donation of land or money must clearly be capable of carrying out effective watershed management and conservation activities. If the government encourages such donations through tax incentives, it should also put in place mechanisms to ensure that the tax benefits are available only for donations to qualified conservation organizations. Inherently there is a public cost associated with the management and monitoring of such a scheme.

Conservation Easements

An “easement” is a concept of property originating in common law systems. If property is subject to an easement, the owner is not the only person with rights to that property; the holder of the easement maintains limited aspects of the ownership rights. Creation of an easement is possible in Jamaica as a common law country, because property ownership is understood to consist of a bundle of rights, many of which can be readily separated one from the other. Because these rights are independent they can be sold or granted individually, as through easements.

Essentially, a conservation easement separates the right to engage in certain types of land use – such as more intensive development – from the other ownership rights over a specific parcel of land. Only the holder of the easement may exercise activities covered by the easement. The property owner, however, continues to own title to the land, and can use it for limited purposes that do not interfere with the easement.

Once created, easements “run with the land” and bind future owners of the primary interest in the land, because the land is permanently subject to the easement. In other words, if the owner transfers title to the land, future owners are also bound by the easement’s limitation. This permanency is an important advantage of easements.

Conservation easements became practicable only when some common law systems made certain changes in the historic concept of easements. Originally, easements by definition benefited one parcel of land, the “dominant tenement”, by burdening another, the “servient tenement”. An easement could exist only if there were both a dominant and servient tenement. In addition, the dominant and servient tenement had to be adjacent to one another. The classic type of easement was a “right of way”, in which the owner of the dominant tenement had the right to traverse the adjacent servient tenement. The significant change came when common law jurisdictions began to eliminate the requirement that there be a dominant tenement to the servient tenement. As a result, conservation organizations and private landowners could design easements unconnected to any other parcel of land to advance environmental goals.

In most jurisdictions, a conservation easement is created when the landowner transfers some or all rights to develop the property to a government or qualified conservation NGO, the landowner can maintain certain uses but cannot legally take actions inconsistent with the terms of the conservation easement. The government agency or conservation organization, as owner of the easement, has the legal right to block incompatible uses of the land. For the conservation easement to be effective, the agency or organization must be committed to monitoring the land use and protecting the conservation purpose of the easement in perpetuity.

As with other property rights, conservation easements may be either donated or sold. The sale of a conservation easement is an attractive option from the owner’s perspective because, in addition to receiving the negotiated purchase price for the value of the easement, the owner can continue to own and use the property for all purposes compatible with the easement. The restrictions contained in the easement often benefit the owner, and reflect his or her desires for the long-term use of the land.

Of course, purchasing conservation easements at their market price is less attractive from the perspective of conservation groups, because they have limited funding. To encourage donations, in contrast to sales of conservation easements, a number of jurisdictions specifically provide that a conservation easement qualifies as a charitable contribution, so that the landowner can deduct its value from her taxable income. Furthermore, tax laws in some jurisdictions provide that the transfer of a conservation easement results in a lower property tax valuation for the owner, in recognition of the fact that the use of the property is limited and its fair market value is therefore reduced. Thus, properly designed tax policies can vastly increase the benefits to a donor of donating conservation easements.

Some commentators report that permanent conservation easements are currently not possible in most civil law applications. They argue that civil law generally appears to require the existence of a dominant and servient tenement, with the holder of the dominant tenement retaining ownership of a partial property right such as an easement. Further, civil law may require that dominant and servient tenements be contiguous. However, certain exceptions are being developed in a number of jurisdictions. We believe modifications in national legislation or creative use of existing concepts in civil law countries to accommodate conservation easements could be a bold step forward for conservation, with both private actors and the public being able to enjoy the benefits. Preliminary investigation suggests this procedure is possible in Jamaica. In this section, we outline work being done elsewhere in this regard.

In Switzerland, the Civil Code provisions related to easements do not require contiguousness between the dominant and the servient tenements. Additionally, the 1966 Swiss Act for the Conservation of Nature and Landscape (currently under revision) explicitly provides for voluntary agreements between a governmental agency (or a private association) and a landowner in order to create a conservation easement. To date, conservation easements in Switzerland have been used mainly to protect primarily agricultural lands.

In Costa Rica, the notion of conservation easement was recognized when the Public Registry recently adopted a new code, the "GF3", especially for conservation easements. Under the regulations, these easements are temporary or permanent land-use limitations imposed by private landowners. While selling such easements may compensate some of the landowners, others create them to increase the value of their real estate or to promote conservation.

One example is the conservation easement that was created near the Monteverde Cloud Forest National Park in Costa Rica. This agreement between The Nature Conservancy and the Tropical Science Center protects 42 acres of land, including migratory habitat for the Quetzal, which uses this area as a stopping point and feeds on the Aguacatillo tree, endemic to the area. Another example is that of Braulio Carrillo National Park, where a tract of land abutting the Park is covered by an easement. Under the terms of the easement, a private company is able to operate a cable car for tourists to give them an aerial view of the rain forest area and adjacent park. While allowing for revenue for the park, the easement serves an additional conservation benefit by setting limits on foot traffic near the cable car in order to reduce the ecological impact on the area.

Conservation Agreements

Another widely used mechanism for watershed management and conservation is the conservation agreement. In a conservation agreement, the owner makes a legal agreement to manage the property to accomplish a defined environmental, watershed management or conservation goal, but does not transfer an ownership right. It may be possible to design conservation agreements for immediate use in those jurisdictions where conservation easements are not possible because laws have not yet been revised to permit their use. Conservation agreements are becoming increasingly important in a growing number of jurisdictions.

In a conservation agreement, the landowner agrees to manage his property according to specific terms, in exchange for payments from a government agency. For example, a farm owner might agree not to disturb native vegetation, or to adjust the harvest cycle to account for habitat needs of native animals or birds. In order to maximize the effectiveness of such arrangements, governments usually make periodic rather than lump sum payments. Such a system maintains the financial incentive for continued compliance by the landowner. Governments can also encourage owners to form and comply with conservation agreements by creating tax incentives.

Conservation agreements, unlike easements, generally last only for a specified time period, after which they must be renewed if the land is to remain protected. Conservation agreements, on the

other hand, will not qualify as transfers of property for purposes of the charitable contribution deduction. Furthermore, they generally will not result in a lower property tax assessment, since they are not usually permanent. Nevertheless, governments could design income and property tax policies that treat owners more favourably where they enter into conservation agreements.

While conservation agreements typically bind only the current landowner, a growing number of jurisdictions do provide for conservation agreements that bind future as well as current owners. In the United Kingdom, for example, management agreements between the government and holders of National Nature Reserves and Sites of Special Scientific Interest are generally defined as “contracts in rem, which run with the land” and can be enforced against those who succeed the current owner”. Similarly, the national government of Australia as well as the Australian state of Queensland have passed legislation authorizing the government to form conservation agreements with landowners in certain areas that restrict land use or require conservation actions. These agreements may apply to the owners’ successors in interest.

Conservation agreements have the drawback of usually requiring continued government expenditures for supervision. In addition, if a conservation agreement merely obligates the owner to avoid development, there is a real risk that an owner with no prior intention of developing might sign an agreement in order to receive payments. While landowners should be encouraged to promote conservation regardless, governments can ensure that their expenditures have a real added impact by requiring the owner to take positive steps, in addition to merely avoiding destructive activity, in order to qualify for payments under a conservation agreement.

Land Exchanges

Land exchanges can also support watershed management and conservation while minimizing government expenditures. Such exchanges between government and private parties can conserve biologically valuable land through public ownership. In addition, conservation groups can use exchanges between private parties as tools to accomplish conservation.

Carefully designed land exchanges allow governments an efficient means of accomplishing conservation goals in the public interest, while also allowing private actors to advance private economic goals. To be successful, a land exchange policy or program must include: 1) a procedure for ensuring that the land to be acquired is indeed valuable for conservation; and 2) a procedure for ensuring that the government negotiates a reasonable bargain and does not accept too little in exchange for public lands. To be effective, these procedures must involve expert assessment, public participation and judicial review of the agency decision-making process.

4.0 Tax Incentives for Watershed Management and Conservation

Tax law is crucial to implementing the legal tools described above because it can provide important incentives to private actors to use those options where they are available. This section discusses specific tax policies that encourage private support of watershed management and conservation.

One of the single most important steps government can take is to create a positive tax climate for direct support of nongovernmental conservation organizations or initiatives. In Germany, a taxpayer can reportedly deduct the value of a charitable donation from taxable income up to a ceiling amount. To be eligible, the donation must go to an environmental organization or to the states, districts, communities, or their agencies in order to promote protection of the environment, the landscape, or ancient monuments. Such a device may well be feasible for Jamaica particularly in light of the well-developed environmental NGOs existing both at the national and regional levels.

4.1 Income Tax Deduction: Contribution of Land

Donation of land can be a very important tool for watershed management and conservation. Some countries' tax policies encourage such donations by specifying that donations of land can qualify for the charitable contribution income tax deduction. In the United States, for example, the tax code specifies that a person who contributes qualified real property to a qualified organization exclusively for conservation purposes can deduct the value of the property interest from taxable income as a charitable contribution up to the ceiling amount. This provision could be a significant incentive for watershed management and conservation.

As a practical matter, a donor can often obtain more favourable tax treatment by directly donating real property rather than cash. For example, if a donor sells a piece of property, intending to donate the proceeds, the donor will be required to pay income or capital gains tax on the sale price, thus diminishing both the funds available for the donation and the resulting value of the tax deduction. If the donor however, contributes the property directly, full value is deductible (up to the ceiling amount) and capital gains taxes are avoided. In cases where the property has appreciated in value, the donor can deduct the appreciated value, rather than the original purchase price, thereby qualifying for a substantial deduction while avoiding capital gains taxes. Under U.S. law, charitable donations of both cash and certain types of property are tax deductible.

4.2 Income Tax Deduction: Contribution of Conservation Easement

Another tax policy that increases the incentives for donors to support watershed management and conservation is one that allows donations of conservation easements to qualify as charitable contributions deductible from taxable income. Federal law in the United States provides that, in general, a property donor must convey his entire interest in a property to qualify for the charitable contribution deduction. The critical exception, for our purposes, involves the donation of a "qualified conservation interest". A qualified conservation interest is, contrary to the general rule, deductible as a charitable contribution, even though it is only a partial interest in real estate. A qualified conservation interest is defined as an interest in real estate given in perpetuity for the purposes of land preservation, public education or recreation, protection of a natural habitat, preservation of open space, or pursuant to government conservation policy. Thus, the donation of a conservation easement is deductible as a charitable gift as long as the easement is solely for conservation purposes and is given to a qualified conservation organization or public agency.

4.3 Income Tax Deduction: Contribution of Securities

Another method of obtaining the charitable gifts deduction in the United States is through a donation of securities. Securities may be donated outright, or the donor may donate the capital but retain the right to receive the income generated by the securities during his lifetime. In either case, the donor is eligible for a deduction equivalent to the value of the securities donated. Furthermore, if the securities have appreciated in value, donating the securities outright enables the donor to avoid the capital gains taxes he would incur if he had sold the securities and donated the proceeds of the sale.

Securities contributions may pose particular challenges for regulators. For all charitable contributions, the government must assess their value to determine the amount to be deducted from taxable income. Cash donations of course, are easy to assess. Property donations are somewhat more complicated, as there must be an assessment of the fair market value. Some types of securities, however, can pose a particularly difficult valuation problem. For example, privately held or rarely traded stock can be difficult to evaluate. If the government decides to permit deductions for securities donations, it must be prepared to monitor and evaluate such transactions to minimize tax evasion and fraud, through measures such as appraisal of assets.

4.4 Tax Deductions for Certain Types of Land Use

Another possible tax measure allows deductions from taxable income of expenses that landowners incur in taking specified for watershed management and conservation measures. In the United States, for example, farmers may deduct the costs of soil and water conservation measures from their taxable income. To qualify, such expenses must be incurred in the process of carrying out a soil conservation plan approved either by the U.S. Soil Conservation Service or a comparable state agency, and must not involve dredging or filling of wetlands. The deduction is limited annually to 25 percent of the taxpayer's gross income from farming; any expenses above this limit can be carried over to succeeding tax years without time limitation.

In another example, Italy's Protected Areas Act provides that noncommercial organizations may deduct from taxable income any expenses incurred in maintaining and protecting property that is within a natural area designated for protection under other conservation laws.

4.5 Tax Exemptions

A variation on the idea of a tax deduction is the tax exemption. In addition to making donations or certain expenditures deductible from taxable income, governments can also encourage conservation by exempting certain activities, or property devoted to certain purposes, from tax. For example, the United States confers income and sales tax exemptions on qualified nonprofit organizations. Other examples include property and estate tax exemptions, discussed below.

4.6 Property Tax Exemptions and Reductions

Some governments have tax policies that reduce or eliminate property taxes on land of ecological significance if the owner agrees to manage the land for conservation purposes. In addition, government policies can provide property tax incentives for transfers of conservation easements, by recognizing that the transfer of the easement reduces the value of the property for tax assessment purposes.

In a number of jurisdictions in the United States, taxing authorities lower taxes on land that is subject to a conservation easement, recognizing that land has reduced market value when it is subject to an easement that restricts development. As a result, property taxes (usually assessed and collected by a state rather than the federal government) may diminish commensurately; indeed, many jurisdictions explicitly provide for this in legislation. Thus, along with federal income

tax deduction, property owners can significantly decrease their property and estate taxes while retaining ownership, by donating conservation easements during their lifetime. In addition, the federal income tax deduction and estate tax reduction also apply if an easement is donated through a decedent's will.

4.7 Exemption from Estate Taxes

In many countries, the government imposes a tax on the transfer of wealth from a decedent to his or her heirs or assigns. This estate tax is generally assessed based on the fair market value of property in the estate. In many cases, the tax burden imposed by taxing land at the fair market value forces heirs to sell the land in order to pay the taxes, particularly if the family is rich in land, but poor in cash. In part, this is because fair market value is often defined as the value of the land converted to its best use, i.e. the most intensive development. A number of governments modify this policy to discourage subdivision and development of biologically valuable lands, and to protect family landholdings.

The United Kingdom, for example, provides an exemption from estate tax for land that the government determines is "of outstanding scenic or historic or scientific interest"; this land is exempt from estate taxation if transferred to a nonprofit organization that is "an appropriate one to be responsible for the preservation of its character". The government may also require the formation of a contract that establishes rules for use of the land as a condition precedent to claiming the exemption.

In another example from the United Kingdom, the value of standing timber on property within the estate is exempt for tax as long as it is not cut and sold. This reduces the financial incentive to heirs to cut and sell timber to pay inheritance taxes; if applied in a country with old-growth forests, it could act as an incentive to biodiversity conservation.

In the United States, estate taxes may be reduced if a will provides for donation of an easement to a conservation organization. Upon the owner's death, the easement will be transferred according to the terms of the will. The value of the estate will be reduced accordingly, thus reducing estate taxes. Owners can also accomplish the same reduction in total estate value by transferring the easement before death.

5.0 Other Instruments to Support Watershed Management

The preceding discussion focused on government policies specifically designed to create incentives for private actors to enhance their activities for watershed management and conservation. There is also a broad array of less direct options capable of encouraging similar behaviour change with resultant positive impact on watersheds with respect to their conservation and sustainable use. This type of incentive is meant to deal with the problem of differential spatial or regional impact of conservation activities. If the region avoiding exploitation of an area of its forest or watershed loses directly in the benefit-cost impact, it can be compensated by differential treatment in the law. In this section, we present a subset of these additional options that appear to be most directly related to our effort at watershed management and conservation.

5.1 Tax Allocation

The allocation of tax revenues collected at the state or national level can be designed to encourage watershed management and conservation. While this method is not directly a private sector incentive, such allocation regimes can help ameliorate the loss to the local property tax base, which often results from the establishment of conservation easements or other tax incentives for watershed management and conservation (since such measures reduce the assessed value of the affected real property). Tax allocation arrangements can help to encourage municipalities to undertake conservation measures, by helping to compensate for any loss of revenue.

Two Brazilian states, Sao Paulo and Parana, have passed laws that allocate a proportionally larger share of state tax revenues to municipalities that have protected areas. A small fraction – 5 percent in Parana and 0.5 percent in Sao Paulo – of the state value-added tax that is imposed on most goods and services, is reserved for municipalities that protect environmentally significant areas. The environmentally adjusted allocation compensates localities for removing areas from economic activity, thus creating an incentive to protect existing reserves and to create new ones. In Parana, \$19 million will be split 115 ways. The difference is most beneficial to towns with small budgets. For example, in Sao Paulo state, the town of Barra do Jurvo increased revenues from the state value added tax by 522 percent after the protected areas-based tax allocation scheme was put in place.

To maximize the effectiveness of tax revenue distribution as a conservation tool, guidelines must be narrowly drawn so that the number of beneficiaries is limited. The payments must be sufficiently large to reward local governments at least in part for foregoing short-term economic development and to compensate for the additional costs associated with park management. Another option to enhance the effectiveness of such programs is to increase the percentage allocated to qualifying municipalities once the programs have been shown to achieve the desired goals.

5.2 User Fees to Support Watershed Management and Conservation

The exploitation of natural resources often results in environmental costs in the form of damage to ecosystems, loss of biodiversity and other negative impacts. This applies equally in the case of the watersheds. These costs are often not reflected in the market prices for use of the resource. Because these damages are external to the market, the direct user generally has a financial incentive to avoid incurring the cost of environmental protection and instead pass these costs on to others. While individuals profit, society as a whole loses. One important method for correcting such market failures is to impose user taxes or fees on the use of natural resources. This is particularly important if the resources are taken from publicly owned lands. Ideally, the fees imposed should reflect all of the social and environmental costs. In this way user fees can actually promote efficient resource use with some direct link to prevailing market conditions.

User fees however, should not be the sole direct source of revenue for the administering agency, because if an agency depends on user fees for revenues, it may have an economic incentive to promote overuse rather than conservation. Instead, user fees should be allocated directly to watershed and conservation uses specified by law, such as the purchase of land or easements for conservation, or conservation trust funds that are independent of the fee-charging agency.

We have been unable to locate any completed work in the Jamaican case for assessments of water rates for downstream users. Work is ongoing but not complete. From our discussions with practitioners in the field, it would appear however that a conservation fee chargeable to all water users would be appropriate. This would be easy to administer. It would also be, in our view more palatable and easy to explain to the public.

5.3 Timber User Fees

Timber extraction is one of the most dramatic causes of biodiversity loss. One method for capturing at least some of the many costs of timber extraction is a user fee. User fees must be carefully designed and strictly enforced, however, to ensure they promote conservation and do not encourage unsustainable practices. For example, if the government places user fees in a fund for reforestation, it must take great care to ensure that the fund does not have the unintended effect of encouraging an actor to extract timber from natural areas in order to get access to reforestation funds. Further, government must insure that the funds generated by such user fees are used in a transparent manner for the purpose intended.

Several difficulties have arisen. First, establishment of industrial forests does not promote conservation of biodiversity, and in fact could even reduce biodiversity if industrial forests displace natural forests. Similarly, reforestation of previously degraded land is at best neutral from a biodiversity conservation perspective if the land is reforested with a monoculture plantation; to restore at least some biodiversity, the land should be reforested with native species rather than a monoculture plantation. The Indonesian program has also been criticized by some observers because a uniform flat tax may encourage high-grading and wastage, and fails to capture greater revenues from tree species with higher commercial value. A better option for maximizing revenue and promoting efficiency might be an area utilization fee. A final challenge for resource extraction fees is to insure that the funds are used exclusively for restoration purposes. In the case of Indonesia, a portion of the fund was reportedly used to bolster the aviation industry. Hence, timber user fees and forest funds must be carefully designed and closely monitored if they are to be effective incentives for conservation and watershed management.

5.4 Recreation User Fees

Recreation, though not as destructive as extractive resource development, has environmental consequences. Imposing fees for recreational resource use is another method of generating economic revenues to support conservation. Such fees include park admissions fees, backcountry permit fees, and fishing and hunting licensing fees. User fees should reflect the costs of administering recreation programs, maintaining trails and facilities, and enforcing hunting and fishing regulations. The imposition of user fees on recreation, particularly on public lands, has led to concern about imposing too high a cost for access, thereby excluding poorer persons. This concern may limit the extent to which costs can be recovered solely through user fees.

While there are many examples of how the demand for nature tourism and outdoor recreation might be used to promote conservation goals, we have included three examples of government and private sector cooperation in this regard. In Australia, the government charges user fees, leases food outlets, and charges concession fees for buildings and marina associated with protected areas. Reportedly, companies and private individuals have in turn formed an eco-

tourism association, members of which are required to put back a certain percentage of revenue into conservation and watershed management projects.

5.5 Controlling Access to Shared Resources

The entire public in a community collectively owns common property resources - whether local, national or global. If unregulated, common property resources are often exploited to the point of exhaustion. Individuals reap the entire benefit of harvesting the resource, but they spread most of the costs over the entire community. An individual has no incentive to exercise restraint and conserve the resource, because someone else may take anything left in the commons. As private individuals act to maximize their self-interest, a valuable resource is overexploited; this is commonly referred to as the tragedy of the commons. A contemporary example is the North Atlantic fishery of Georges Bank off Cape Cod; once tremendously productive, it is now impoverished and subject to a fishing moratorium.

Through regulation, the tragedy of the commons can be averted. The “tragedy” occurs when there is no social method of management. A number of traditional cultures have managed common property through community management arrangements, without privatization and without an environmental or social “tragedy”. In a number of countries in the Western Hemisphere, indigenous cultures may already be managing property that they hold in common in a sustainable manner. In these situations, governments can best promote conservation by helping these cultures demarcate their lands and enforce borders against incursions by outsiders who do not follow the communities’ rules of common property management.

In some other cases, however, it may be useful to assign private property rights in a resource previously held as common property. Assigning property rights to a limited number of holders, and excluding others from using the resource, may be of some benefit in eliminating overexploitation, fostering private stewardship and encouraging sustainable use of traditional common property resources.

For example, Iceland uses a combination of regulations and market incentives to protect Eiders, a species of sea bird. Eiders are a traditional source of eggs and feathers. In the past, they were treated as a common property resource, and could be hunted freely. Subject to unchecked exploitation, however, eider populations dwindled. To remedy the situation, the government issued regulations that protected the birds, in part by creating a private property right. The regulations impose an absolute ban on killing eiders and protect public nesting sites, but give property owners the right to collect eggs from nesting sites on private land. Property owners, as the sole legal source of eider eggs, have an economic incentive to protect nests from poachers and predators. The government enforces the private property right by imposing substantial penalties on poachers.

5.6 Tradeable Development Permits

The state of New Jersey in the United States developed an innovative zoning and credit program to protect a biologically unique area known as the Pine Barrens. The New Jersey Pinelands Commission, created through a combination of federal and state legislation, was granted the authority to develop a Comprehensive Management Plan for the Pine Barrens and to establish the Pinelands Development Credit System. Pursuant to the Management Plan, three zones of use were established in the region: i) the preservation area, which is the most ecologically sensitive; ii) a buffer zone where some economic activity with relatively benign environmental impact is permitted; and iii) a commercial growth area.

The credit program operates as follows: landowners in the more restricted conservation zones (i and ii) can earn conservation credits by placing restrictive covenants, which preclude development, on their property. Landowners in the commercial growth zone can increase the

density of development on their property by purchasing conservation credits from others. Instead of conflicting, development and conservation stimulate and support each other. The state also established a bank that can guarantee loans using credits as collateral. From 1982-1992, 10,000 acres of the Pine Barrens were protected through the credit program, while at the same time over 180 high-density development projects were able to go forward.

5.7 Performance Bonds

Where a proposed activity requiring government regulatory approval has uncertain environmental consequences, including the potential to damage biodiversity, the government could require the person proposing to carry out the activity to post an environmental performance bond or acquire environmental insurance. In essence, a performance bond is a sum of money that must be deposited with a government agency before a permit can be obtained. The bond is set at an amount that reflects the best estimate of the largest potential future environmental damages. The bond is returned if the developer can demonstrate that the anticipated damages did not (and will not) occur. Conversely, if damages do occur, the funds are used to restore the site, and the remaining balance, if any, is returned. Thus the bond, if it accurately reflects the true costs of reclamation, acts as a guarantee against failure to cure environmental damage. A performance bond system “combine{s) the ‘polluter pays’ principle with the ‘precautionary’ principle, providing for internalization of costs where harm is possible but damages are uncertain.

This proposal would probably be least controversial for projects on public lands, for projects on public lands, for projects to be carried out under government contracts or grants, or for activities that pose dramatic, obvious environmental threats. Categories of activities with clear potential for negative impacts on watershed management include road building, timber cutting, and oil shipping. Performance bonds have been used in the United States for coal-mining reclamation.

5.8 Eco-labeling

Another positive incentive would be to establish a uniform, widely accepted and comprehensive regulatory scheme that regulated labeling claims. Eco-labeling informs consumers about environmentally sound products and production processes, empowering them to act on their preferences for “green” products. Eco-labeling constitutes an advertising bonus for qualified products, and can also be a powerful educational tool. To make eco-labeling effective, however, consumers must be able to rely on the accuracy of labeling claims. In fields affecting watershed management and conservation, the government could set standards for labels certifying, for example, that agricultural goods or forest products were produced sustainably. Consumers and purchasers could then express their preferences in the market for such products, thereby increasing market incentives for watershed management.

5.9 “Biodiversity Prospecting” and Other Benefit-sharing Mechanisms

“Biodiversity prospecting” initiatives, involving sampling species from biodiversity-rich habitats in search of new drugs and other products, have been much in the news lately. Properly carried out, these initiatives could serve as economic incentives to protect, rather than destroy, watershed management and conservation. They also have the potential to bring revenues and technological capacity to developing countries. Finally, they could provide a mechanism for avoiding perceived inequities of the past in which scientists or corporations took and used the knowledge and handiwork of traditional farmers and indigenous peoples without professional acknowledgement or financial compensation.

5.10 Elimination of “Perverse” incentives

Sound watershed management and conservation is often inhibited by subsidies or other incentives that encourage overexploitation of resources. Eliminating such negative or “perverse” incentives actually create new incentives for conservation.

6.0 Review of Incentive Models in Selected Countries

6.1 New Zealand

Conservation in Context

As a relatively recently developed country with an accelerated rate of settlement over the past 150 years, New Zealand still has a substantial proportion of land in Crown control, much of it accorded reserve status. It also has a relatively high proportion of species in decline or in threatened status, and a pervasive problem with pest species, which on one recent estimate costs the economy around \$800 million a year in combined damage and remedial measures (Bertram 1999). A biodiversity strategy calling for substantial increases in government funding, published at the end of 1999, recognized the need to extend biodiversity enhancement beyond the boundaries of reserve land onto private land. The Department of Conservation (DOC), government's chief advocate for biodiversity and manager of national parks and reserves, has a process for prioritizing protected natural areas of national significance, which extends beyond the current boundaries of the lands it administers. Regional councils and local territorial authorities (city and district councils) also have processes for recognizing significant natural areas under section 6(c) of the Resource Management Act.

Incentive Instruments

A number of positive incentive instruments for watershed management on private land are currently in use around the country. Their consistency in application and co-ordination of prioritised habitat outcomes is unclear.

- **Nature Heritage Fund:** Set up in 1990 as the Forest Heritage Fund, this has now widened to include non-forest ecosystems, with the purpose of protecting the full range of natural diversity originally present in the New Zealand landscape by providing incentives for voluntary conservation. Administered by an independent committee and receiving annual allocations from government, it is a contestable fund which gives assistance to DOC, TLAs and sometimes other organisations for the purchase, covenanting or fencing of areas for watershed management conservation. Over 100,000 hectares have been protected to date, principally through land purchase for addition to the DOC-administered public estate.
- **Open space covenants:** These are the principal mechanism of the QEII National Trust, and similar covenants administered by DOC or local councils can be established under the Reserves Act. The covenants restrict use of areas of private land so as to protect natural features, in return for which landowners may receive rating relief, 50% grant towards costs such as fencing and some pest control, and 100% grant covering the surveying and legal costs of registering the covenant on land title (under the QEIIINT scheme). The QEIIINT is funded partly by government annual allocation and partly out of private fund-raising. It is seen to be sympathetic towards farmers' needs, and is over-subscribed.
- **Rates relief:** The Rating Powers Act 1988 allows councils to set differential and special rates, distinguishing properties by various characteristics as to use. Section 1805 gives councils discretionary power to grant relief on properties containing natural, historic, or cultural features being voluntarily protected by the occupier (including areas covenanted under the QEIIINT Act, the Reserves Act, the Conservation Act and Maori Affairs Act). How widespread, or consistently, these powers are used is unclear, but overall rates relief is likely to be modest because much eligible land is of low rateable value.
- **Financial contributions:** Section 108 of the Resource Management Act allows councils to collect financial contributions from developers in the form of money, land, works or services,

as a condition for granting some forms of resource consent. A common example carried forward from earlier legislation in some districts is a “rezer” new subdivisions, intended to provide recreation and landscape amenities for the newly enhanced population. These act like a development levy, providing some disincentive to profligate land use and also funds for public uses with incidental benefit to watershed management.

- **Tradable development rights:** Some councils now provide for transfer of restricted rights between urban properties (e.g. building height entitlements) and rural properties (density entitlements on subdivision). These can be used to divert developments away from significant natural areas and concentrate them in areas of less environmental sensitivity.
- **Other measures:** Some councils and charitable organisations have small funds for assisting farmers in fencing off significant natural areas under section 6(c) of the Resource Management Act. Councils may also waive consent application fees for activities aiding conservation, and some attach performance bonds as a condition of resource consents.

New Zealand has various watershed management incentive measures either in place or mooted, but there is little indication of their coherent use towards common watershed management goals. With many rating and development measures located at the territorial authority (district council) level, there is a risk of duplicating efforts towards protecting particular ecosystems in adjacent authorities when more might be achieved by co-ordinating and dividing efforts across the region. The legitimacy of some measures may be open to challenge because legislative requirements for instruments to be linked to a clear purpose in local plans have yet to be legally tested.

The use of these incentive measures may also be restricted by misconceptions about their economic implications, such as the belief that rates relief reduces overall rates take (Anon 1999). Since rating is a mechanism for recovering a council’s necessary expenditure on public services, granting relief to some properties redistributes rating liability, contracts the rating base and may require resetting of the standard rate struck, but it need not affect the overall level of rates revenue unless the previous rate was at the limit of what is legally permissible under the Act. The extent to which councils can afford to offer rates relief is affected by their districts’ rating capacities, which varies widely between urban and rural areas.

6.2 Australia

Conservation in Context

Australia has a federal system of government, which to some extent results in diverse approaches and instruments in biodiversity policy. Despite this, development of a coherent policy towards biodiversity has been in train over the past decade, as testified by official documents towards the Convention on Biological Diversity, Australia’s National Strategy for the Conservation of Biological Diversity, the Intergovernmental Agreement on the Environment and the National Strategy for Ecologically Sustainable Development. Australia’s flora and fauna is “megadiverse”, displaying exceptional variety, but this is not reflected in conservation to date, with more than half the major biogeographic regions underrepresented in current reserves.

Incentive Instruments

A range of positive incentive instruments for biodiversity on private land are currently in use in Australia, varying by state (Young et al 1996). Some examples are outlined below.

- **Non-binding management agreements:** A number of schemes, such as Land for Wildlife, use non-binding management agreements as a non-threatening way of encouraging

landowners by providing chiefly information on management of natural areas. Useful as an initial or short-term measure, very few of these agreements have yet proceeded to long term securing of site management through covenants or other measures (Bayfield 1999).

- **Conservation Covenant Programme, Victoria:** This programme, administered by a private trust and funded by state taxpayers, seeks to secure permanent protection of sites by creation of a covenant registered on the land title. Landowners receive payment covering both costs of conservation management and compensation for lost income. The scheme has had low uptake but is viewed as highly effective in securing conservation gain (OECD 1996).
- **Heritage Agreements, South Australia:** This scheme, administered by state government out of state taxpayer funds, seeks to secure permanent protection of sites by voluntary creation of easements registered on the land title, in exchange for a one-off payment covering mostly lost income. Although apparently well-targeted, its conservation effect has been questioned, since it has encountered landowners threatening clearance with the intention of receiving compensation, difficulty in servicing agreements scattered over wide areas, and difficulty in achieving landholder responsibility for on-going maintenance (Clairs & Young 1995).
- **Conservation Area Scheme, South Australia:** This scheme, administered by state government out of state taxpayer funds, seeks to secure medium term protection of sites by purchase of leases in exchange for recurring payments covering both forgone income and conservation management costs.
- **Federal Save the Bush Programme:** This federally-administered and funded scheme offers grants for biodiversity enhancement works on private land. The manner in which funds are disbursed, and hence the incentive faced by the landowner, are unclear from the literature.
- **Revolving funds:** These schemes, an example of which is provided by the Trust for Nature (Bayfield 1999), provide funds for the purchase of sites for resale with long term restrictions on subsequent use in the form of covenants. A variant on covenant creation by voluntary persuasion, such funds depend on the timing of suitable land coming on the market.

Taxes in Australia, compounded by overlapping federal, state and local roles, have been identified as providing strong disincentive towards conservation: land held for conservation may produce no income against which to deduct expenses, yet still be liable for annual outgoings on income tax, land-tax and local rates, whereas the same land used for “productive purposes” would attract various allowances which result in significantly lower annual liability. New Zealand faces similar but less marked disincentives, due to the absence of land tax, and the possibility of receiving rates relief. Australia appears to have been successful in motivating conservation on private land with relatively low financial incentives, through measures such as non-binding management agreements, easements and covenants. In part this may be due to a convergence of biodiversity and farm conservation measures: for instance, enhancing remnant trees may counteract the rate of salinity increase in dryland farmland (Beale 1997).

6.3 Canada

Conservation in Context

Transformed by European settlement over the past 400 years, Canada has a federal system of government and various approaches and instruments in biodiversity policy. Agriculture is moderately subsidised, raising the opportunity cost of private conservation. No information on the guiding principles for biodiversity policy in Canada has been uncovered in this search.

Incentive Instruments

A large number of environmental improvement schemes on agricultural land have been identified (Agri-Food Canada 1997) but the manner in which they operate, and their incentive effect, is unclear. Schemes include such measures as tree planting, wetland restoration, game cover establishment and so on. Some examples of identifiable incentive instruments follow:

- **Permanent Prairie Cover Restoration Program:** A federal programme with the mixed objectives of reducing cereal production and restoring biodiverse ground cover, this entails the agriculture ministry offering annual payments covering both conservation management costs and forgone income compensation for 15 to 21-year contracts. The impact of the programme is blunted by inconsistent government policies towards agriculture, and would be improved if farm support were decoupled from agricultural output (IISD 1994). In 15 years the programme achievements have been modest, achieving uptake on 6% of eligible area.
- **Conservation covenants:** A number of provincial governments encourage conservation covenants being vested in registered conservation agencies, in exchange for tax concessions against income tax, estate tax and capital gains tax. The law in British Columbia was recently changed to broaden the range of covenants to include non-profit organizations (NPOs) as well as government agencies.
- **Prairie CARE:** A federal programme funding non-profit organisations to purchase land for biodiversity conservation purposes, retaining and managing them on a permanent basis. Funding comes from both taxes and profits on sale of land surplus to conservation needs.

There appears to be widespread encouragement of conservation through tax concession in Canada, although the uptake rate and effectiveness is unclear from the material reviewed. Wider use of compensation is being considered through a proposed "Species at Risk Act".

6.4 USA

Conservation in Context

Transformed by European settlement over the past 400 years, the USA has a federal system of government and moderate to heavy intervention in some agricultural production lines. The guiding principles for biodiversity policy in USA come through legislation such as the Endangered Species Act, the North American Wetlands Conservation Act, and state and local statutes governing land use planning. The US Department of Agriculture and the Department of Interior Fish and Wildlife Service both run schemes affecting biodiversity on private land. There is a long tradition of voluntary conservation bodies such as the Nature Conservancy and Sierra Club directly managing some areas for conservation purposes.

Incentive Instruments

A number of positive incentive instruments for biodiversity on private land are currently in use around the country.

- **Agricultural Set-aside Scheme:** A federal scheme for removing land from agricultural production, by offering standard payments compensating for income forgone through 10-year contracts, covering up to a specified percentage of each farm's area. Widely regarded as attracting land of least value to agriculture rather than land of most value to biodiversity, it provides no long-term security and has low conservation effectiveness.
- **Conservation Reserve Program (CRP):** A federal scheme for removing land from agricultural production and restoring grassland or forest cover. Landowners volunteer to enter

10-year contracts in return for annual payments, which cover both additional costs of restoration and compensation for income forgone. The scheme sets targets for participation over specific periods, and invites farmers to “bid” for inclusion, selecting them according to modified cost effectiveness principles until the target area is achieved. Both administrators and bidders display learning behaviour over successive bidding rounds, so there is a risk of inefficient selections and over-payment in the initial years (Reichenfelder & Boggess 1988).

- **Wetlands Reserve Program:** Administered by the USDA since 1990, this aims to improve water quality and biodiversity through improved fish and wildfowl habitats. USDA pays 100% restoration costs on permanent conservation easements; 75% costs on 30-year easements; and restoration cost share agreements for a minimum of 10 years in which USDA pays 75% of restoration cost and owners receive no reimbursement for site use.
- **Wetlands Mitigation Banking:** A market creation device which requires restoration, creation or enhancement of other wetland areas in compensation for wetlands damaged by new developments. Essentially a development consent condition imposed by some state governments, it also provides opportunities for private landowners to voluntarily offer areas of their properties suitable for the wetland mitigation work, and provides a means of improving flood control and recreation space as well as habitat restoration (Lashley 1995).
- **Environmental Quality Incentives Program (EQIP):** Run by USDA since 1996, this is a voluntary programme providing incentives to farmers to make environmental improvements to farmland, involving the preparation of conservation plans and 5 to 10-year contracts for incentive payments and cost-sharing on installation of improvements. Priority areas include soil erosion, water quality, wetlands and wildlife habitat.
- **Conservation easements:** A number of states offer tax concessions to private landowners in exchange for easements created for the benefit of local community or conservation bodies. There is also federal income tax deductibility for assessed reductions in property value. The predominance of easements over more readily extinguished covenants, and the linkage to tax concessions, creates an emphasis on demonstrable permanence in land use change.
- **Endangered Species (ES) Act:** Administered by the Fish and Wildlife Service, the ES Act prohibits activities affecting endangered plants, animals and their habitats, and may require landowners to modify their use of areas deemed critical habitat. A constitutional prohibition against uncompensated government “takings” of property creates legal debate about whether actions under the Act constitute takings, or regulation for which no compensation is payable. Most ES Act interventions attract no compensation at present, which creates perverse incentives to conceal or destroy habitat before it is identified (Innes et al 1998).

The US displays a mix of long term property right adjustments, contractual payment schemes derived from agricultural policy, and uncompensated regulatory measures. It encourages widespread and scattered conservation management areas which, since the probability of success in reducing risks to biodiversity is a function of increasing number of sites under conservation management, may advance the cause of conservation at low apparent cost to government. But policy, and in particular the ES Act, has also been criticised for creating a dichotomy between species on threatened list and those that are not, and mechanisms which admit to a continuum of risk probabilities could improve consistency (Solow & Polasky 1999).

6.5 UK/European Union

Conservation in Context

With virtually no land unaffected by human use in its long history of settlement, the focus of biodiversity conservation is on semi-natural landscapes on privately owned land. Much of it is used for farming which, for the past half century, has received subsidies favouring intensification to the detriment of nature conservation. The structure of conservation policy mechanisms in the UK was established soon after World War II, and comprises principally:

- The designation of Sites of Special Scientific Interest (SSSIs) by statutory conservation agencies, ranging from small discrete sites to extensive tracts covering several properties.
- The designation of National Parks, which are extensive tracts of privately owned and used countryside, with special funding and land use planning provisions favouring landscape, public access and nature conservation. Each is administered by a national park authority with members drawn predominantly from the constituent local councils.
- Statutory powers over land use planning held by local councils (territorial authorities), restricting private landholder rights through such measures as development control, green belts and tree preservation orders. National government offers advice on best practice in the form of Planning Policy Guidance Notes.

EU Directives have superimposed pan-European priorities since the 1980s, giving rise to new designated areas given effect through the SSSI mechanism. There has been increasingly explicit focus on biodiversity since the 1992 Earth Summit, expressed in the UK in the Biodiversity Action Plan (1995) which specified national targets for enhancing different habitat types, distributed around the country according to areas defined by their similarity in natural characteristics (similar to the ecological domains being developed in New Zealand).

There is a long tradition in UK of non-profit organisations (NPOs), such as the National Trust, the Royal Society for the Protection of Birds, and county naturalists trusts, giving practical effect to conservation by volunteering labour and funds to managing their own reserves.

Incentive Instruments for Biodiversity

Different incentive instruments for biodiversity on private land apply to different circumstances.

- Conservation agencies, national park authorities and local councils are empowered to negotiate management agreements with individual landholders, resulting in customized, targeted agreements covering actions and associated payments. This is the instrument most commonly used to protect SSSIs against potentially damaging operations, since the agencies are reluctant to undermine landowner goodwill with their alternative statutory powers of prohibition orders and compulsory purchase. Although the agencies would prefer to reimburse only positive actions rather than the landowner's forgone income from a less intensive production, some compensation for forgone income is often required to secure agreement. Management agreements have high transaction costs in the negotiation process, and also tend to have the highest costs per hectare treated, although since they are more targeted they are not necessarily the highest cost per property. They are more commonly used for protecting existing sites, and supplemented with other Wildlife Enhancement Schemes when improving degraded sites or creating new sites.
- Environmentally Sensitive Area (ESA) schemes are administered by the agriculture ministry as part of the agri-environmental policies which comprise about 5% of the total budgetary support to farmers under the EU's Common Agricultural Policy (CAP). These offer 10-year

contracts for standard payments for actions to reduce farming intensity and enhance wildlife over defined areas of eligibility. Payments cover positive actions and forgone income, since the schemes aim to provide a competitive alternative to the return from subsidised farm output. The ESA schemes have high acceptance and take-up by farmers, and relatively unconstrained funding as part of the agri-environmental programme since 1992. They are particularly suited to areas where standardised remedies to common problems can be readily discerned, such as stocking rates in upland pastures or wet grazing lands management in areas such as the Norfolk Broads and Somerset Levels. A similar approach has been adopted in the Nitrate Sensitive Areas scheme. Pioneered in UK, ESAs are used in other EU countries, notably Germany, Denmark, France, Spain and Portugal.

- The Countryside Stewardship Scheme (CSS) is the *a la carte* version of the ESA, offering a menu of standardised payments for specific conservation works - so much per kilometre of hedgerow maintained to a certain standard etc. It is not confined to defined eligibility areas, but funding is constrained so only the best applicants are selected for the 10-year contracts. Piloted by the Countryside Commission, the statutory agency for landscape and public access, it has been available nationwide and administered by the agriculture ministry since 1997. It is popular with farmers and over-subscribed. Similar, more limited schemes include the Farm Woodland Premium Scheme.
- Various grants for capital works are available through the agriculture ministry, some of them limited to ESA districts, others more widely available. While many are aimed at landscape or access improvements, some have lasting biodiversity gains, such as pond restoration and small woodland establishment.
- Planning gain is the practice of making planning permission conditional on some remedial work being done elsewhere for the benefit of biodiversity. It is used by some local councils, although by its nature it is difficult to enumerate its extent or effects for conservation.

All these schemes are essentially contractual, securing farmers' commitment for the duration of the agreed payment period but with uncertain long term gains. More permanent options such as the acquisition of land, or securing of easements or covenants, appear to be used less often. This is possibly because of the greater impact they make on the agencies' limited annual budgets, but may also reflect other influences: crowding out of these options by the contractual schemes; landholders' reluctance to cede control because of misapprehensions about squatters' rights, and gypsy travellers; and restrictive interpretation of who may enforce covenants under English law.

A recognised drawback of site-based approaches to conservation policy is the sheer cost of trying to manage more than a small proportion of the country's total conservation resource in this manner. Intended partly as seed-beds from which species might colonise surrounding areas, many SSSIs continue to decline in quality, having become isolated fragments surrounded by an unreceptive countryside being shaped by agricultural policy and other economic forces (Adams et al 1994). Agri-environmental schemes have been devised partly in response to this perception. SSSI's cover about 7% of England's land area, agri-environment schemes add a further 3%, and the clearly identifiable area accorded some conservation status (after allowing for overlaps between the different mechanisms) is around 12%.

It may be significant that the wide acceptance of ESAs and CSS coincide with their mainstreaming within agricultural policy and their consolidation within the agriculture ministry. Management agreements and SSSI designation are reportedly resented by some farmers because of the implied threat of statutory powers underlying the negotiation process, and they may be prolonged by farmers holding out for more generous settlements. Government's signaled intention to legislate for a public right of access over unenclosed land, similar to that

found in Scandinavia, is perhaps an indication that, at least regarding access, the experience with management agreements is viewed as unsatisfactory.

Other Incentive Instruments

The literature review uncovered some other instruments for watershed management in other countries.

- **Ecological Compensation Programme, Switzerland:** This is a voluntary programme offering 20-year contracts for annual payments covering the cost of positive works for landscape improvement, funded by federal taxpayers but administered by each Canton (state). It currently has low uptake but moderate effect on conservation (OECD 1996).
- **Park-Share Dividend Hypothecation, France:** This scheme aims to provide a recurring incentive to biodiversity by paying a dividend to landowners within national parks, drawn from hypothecated revenues collected by park authorities in entry fees, bed-night taxes and so on. Administered by local councils, it is considered to be highly effective in securing long term benefits (OECD 1999), although from the description of the mechanism the link between actions and payments is not clear and may be prone to free-riding.
- **Differential Land Use Tax, Germany:** Applied by Lander (state) governments as a charge on land developers, this is a compulsory “fine” for the damages presumed to flow from particular land uses, providing a long term and recurring disincentive against some land use changes. The tax schedule favours land uses retaining biodiversity, access and landscape.
- **Landcover Mitigation Scheme, Germany:** Various Lander and some city authorities employ mitigation schemes, in which all landcovers are “scored” according to ecological or landscape characteristics, and requiring reductions in score caused by developments such as roads, housing or mines to be made good by enhancements of score in other areas. The relative values implied by scores, and the monitoring of effectiveness, are contentious.
- **The UK’s landfill tax:** This tax, paid on waste deposited in landfills, includes a mechanism hypothecating revenue for environmental enhancements. Depositors earn credits against this tax by demonstrating equivalent contributions to accredited environmental improvement trusts. Some mining and construction companies (who produce spoil for dumping) are reputedly using this for habitat restoration, such as turning disused quarries into nature reserves, but there are serious concerns about the effectiveness of this scheme following public revelations earlier this year of widespread illegal dumping and the channelling of most funds through front companies of landfill operators rather than independent established environmental bodies.

6.6 Costa Rica

Private National Wildlife Refuges are exempt from property taxes. Also, private forest owners who are managing their forests for conservation purposes receive an exemption on real property tax as well as on asset taxes.

6.7 Brazil

Landowners are exempt from rural property taxes on lands that they have declared as private reserves and they receive priority in the analysis and concession of grants from the National Environmental Fund. In addition, the establishment of private reserves makes it easier for landowners to obtain agricultural credits from state banks.

Brazil provides a property tax exemption to encourage the creation of reserves on private lands. By Decree No. 98,914 of January 1990, the President gave the power to regulate protected reserves to the Brazilian Institute of Environment and Renewable Resources (IBAMA), a government agency. Under the authority granted by the decree, IBAMA has the power to declare private lands as special natural patrimony reserves, where they are identified as having biological or scenic value. Hunting, fishing, capturing animals, burning, and deforestation are banned within the protected reserves. In addition, Article 3^o(e) of Law 4771, the Brazilian Forestry Code, defines lands that may be protected, including lands of scientific, historic or exceptional aesthetic value. Private lands so designated are exempt from federal tax. However, poor enforcement of use restrictions is a serious problem.

6.8 Guatemala

This country's Protected Areas Law provides for the establishment of private nature reserves, allowing landowners to deduct 100% of their property taxes on any lands set aside thereunder. However, the property tax deduction has not been implemented to date.

In Guatemala, businesses or individuals may designate a portion of their property as a private natural reserve. Property owners who do so are exempt from property taxes on the portion of land so designated. In order to qualify for the exemption, the owner must manage the reserve according to the established requirements, and the reserves must be recognized by the government. However, this law has had little practical impact as tax collection has not been strict. Thus, there is no significant difference in actual tax treatment of protected areas and unprotected areas, providing little incentive to take advantage of the exemption. Efforts to strengthen tax enforcement might therefore result in both fiscal and conservation benefits.

6.9 Colombia

Fundacion Natura is working with the Municipality of Encino in the Department of Santander to offer tax breaks to local landowners who conserve the forest in their lands. The municipality would offer a 20% tax break on the property tax, which would be matched by an additional payment to the municipality equal to 20% of the owner's tax, to be financed by a private conservation fund that will be established with external financing. The municipality benefits because a larger number of owners will actually begin paying their taxes, which would now be 60% of the assessed value, while the owners benefit by receiving a substantial tax break.

6.10 Ecuador

A new program for reforestation incentives is currently being discussed and a small portion of these incentives could be utilized for incentives for the conservation of natural forests.

6.11 Chile

The General Law on the Environment establishes that private protected areas will be beneficiaries of incentives. Currently, the government is considering a bill that proposes that private protected subject to a two-tiered incentive system. All areas that are accepted by the government as private protected areas, with an approved management plan, can receive tax exemptions including property and income taxes. The areas selected by the government in a process of public bidding, and based on conservation priorities (e.g. ecosystems not represented in current state protected areas, habitat for endangered species, etc.) will receive direct economic incentives.

6.12 Germany

In Germany, a taxpayer can deduct the value of a charitable donation from taxable income up to a ceiling amount. To be eligible, the donation must be given to an environmental organization or to the states, districts, communities, or their agencies in order to promote protection of the environment, the landscape, or ancient monuments. Similarly, the United States allows for a federal income tax deduction for qualified charitable contributions up to a maximum ceiling of 30 percent of the taxpayer's adjusted gross income. These tax code provisions are a valuable incentive, encouraging millions of donors to donate funds to non-profit organizations, including conservation groups.

Economic incentives as a method of encouraging private sector involvement are advantageous as they can accomplish major conservation actions at a lower cost than traditional approaches. Government expenditures for strict regulation of land use or the purchase and management of protected areas can be prohibitively high, particularly in developing countries. While tax incentives for conservation may reduce government revenues slightly in the short run, in the long run, the overall economy benefits from resulting resource conservation. For example, conservation incentives can promote sustainable economic activities such as ecologically sound tourism and recreation that might otherwise be foreclosed.

7.0 Conclusion, Recommendations and Implementation Strategies

Our study demonstrates that incentives can and must be an important component of watershed management approaches. No single approach will be successful and action needs to be taken at both the local and national levels. Our discussion of valuation methods indicated the complexity of any scheme that may be used to value environmental assets, regardless of how it may be designed. It also clearly pointed to the fact that controversy over methods and values arrived at, may possibly be unavoidable. There is no question however, about the absolute necessity of protecting Jamaica's watersheds if we intend to move into the future with adequate supplies of water for all the uses a modern society requires. Our study required perusal of policies and practices of other countries as well as their regulations and initiatives here reviewed. This, along with a reading of the working papers of R2RW as well as our interviews with a wide cross section of stakeholders has suggested various possibilities in determining the way forward.

On the one hand, incentives need to be based on local needs and motivations and what works locally. On the other hand, wider national schemes are needed to avoid fragmentation of current and past efforts and to demonstrate to stakeholders that they are contributing to something of significance. In this context, incentives should be designed to both encourage good watershed management practices and to build a sense of the value of watershed services including the obligation of users to contribute to their costs.

Given the complexity of the problems encountered it is considered that a wide range of incentives will be necessary. It will also be appropriate to commence immediately with certain pilot projects. These pilot projects could be incorporated into a larger national campaign to increase visibility, attractiveness to stakeholders, coherence and thus impact. The current EFJ initiative on the Spinal Forest could provide the focus of a range of mutually reinforcing incentive-based actions.

Our review of incentives worldwide reveals that one area of success has indeed been the tax-based schemes. These fall naturally into three categories: tax incentives based on deductions against income for approved activities; property tax exemptions and reductions; estate duty exemptions where the property is to be conveyed or held for an approved purpose. We already have in Jamaica, two tax-based incentives available: property tax rebates, and deductions against income for approved agricultural activities. The current implementation difficulties for these incentives are that they are not well known, the procedures are neither clear nor coherent, the application process is slow and difficult and there is no readily available body of material available to the public at large, to facilitate their use. Nevertheless they are and will remain a key element in attracting private sector investment in watershed management.

In addition to the tax-based incentives identified above, the private sector has shown an interest in incentives that would reduce cash outlays in exchange for watershed management or conservation activities. Consideration could be given to creative use of NIS, NHT, Education tax and GCT in this regard.

For any of the recommendations to work in the Jamaican environment they should meet the following criteria:

- The outcome of the incentive must result in increased and readily observable private economic or financial benefit/gain
- The incentive must result in benefits that can be privately appropriated
- The modalities of the incentive must be simple to operate and monitor

In the case of incentives with benefits that cannot be readily appropriated by the individual farmer, landowner or other watershed user, they must satisfy at least three requirements:

- The incentive must be credible, leading to readily observable community benefits
- The community must be involved in its determination
- Governance of its modalities must be transparent

Based on these criteria, we arrived at a set of recommendations outlined below:

7.1 Immediate or Short Term

1. **Conservation Fee:** A fee dedicated to use in watershed management should be added to the water bill of all Jamaica. The amount would have to be determined through study, but \$50 to \$100 could go a long way
2. **Ridge-to-Reef Donation Programme:** Hotels, Restaurants and other downstream users are encouraged to support middle and upper watershed management activities, perhaps in the case of hotels by contributing funds saved through their conserve water initiatives with guests. This would be carried out in conjunction with the Ministry of Tourism's efforts to increase the industry's support to the community and with WFJ's Forest programme which would provide recognition to the contributors. International tourism certification schemes increasingly recognize such efforts in a positive light in their assessments. This recommendation is based on an ongoing arrangement between Sandals Resorts and local farmers in the Mafoota area.
3. **Eco Labeling:** Recognition through certification or branding of horticultural, fresh and processed agricultural products, as well as bottled water based on agreed and applied standards of practice (the Great River brands idea). There are several possible incentives, apart from the obvious market-led incentives from sales to discriminating markets. They include streamlining government procedures for allocating rights and for planning development control.
4. **Grants:** The National Water Commission or other chosen body will create a scheme of grants for the establishment of community mini-dams and household water storage tanks to reduce supply reliability problems and reduce the NWC's delivery costs. These will be associated with standards for their construction and use. The process will be combined with an appropriate public education for water conservation campaign and community endorsement of the scheme.
5. **Awards:** Promote awards for building stewardship of the water cycle through competitions aimed at finding the winning example of community based best practice and behaviours. The award would include a monetary element and be featured in the public relations campaign.
6. **Deduction for Contributions:** The Income Tax Act should be amended to provide deductions for contributions of land, money or other assets to watershed management and conservation purposes. Appropriate forms and other administrative directions will need to be devised and implemented.
7. **Deduction for Land Use:** The Income Tax Act should be amended to allow certain types of expenses incurred by private landowners to be deducted for the determination of taxable income. Such expenses must have been incurred for watershed management and conservation purposes such as low impact agricultural techniques.

8. **Property Tax Exemption or Rebate:** Tax exemptions or rebate in respect of properties devoted to watershed management and conservation should be further developed and implemented.
9. **Estate Duty Rebate:** Where property is transferred upon death to be maintained in a manner that preserves the spatial integrity of the property for purposes of watershed management and conservation a rebate would be allowed. The modalities of this provision would have to be worked out and arrangements for negotiation established.
10. **User Fees:** Establish user fees to support watershed management and conservation. These fees should be imposed for the extraction of the watershed's economic resources.

7.2 Medium Term

11. **Public Awareness Programme:** A public awareness programme should be implemented in the medium term using results of current surveys and perceptions of watershed services to develop non-market incentives for behaviour alteration. The programme should also seek to tap into community-based schemes in areas of settlement in which poverty and the simple "need to survive" make negative behaviours perhaps the inevitable norm.
12. **Eliminating Perverse Incentives:** Create new positive incentives for watershed management and conservation by eliminating subsidies or other negative "incentives" that promote over-utilization of natural resources.
13. **Promote Watershed-friendly Technologies:** Mechanisms that promote the use of technologies that have a positive impact on watershed management should be implemented. This would include disincentives to discourage for instance, the practice of using chain as opposed to circular saws for harvesting of wood. This could be implemented by differential tax imposition either at the point of sale or of importation.
14. **Jamaica Forest Management and Conservation Fund:** Seek funding for the protection of forest reserves critical to upland watershed services to be managed by the Forestry Department or the NWC. This could include a percentage, even if initially a very small one, out of water abstraction license fees, as suggested in the National Forest Management and Conservation Plan, as well as user fees on construction projects in watersheds which have been considered by government.
15. **Conservation Easements:** These should be established early to allow landowners to retain ownership of their land but to use it for limited purposes while permanently removing their right to use it for certain non-conservation purposes.
16. **Land Exchanges:** Implement a scheme of land exchange which would allow landowners to exchange, for example, property that is significant for watershed management and conservation reasons with a different property that may be of equal economic value.

7.3 Long Term

17. **Tax Allocation:** Government should consider allocating national or municipal taxes to specific areas of great importance to watershed management.
18. **Conservation Agreements:** This should be facilitated to allow a landowner to enter into a legal agreement to manage his or her property according to specific
19. **Tax Incentives for Improved Land Use:** Create tax mechanisms to assist upper watershed landowners to engage in reforestation, fruit tree growing based on good land use standards.

20. **Improve Land Tenure Arrangements:** Establish mechanisms for settled land tenure arrangements for farmers and residents in the watershed, tying security of tenure to meeting watershed friendly land use standards. (With the possibility of loans or Social Investment Fund grants to assist poorer farmers meet those standards).
21. **Controlled Access to Shared Resources:** Controlling access to shared resources: governments can use a combination of regulation and designation of limited ownership rights to provide incentives for conservation of shared “common” resources such as fisheries or birds.
22. **Tradeable Development Permits:** Government can use market incentives for conservation by creating a set of tradeable permits for development of a given area that can be used in conjunction with “credits” for watershed management and conservation activities;
23. **Biodiversity Prospecting and other benefits-sharing mechanisms:** Incentives for watershed management and conservation can be created by resource use agreements, for example, in the pharmaceutical industry, that provides a portion of revenues generated to return to the country, region or community where that resource is found.

7.4 A Word on Implementation Strategies

It is a truism that all life forms resist change. It is also true however, that only those that adapt well to inevitable change do survive and prosper. For us these imperatives do exist and are binding. Key government agencies, environmental NGOs and various categories of persons and some within the private sector are convinced or rather, are seized of the immediate necessity to protect our watersheds. Beyond this commitment there is a clear and present need for its translation into a generalized concern among those who inhabit and or use our watersheds. Further, and this is the hard step, we need concrete actions to give impact to this realization.

By their very nature, the initiatives considered here require changing relationships between members of the various communities, between government and the communities as well as between the private sector and government. In broad terms the strategies will have to be directed at three main groups – government, the communities and the private sector. Looking for instance at the proposals we define as immediate or short term, it is considered that the Ridge to Reef donation programme could get off the ground within six to nine months. Major hotels and other parties would have to be contacted immediately. Support of the Ministry of Tourism would also be critical. Select communities would be targeted and the process initiated for their participation. This particular project is already grounded in that it exists between Sandals and farmers in the Mafoota area. Clearly it can be replicated elsewhere - there are clear benefits for all parties involved.

In relation to our recommendations for tax-based incentives, we consider these to be of central importance. Clearly these incentives would require government approval and public acceptance of their usefulness. We consider that a Cabinet submission should be prepared to obtain broad governmental approval of these types of incentives. But before this, there must be a process of consultation with the private sector for streamlining the proposals. This should be followed by the amendment of the income tax legislation to incorporate the necessary changes. Along with the legislative changes the mechanisms for administration - which we insist must be simple and readily accessible - will have to be identified and organized. The proposals do not necessarily require a new and complex set of bureaucratic arrangements.

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