MEASURING THE BENEFITS OF PROTECTED AREAS: A CRITICAL PERSPECTIVE ON THE IUCN GUIDELINES

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The International Union for the Conservation of Nature has drafted guidelines to help managers of protected natural areas to develop economic arguments in defence of those areas. The guidelines identify a series of benefits which protected areas might produce and which all have real markets in the outside world, and recommend that managers focus their arguments on these benefits. One of the benefits, tourism spending, cannot be treated as a benefit like the others, however, and there are additional benefits which the authors believe should be included in the guidelines.

In February of 1996, Lee Thomas, convenor of the Economic Task Force of the International Union for the Conservation of Nature's (IUCN) Commission for National Parks and Protected Areas released for review a draft of guidelines for the economic assessment of protected natural areas (IUCN, 1996). He was seeking critical comment from the economic community and protected area managers and planners. He also hoped to encourage managers to undertake pilot studies to test the methodologies described in the guidelines. The authors were asked by Parks Canada to review the guidelines and offer comments to Lee Thomas, as part of Parks Canada's contribution to the guidelines development. This paper describes the conclusions of that review.

The purpose of the Guidelines was to help managers and planners of protected areas throughout the world to develop credible arguments to justify spending on those protected areas, in the face of opposition from industries wanting to exploit the protected areas for their resources. The guidelines therefore identified a number of economic benefits that protected areas might produce which would be particularly credible in making such arguments.

The benefits they identify are:

1. Tourism and recreation. Protected areas attract visitors who wish to experience the outdoors and the flora and fauna of a place. These visitors spend money on food, transportation and accommodations and so create beneficial economic activity around the protected area.

2. Natural services. This is the benefit produced by various natural phenomena which occur thanks to the protected area. An example is pollination of crops by bees who live in the protected area. If they did not exist, farmers would have to pay pollination services to bring bees in to pollinate plants. There is a private market for this, and so the value that the protected area generates can be evaluated credibly.

3. Water production is an important benefit that protected areas provide in many places in the world. A protected area can act as a natural reservoir holding water from a rainy season for slow release through the rest of the year when needed. It also acts a filtration plant, purifying the water. Dams and filtration plants have clear costs, so if downstream cities are saved from having to invest in such things because of the existence of a protected area, then the protected area is clearly providing substantial benefit.

4. Protected areas can mitigate natural disasters. Protected areas retain water to prevent flooding. We only have to consider the millions of dollars spent every year by the US Army Corps of Engineers to control flooding in the Mississippi basin to realise that some forested protected area s in the place of the cultivated prairie grasslands would mitigate flooding and save money.

5. The guidelines identify fish breeding and spawning as a benefit. Protecting shorelines and rivers preserves the breeding grounds of fish, which can support a fishing industry. Failure to protect these areas can lead to destruction of the fishing industry. The classic example of this is the Aswan Dam. When it was built on the upper Nile, ostensibly to bring economic benefits to Egyptian agriculture, the shrimp fishery on the eastern Mediterranean was wiped out.

6. The next benefit identified is food and fibre hunting and gathering. This is the sustenance that, for example, native peoples draw from the protected area. It is not commercial (or the area would not be considered protected) and it is typically not intensive. In Canada's National Parks, hunting and gathering must generally have been a traditional activity of native peoples to be permitted. It is nonetheless real, and, in its absence, the hunters and gatherers could well be obliged to purchase equivalents in a market.

7. The next benefit, commercial activities in protected areas, has to be understood properly. Obviously, a mine or logging operation which takes place in a protected area produces economic benefits. However, in most cases, it is no thanks to the protected area that it takes place. In fact, commercial activities are generally

considered to be antithetical to protected area s. If the commercial activity is to be considered a benefit, it must itself benefit from the protected area. For example, only if the protected area=s conservation programs or effects permit a sustained yield of forest products could the benefits created by forestry be in any way attributed to the protected area.

The guidelines also identify three areas of economic activity which represent costs of protected areas, and which the guidelines suggest should also be measured and accounted for against the benefits, in order to present an honest picture of the protected area.

8. The financial costs of protected area development and operations are correctly identified by the guidelines as being a cost, and not a benefit. These expenditures are what are usually considered as creating an impact in the area local to the protected area (see, for example, Coopers and Lybrand, 1992) and this impact can often be incorrectly taken as a benefit. The guidelines rightly do not make this common error. The guidelines point out, however, that when the funding for development and operation of the protected area come from outside of the economy, as is the case when the protected area is a foreign aid project, then the recipient country can consider the administrative costs as a benefit, and hence include it and the resulting impact in the benefit account.

9. The guidelines identify natural phenomena causing damage as another cost of protected area s. Wild animals who are sheltered by the protected areas and prey on neighbouring livestock are an example. The guidelines point out however, that careful study of the situation often reveals that the natural phenomena cause more damage in the imagination than in fact.

10. The last item which has to be included in the cost-benefit balance is the opportunity cost of the protected area, or the benefit foregone because economic activities such as natural resource exploitation are prohibited in a protected area. The loss of the opportunity to exploit resources in the protected area should always be taken into account as a cost.

Of course, it is unlikely that any one protected area will have all of the benefits or even the costs which the guidelines identify. The guidelines suggest that each type of benefit should be examined to determine which the protected area in question has it. This, says the guidelines, is a task for the park manager or biologist/naturalist and the economist combined. Both knowledge of the natural processes of the park and the knowledge of the functioning of the market place are needed to identify and assess the benefit.

Why are these particular benefits identified? For each of the benefits identified, a real market can be found somewhere, trading in that benefit. Real prices exist for the benefit that the protected area is providing. Therefore, it will be possible to determine the real value of the benefit, without resort to surrogate or artificial methods such as contingent valuation or revealed preference . As a result, industry and politicians will perceive the benefits as credible.

The authors are aware of a number of other benefits such as those identified by Walsh (1992) but did not mention them because they believe that managers and planners will not gain much by advancing these benefits at the table when face to face with logging and mining interests. The guideline is, after all, supposed to help people advocate for protected areas in public fora, against sometimes hostile interests, where credibility is everything.

There are two major problems with the guidelines. The first is that they incorrectly claim that tourism spending is a benefit, when in fact most tourism spending is merely redistribution. Secondly, they ignore a large number of benefits which could be used in justification, and by ignoring them, deny the guidelines user the full array of choices available for making arguments.

To understand the problem of tourism spending as it is treated in the guidelines, it is useful to start with a fundamental question: why do we want to measure economically the benefits of protected areas anyway? The reason is that if entrepreneurs and managers are to make rational decisions about whether to invest in or continue to maintain a protected area, they must compare the costs and benefits. In this way they can ensure that they only invest in those projects where the benefits exceed the costs. It is fairly easy to estimate the costs, both direct costs, and the economic value foregone because various forms of natural resources can no longer be exploited. The calculation of benefits, many of which are indirect or even intangible, is much more problematic. Hence, the guidelines.

For example, if an entrepreneur sees that the cost of some undertaking is $12 million, and the revenue (the entrepreneurs benefits) to be expected is $ 15 million, then it makes sense to proceed. If cost is $12 million and revenue is only $6, then it makes no sense to do it. Of course, this simple example ignores the many complicating factors such as the duration of the investment and the wait for revenues, and the risk. However, the basic decision criterion used is that benefit must exceed cost.

When a public agency decides to protect an area, it generally does not expect enough revenue (from users, concession fees, etc.) to equal or exceed costs. That is, in fact, why it is usually public agencies which protect natural areas. But the investment criterion with public money should be the same as with private money: the benefit must exceed the cost. If there is not enough revenue to counterbalance costs then, the question becomes: where else can we look for benefits to justify the public cost of the protected area?

Usually the first thing to come to mind is economic impact (see, among numerous examples, Coopers and Lybrand, 1992). Whenever a public agency spends money to operate a protected area, employees are hired and paid, and suppliers of goods and services in the local area receive the money as income. They, in turn, re-spend some of that money to pay their employees and purchase more stock from other suppliers to replace what they have just sold to the public agency. These other suppliers also spend some of the money they receive on their own employees and on additional goods and services. The original expenditure can thus go through many rounds of re-spending, creating beneficial economic activity in the local economy which would not have been created without the public agency spending on the protected area. The sum of this spending and re-spending is called economic impact.

But all expenditures, no matter what they are for or who makes them, have this impact. If it can be used to justify the investment in a public project that has insufficient revenue to make it profitable, why did the private sector entrepreneur not use it to justify his investment in the project that was not expected to bring in sufficient revenue? The obvious answer is that the private entrepreneur does not receive any of the impact; it accrues only to third parties: the local suppliers of goods and services and their employees, for example. The reason that the government (public agency) can claim the impact as a benefit is that the recipients of the spending are the constituents of the public agency, so any benefits accruing to the recipients accrue in some sense to the public agency that represents them and is supposed to be promoting their interests.

If, for example, the federal government of Canada spends money in Newfoundland to develop and operate a national park, then the citizens of Newfoundland obviously benefit. Since it is the mandate of the federal government to create benefits for its citizens, the benefits it creates for the citizens of Newfoundland can be put against the costs of developing the park.

But the money spent in Newfoundland came from somewhere! It came from taxes on the citizens of the rest of Canada. When the taxes were taken from somewhere else in Canada, a reverse impact took place in that somewhere else. Dollars removed from the taxpayers were not spent in their local economy, so local suppliers of goods and services received less revenue than they would have. They hired fewer workers and bought less stock in trade. The suppliers similarly received less revenue and bought less in their turn. Therefore, for every dollar of impact gained by Newfoundland, there is a dollar of impact lost somewhere else in Canada. The agency is merely redistributing economic activity, not creating any net increase in benefit. This is why the impact cannot count to balance against the cost, at least in the view of the public sector manager. Paradoxically, the expenditures are a benefit from the point of view of the people living in the area that receives the expenditure. The advocacy of the people in the receiving area frequently confuses the argument to the point that the public agency comes to believe that it is in fact creating a benefit, and not merely redistributing economic activity among its many constituents.

The IUCN guidelines correctly identify the costs for developing a protected area and operating it as costs and not benefits. Nor do they advocate applying impact analysis to these costs to multiply up the economic activity. However, they also do not warn against doing this. Since presenting government spending as a benefit to justify the creation of a protected area is such a common mistake, I believe that the guidelines should have mentioned this practice, and pointed out why it is an error. The use of government spending as a benefit does a great deal to undercut the credibility of economic benefit arguments generally, and the IUCN guidelines miss an important opportunity to correct the error and thus strengthen credibility.

Although the guidelines do not make the error of considering government expenditure a benefit, they do make that very error when considering tourism expenditure.

The protected area will draw visitors (or what we loosely call tourists, lumping local visitors in with those who come from long distances away, because it makes a bigger number and makes the argument look better) who will spend in the local area and bring the kind of Impact benefits that we thought government spending would bring. They, at least, are spending their own money and not taxes.

Unfortunately, tourists come from somewhere too. If they are from other parts of Newfoundland, the spending they do in the protected area is merely spending redistributed from somewhere else in Newfoundland. It they are visiting Newfoundland from somewhere else and spending money, they are not spending it visiting somewhere else, or not spending it on entertainment at home. So again, Newfoundland's gain is someone else's loss. Since most tourism in Canada is domestic, and indeed most of it is from within the same province (Statistics Canada, 1995 a,b), most tourism spending is merely redistribution.

The word "most" is important here. Not all tourists to our fictitious protected area in Newfoundland come from other parts of Canada. Some come from other countries, and some would have left Canada to travel to other countries in the absence of the attractive protected area. So it is valid to count as benefits the expenditures produced by some of those tourists, that is, those tourists who would not otherwise have come to Canada, but who came because of the protected area, and it is also permissible to count those who stayed in Newfoundland (or the rest of Canada) but would otherwise have left the country had it not been for the existence of the protected area.

In practice, of course, it is quite difficult (although not impossible) to determine which tourism spending is legitimate to count and which not. However, if we are trying to make rational and informed decisions about major

Table 1 Economic Benefits of Protected Areas

	Economic Effects of Protected Areas	
	True Incremental Benefits	***Redistributed Economic Effects***
Benefits to individuals using the area for activities compatible with its primary purpose	**Direct paid use benefit** (= revenue) Direct unpaid use benefit (= consumer surplus)	
Benefits to individuals through the knowledge of the area in the awareness of its primary purpose	Indirect use benefits (books, TV) Existence benefits Option benefits Bequest benefits	
Benefits to individuals using the area for collateral purposes	***Natural services** ***Water production** ***Mitigation of natural disasters** ***Fish breeding** ***Hunting/Gathering** ***Commercial activities** Ecological functions Health effects ***[Displaced activities]** ***[Natural disasters]**	***Tourism spending and impact** ***Protected areas development and operations and impact** [can be considered a cost under certain circumstances]
Benefits to society at large (externalities)	Worker productivity Biodiversity Scientific, educational benefits Amenity benefits	

Notes: **bold** denotes those benefits for which a market exists and which can therefore be quantified with reference to market equivalents; * denotes those benefits and impacts identified by the IUCN guidelines; **[ ]** denotes those benefits which are negative, that is, a cost.

investments, it is irresponsible not to make the effort to get the true benefits, and instead to fool ourselves by not acknowledging that many of the benefits claimed are merely a redistribution of economic activity that would have taken place anyway.

The IUCN guidelines ignore the redistribution problem and incorrectly recommend that all visitor spending be counted as a benefit.

The second problem with the guidelines is the lack of mention of large classes of benefits which in recent years have become more credible. These are the benefits which the user of the protected area gets but which he or she does not pay for, and the benefits which non-users get from the mere existence of the protected area. They represent the hard to quantify well-being that is created by the protected area: the psychological, or spiritual benefits, and the enjoyment which the Protected area creates. These benefits are often the real justification for the Protected area.

The benefits include:

1. Consumer surplus: benefit the direct user gets from his or her experience of the protected area above and beyond what is paid for. This is often captured through the question How much more would you have paid to have the experience you had today?
2. Indirect use benefits: the benefits the non-user obtains by such activities as reading about the protected area or viewing it on television.
3. Existence benefits: the benefits obtained by knowing that the area is protected, for example, the pride in knowing that the nation's natural heritage, or the environment are being protected. This is closely related to bequest benefit, the benefit a citizen gets from knowing that future generations will still have the protected area to enjoy.
4. Option benefits. These are the benefits the non-user gets from maintaining the options for future

use of the protected area. For example, the non-user may someday visit the protected area, or society could someday benefit from the future discovery of a use of genetic or other material in the protected area. This potential would be lost if the protected area were to be exploited for its resources.

5. There are a whole variety of further benefits to society at large which can loosely be called externalities, which include biodiversity, scientific and educational benefits, increased worker productivity and sense of social cohesion, and amenity benefits.

It is beyond the scope of this paper to explore all these benefits exhaustively. However, Table 1 attempts to put these types of benefits into an overall framework.
The main importance of this table is in the distinctions it makes in the columns and rows.

The columns make the distinction between benefits that are true incremental benefits and those which are benefits only to a limited group of people with a particular geographic perspective. The benefits listed in the first column represent a net increase in society=s well being which would not have occurred at all if the protected area had not come into existence. Not all are additions to gross domestic product, of course. Some cannot even be quantified or must be estimated indirectly, but they are all true benefits of protected areas. The second column lists economic activity which the existence of the protected area redistributes to the local area, but which would have taken place somewhere in any case. It is only a benefit if the evaluator takes the narrow geographic perspective of those who are receiving the economic activity and is willing to ignore the perspective of those who are loosing the economic activity. This narrow perspective is frequently adopted, quite rationally, by those who are promoting the development of a protected area for their region, but should not be accepted by those who are funding the protected area, since it inevitably means redistributing economic activity from some other part of the funding agency=s jurisdiction.

The rows distinguish between the different types of use. The first row identifies the benefits that accrue to the direct users of the protected area who enjoy its resources in a way compatible with its objectives, for example by hiking. The second row identifies the benefits that accrue to those who do not use the area directly at all, but benefit from the knowledge of its existence at second hand, say by reading about it. The third row identifies the benefits that accrue to those who actually use the resources or the effects of those resources in a consumptive way, although the uses may be sustainable. Finally, the fourth row identifies the benefits that accrue to society at large from the existence of the protected area, whether they use it or not. An example here is the benefits we all gain from the increased productivity of workers who use the protected areas to vacation in.
The guidelines do not address these benefits that are not marked with an asterisk, reasoning that they do not have market equivalents, so they are not as credible as the ones the guidelines identify. In recent years, however, great strides have been made in their measurement, through the development of contingent valuation and revealed preference techniques. Although these values may not be as credible to all observers as benefits for which a direct market equivalent can be found, they are nonetheless gaining credibility in North America, following the findings of the NOAA panel of experts in the USA (NOAA, 1993).

Although not all benefits are useful for all arguments in support of protected areas, it is useful to be aware of the complete range of benefits. This enables protected area managers and advocates to frame more coherent and thoughtful arguments, and to put what quantitative measurements of benefits that exist in to the correct perspective

The conclusion that can be drawn about the IUCN guidelines is therefore that they highlight an important set of real benefits which protected area managers should examine when seeking to justify their protected areas. The guidelines are however very misleading about tourism: what groups of visitors to count and which group to leave out because they do not represent an incremental benefit to the economy. Nor do the guidelines do anything to correct the major error in benefit assessment, confusing impacts and benefits. In the guidelines, even the language is somewhat confusing.

Furthermore, the guidelines are not comprehensive, in that they do not put the important benefits they do treat in the context of the complete set of benefits. While this is not a fatal criticism, there is sufficient confusion in the field of benefits measurement that any guideline aiming at a general audience ought to put the subject matter into a general context. The guidelines however are a useful addition to the debate about creating and maintaining protected areas.

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