

The Economic Value of Wild Nephin

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Introduction

The Wild Nephin wilderness project represents an exciting and imaginative long term investment in our environment. It will transform what is now a large forest comprised of exotic conifers into a wilderness landscape that is unique in Ireland, providing valuable habitat and recreational opportunities along with opportunities for the current and future generations.

Wild Nephin will also be an economic resource. Not just in narrow terms of its contribution to tourism (although it will certainly have a valuable role in this respect), but in terms of its contribution to the well-being of people in Ireland. Any resource that contributes to people's well-being, or social welfare, is an economic resource. The wealth of a nation is measured by the well-being



of its citizens and not just by indices such as gross national product. In principle, advancing the welfare of its citizens should be the first priority of government. The familiar support for private enterprise or attracting inward investment are justified objectives of government. However, the ultimate aim remains the same, i.e. to maintain and advance people's well-being and life satisfaction.

Total Economic Value

Many goods, and perhaps especially environmental goods, are 'public goods' in the sense that they are not owned by any one individual. Many are not traded in the market place and the absence of a price largely removes the means by which to judge whether the good is in adequate supply or not. It is for this reason that many environmental goods have been lost or degraded in recent times. The evidence of their value is not overtly signalled and so there can be under-investment in their quality, supply or sustainability. We trust governments to maintain environmental quality, but environmental investment is often overlooked in the face of other pressures on government spending. Other goods such as investment in community development also possess the characteristics of public goods and, likewise, often receive too little investment or support.

Use values and ecosystem services

Economic values are often illustrated through the framework of Total Economic Value. This is a helpful means to identify and define economic value in terms of use and non-use values. Use values can be separated into direct use and indirect use values. Direct use values are the most obvious and typically include a mix of public and private goods, the latter subject to property rights and traded in the market. For a forested landscape the mix is familiar and includes forest products, different levels of amenity and recreation, wildlife watching or hunting. Tourism would be a feature of several of these values and has the capacity to

contribute an income to the local and national economy. Forest products include, of course, timber. In contrast to many remaining wild areas around the globe, Nephin is fortunate in that much of its timber resource has poor growth characteristics and would be expensive to harvest and remove. The 'opportunity cost' is low as the land is of modest or little value for other economic activity.

Indirect use values are a little less obvious, but can be substantial. These include the contribution of wild areas or recreation to physical and mental health, benefits that contribute to people's well-being, but which also save the state money in terms of health care costs. Other indirect use values have been labelled as ecosystem services. These include the contribution that forests can make to biodiversity, water quality, flood moderation and reduced soil erosion. The filtering effect of trees and ground cover can have a significant positive impact on water quality. It is for this reason that natural areas, including forests, have been protected in many catchments used for water supplies particularly in the United States, but increasingly in Europe too. The natural vegetation cover protects water quality for human consumption and watersides with trees and some shade are perfect habitats for wildlife and fish. In addition, forests and alluvial woodland can, to an extent, reduce or delay run-off and the risk of flash flooding. Forest cover also reduces soil erosion particularly on steep slopes and this, in turn, reduces the risk of siltration downstream and adverse consequences for reservoirs and aquatic flora and fauna.



A further ecosystem service is provided in the form of climate change mitigation. Trees sequester carbon from the atmosphere as they grow. If the trees are harvested, this carbon may be stored in the short-term as building material or furniture, etc. while the replacement trees renew the cycle. In a wilderness such as Nephin the trees will likely remain in situ. While they will eventually cease to sequester significant amounts of carbon, they will act as a long-term carbon store. Overall the density of trees will reduce over time. Some will fall and rot releasing carbon in the process or otherwise accumulate over time as peat reversing some of the carbon losses that occurred at the time the original blanket bog was planted. Stronger trees more suited to the exposed environment, including native trees, will have the space to grow larger and mature, enhancing both the carbon store and the landscape in the process.

Non-use values

Non-use values sound like a contradiction in terms at first. However, it is possible to begin to understand one such value, i.e. existence value, in terms of the contribution that wilderness makes to the American psyche or sense of identity (or Canadians or Australians for that matter!). John Muir recognised the importance of existence value, but it took John Krutilla in his 1967 work *Conservation Reconsidered*, or Krutilla and Anthony Fisher (1985), to identify the relationship between existence value and other economic values of wilderness whose value is enhanced through its scarcity, uniqueness or irreplaceable character. Other non-use values include bequest values (i.e. leaving something for future generations) and altruism (i.e. valuing the benefits to others). As there is no human connection, economics does not address intrinsic values, i.e. the value of the environment in and of itself. But this is not to say we necessarily have to deny it.

Option values

A very important value, and one generally classified under the category of use, is ‘option value’. Option value is the value that we place on the possibility of future use. Although at first this may sound obscure, option value is very important in the context of wilderness because it suggests that this resource may be valued more, or for different reasons, in the future. Clearly this applies to many wild areas that may have once been exploited, but which are now valued for their existence. As wilderness becomes yet more rare it is likely that future generations will treasure it even more than ourselves. However, they are also likely to value it for differently. While fifty years ago the Nephin blanket bog may have only been valued in terms of its potential for commercial forestry, these values were in time replaced by a recognition of the value of the environment for wildlife or recreation. Now, as described above, we recognise the importance of ecosystem services. Water quality and climate change were not the major concerns they are now.

There is a warning here too. Values are still changing. There has been some debate in the US about the low or reduced visits to wilderness by young adults, women and minorities. The conventional association with frontier values may not be sustained to the same extent amongst future generations. It has been suggested that our perception of the value of wilderness preservation may increasingly align to concepts or environmental sustainability or ecosystem services (Watson, 2013).

USE VALUE			NON-USE VALUE		
Direct use	Indirect use	Option value	Passive use or pure existence	Bequest	Vicarious or altruistic
Forest products	Biodiversity preservation.	Expectation of future personal use	Landscape/ wildlife/ biodiversity appreciation.	Pure bequest.	Value to others
Recreation (passive & active)	Regulating ecosystem services (water protection, carbon sequestration, soil/erosion protection)	Value to society in future	National or local identity	Carbon storage	
Wildlife watching		Quasi-option values/ preserving development option			
Hunting	Personal health or fitness				
	Regional image/tourism income				
	Corporate image				

Realising economic values for Wild Nephin

How does the concept of Total Economic value apply to Wild Nephin? Certainly, Nephin will attract visitors and recreation. However, where surveys of forest users have been conducted, these often demonstrate that the most valued forests are those that are close to where people live and are used regularly by many people. This is the nation behind the Community Forests initiative in the UK where woodland has been planted in the vicinity of major cities. For Nephin to be valued it must be *different* – it has to be distinctive. There will need to be functioning ecosystem services and a recognition of their value, in Nephin’s case particularly for biodiversity protection, carbon sequestration and storage, and the protection of the sources of some of Mayo’s prime angling tributaries. There will have to be a significant existence value too. This requires that Nephin is accepted as a distinct wilderness and is valued as such by the wider public. Thirdly, there must be a significant option value. People must believe that Nephin will, in the course of time, become a true wilderness with all the attractions and future opportunities this implies.

Estimating a value for Wild Nephin

In the process of the feasibility studies prepared for the Wild Nephin project, we undertook an economic assessment of its potential value (Optimize, 2012). As there is little or no data on visitors or public attitudes, this assessment took the form of a projection of the value of Nephin under assumptions of future visitor numbers. At present, we suspect that around 1,000 hardy individuals per year embark on at least part of the Bangor Trail.

The valuation of public goods is often undertaken using survey methods in which people are asked for their willingness-to-pay to protect a good (contingent valuation). While such surveys have been undertaken for wilderness in North America in the past (e.g. (Loomis and Richardson, 1991; Walsh et al., 1984), rather few such surveys have been conducted in recent times partly due to the difficulty people have of expressing an understanding of the full value of wilderness in a survey situation. Various surveys have been undertaken in Ireland to value forests (e.g. (Clinch, 1999; Fitzpatrick Associates, 2005; Ni Dhubhain et al., 1994; Upton et al., 2012). These tend to indicate willingness-to-pay values of €5-€10 per visit. However, most of these forests do not resemble wilderness.

Instead, we based our values on another method called travel cost. Travel to Nephin will have a direct transport cost and an opportunity cost in terms of the alternative use of this time. In Department of Transport guidance the opportunity cost of travel time is estimated at €7.30 per hour. On-site time we valued at half this figure. We then considered the possible share of local, west of Ireland and other visitors, their travel cost and the time each group would likely spend on site given their journey. We then multiplied these figures by an estimated number of visitors, both dedicated visitors and those who combine the trip with other destinations. Assuming that the number of visitors rises by only 50% in the early years of the project, this results in a welfare value of €164,000 per year.

Table 1: Estimates of economic value in the early years of the Wild Nephin project

	Individual travel cost				Cumulative welfare gain	
	transport cost	time cost	on-site time	sum	x visitors dedicated	x visitors joint destination
Local	€5	€7.30	€14.64	€34.28	€5,375	€13,457
Ireland West	€40	€14.60	€21.96	€83.92	€15,274	€38,242
Ireland other	€80	€29.20	€21.96	€138.56	€26,166	€65,514
TOTAL BENEFIT					€46,815	€117,213

As Wild Nephin becomes more established we assume that visitor numbers will rise by a further 50%. They will enjoy their experience more and stay 50% longer while the utility they associate with each visit is doubled. This results in a welfare value of nearly €500,000 per year. If visitor numbers double again, then this value rises to almost €1 million per year. Forested wilderness has a tremendous capacity to absorb visitors without people's sense of isolation being compromised.

As Nephin matures to resemble true wilderness, option values and existence values emerge. In this respect we are dependent on rather unreliable proportional values estimated by past surveys. In addition, ecosystem service values become significant. For example, carbon sequestration can be valued in relation to the traded price of carbon emissions or the cost to government of achieving emissions targets. The Nephin wilderness would also become an

increasing important reserve for biodiversity and could attract new high profile species such as white tailed eagle or golden eagle that have use-related or existence values in themselves..

Finally, there is the tourism income, both direct income such as accommodation, and indirect income realised through supporting sectors. Many visitors will, of course, wild camp at minimal expense. After all, this is in the nature of the wilderness experience. However, others will make use of hotels or adventure companies. The Mulranny Park Hotel already provides an excellent service in this respect with services for around 600 walking related bed nights per year. In the early to mid years, total tourism income could amount to €225,000 per year, but will rise further thereafter as new opportunities develop. Moreover, the very presence of Wild Nephin will contribute to the outdoors adventure brand that County Mayo is rapidly acquiring. The Wild Nephin wilderness will complement other locations such as Achill and facilities such as the Great Western Cycle/Walking Way.

Conclusion

Over time, the welfare and tourism value of Wild Nephin could exceed €3 million per year. This value assumes significant public good benefits based on 1) the objective of increasing 'use value' and tourism income with facilities for recreation (e.g. trails, basic camping sites, etc), 2) realising 'ecosystem service' values through the restoration and planned evolution of the natural environment (water quality, carbon and biodiversity in particular), and 3) maximising both 'option' and 'existence' values through the creation of a quality environment which can sustain the public's imagination and aspirations for the future.

References

- Clinch, J.P., 1999. Economics of Irish Forestry: Evaluating the Returns to Economy and Society. COFORD, Dublin.
- Fitzpatrick Associates, 2005. Economic value of trails and forest recreation in the Republic of Ireland, Dublin.
- Krutilla, J.V., Conservation Reconsidered. *The American Economic Review* 57, 777-786.
- Krutilla, J.V., Fisher, A., C, 1985. The economics of natural environments: studies in the valuation of commodity and amenity resources.
- Loomis, J.B., Richardson, R., 1991. Economic values of the US wilderness system. *International Journal of Wilderness* 7, 4.
- Ni Dhubhain, A., Gardiner, J., Davies, J., Hutchinson, W.G., Chilton, S.M., Thompson, K., Psaltopoulos, D., Anderson, C., 1994. The socio-economic impacts of afforestation on rural development: Final Report CAMAR. European Community.
- Optimize, 2012. The Economic Value of Forest Wilderness at Nephin. Report prepared for Coillte.
- Upton, V., ni Dhubhain, A., Bullock, C., 2012. Preferences and values for afforestation: the effect of location and respondent understanding on forest attributes in a labelled choice experiment. *Forest Policy and Economics* In press.
- Walsh, R.G., Loomis, J.B., Gillman, R.A., 1984. Valuing Option, Existence and Bequest Demands for Wilderness. *Land Economics* 60.
- Watson, A.E., 2013. The role of wilderness protection and societal engagement as indicators of well-being. *Social Indicators Research* 110, 597-611.