

## Develop or Conserve? The Case of the Diyawanna Oya Wetlands in Sri Lanka

**Wetlands are incredibly important habitats for wildlife, but they can also provide valuable recreational benefits to people, especially when they are located close to urban centres. This idea is examined in a Sri Lankan study that assesses the recreational value of one of Sri Lanka's key wetland areas - the Diyawanna Oya wetlands, which lie 11 km away from the capital city of Colombo.**

The study is the work of Thusitha Dilhani Marawila and Manoj Thibbotuwawa from the Institute of Policy Studies of Sri Lanka. It finds that the Diyawanna Oya wetlands generate benefits worth about LKR 3,890 million (USD 35 million) for the people who use the area for recreation. The welfare loss from developing this natural wetland area would be LKR.19.45 million (or USD 173,107) per hectare. The study highlights the need for more to be done to conserve the wetlands and suggests a number of ways of generating revenue that could be used to fund wetland conservation and enhancement projects.

### THE WETLANDS CHALLENGE

The Diyawanna Oya wetlands ecosystem is an important recreational site in the greater Colombo area. It is located in Sri Jayewardenepura, Kotte, which is the country's administrative capital. The wetlands provide good recreational grounds for exercise, sport and family outings. Inhabitants from the surrounding areas also use the wetlands for fishing, cattle grazing and collecting reeds, rushes and fuelwood. From an environmental point of view, the wetlands provide important hydrological services and are a rich habitat for a wide variety of fauna and flora. For more details on the wetlands, please see the sidebar.

The Diyawanna Oya wetlands therefore contribute significantly to the social wellbeing of the surrounding urban and sub-urban communities. However, there is still little recognition of the value of the wetlands and they are poorly protected. Indeed, the wetlands are being damaged by activities such as land clearance, illegal reclamation and construction and the

dumping of garbage. IUCN Sri Lanka and the Central Environment Authority have identified the Diyawanna Oya wetlands as being at high risk. Unfortunately, they are just one of many wetland areas in Sri Lanka and the rest of South Asia that are poorly protected and seriously threatened. To get a measure of the economic value of the Diyawanna Oya wetlands, and help inform conservation policy, the study assesses their recreational value.

### ASSESSING THE RECREATIONAL VALUE OF THE WETLANDS

The study employs the Travel Cost Method (TCM). According to the TCM approach, if a consumer visits a recreational site, the benefits he or she receives should be more than or equal to the cost incurred in getting to that site. The net benefit derived from visiting the recreational site is called the consumer surplus and this is simply the maximum amount a visitor is willing to pay to engage in recreational activities. As such, this method uses travel cost as a measure of the value of a recreational site. In this study, the travel cost includes the round trip travel cost plus the value of the time the journey took.

## THE DIYAWANNA OYA WETLANDS

The Diyawanna Oya wetlands comprise a vast expanse of marshlands and wooded areas and a network of waterways. The wetlands lie over four Divisional Secretary Divisions: Nugegoda, Colombo, Kaduwela and Kollonnawa. The focus of this study is the most popular recreational site, which is approximately 200 ha in extent and surrounds the Parliament complex.

The wetlands are inland fresh-water marshes and are one of the three interconnected marshes which form the Colombo marshes. The marshes (covering approximately 400 ha), and a low-lying area named the Green Belt wetlands, together form the Colombo Flood Retention area. The area has a high faunal and floral diversity.

The Diyawanna Oya wetlands are surrounded by both suburban middle class and low-income neighbourhoods. The occupants use the wetlands for activities such as fishing, cattle grazing and collecting reeds, rushes and fuelwood. However, due to poor planning, city dwellers have been using some parts of the Diyawanna Oya area for dumping their refuse. Moreover, the authorities have given permission for developers to reclaim a considerable extent of land in the wetlands for projects that include the building of the country's Parliament complex. Overall, the area under wetlands has declined by 50 % over the last three decades.

In order to assess the viability of potential conservation policies, the study also looks at the impact of imposing an entry fee to the wetlands. The study assesses an entrance fee of LKR 50, as this was the potential charge level suggested by respondents to a survey the researchers conducted (see below for details). The implementation of new development projects in the Diyawanna Oya wetlands is likely to affect the recreational value of the site and affect the people who use it. The study therefore calculates the consumer surplus that would be lost if parts of the wetlands are developed.



## ASKING VISITORS ABOUT THEIR TRAVEL COSTS

Information for the study was obtained from primary and secondary sources. Primary data was obtained from an on-site survey of visitors and stakeholders. This survey was carried out at the entry points to recreational areas and at a series of popular sites within the wetlands. In the survey, visitors were asked questions about their travel time, travel costs and how they got to the site. They were also asked about other sites they might visit instead of the Diyawanna Oya wetlands. Demographic information was also gathered along with people's opinions on how the wetlands should be developed. Prior to the main survey, a census of visitors was conducted in order to collect information regarding the use of the wetlands. Secondary data and aerial maps were also gathered to identify changes in land use and acreage.

**Table 1: Main Recreational Activities and Visitors to the Wetlands in one week**

Activity	Number of Visitors
Jogging and exercise	2239( Percent)
Family/ friends outing	2815( Percent)
Playing cricket	2191( Percent)
Playing other games (Volleyball, Rugby, Badminton)	439( Percent)
Visits to the public children's park	1705 (18 Percent)
Cycling	297 (3 Percent)
Total	9687

Source: Field survey, 2008



## HOW THE WETLANDS ARE USED

Out of the many recreational activities taking place at the site, outings by family and friends are the most popular, followed by exercise and jogging. Next in importance are small groups playing cricket, while the area's children's park also seems to attract a sizeable proportion of visitors. Most of the visitors to the Diyawanna Oya wetlands are from the surrounding areas. The mean distance that people travel to the site is 7 km, while the maximum distance that people have travelled is 130 km. The average travel cost per visit is around LKR 23. Some frequent visitors have spent over LKR 4,000 per month getting to the wetlands.

It was evident that most visitors come to the site in large groups to enjoy recreational activities. Indeed, a high percentage of visitors (88 %) visit the site with the sole intention of enjoying the recreational benefits it offers. Although most people are happy with the condition of the site, more than 40 percent say they would be happy to pay an entry fee in order to maintain the quality of the site. The findings show that nearly half of the wetland's visitors are willing to pay for an improvement in recreational facilities.

Since there is no official estimate of the annual number of people who visit the Diyawanna Oya wetlands the researchers estimated the population of visitors at 108,000. This estimate was based on the study's own census and on unofficial UDA sources.

## THE TRUE VALUE OF THE WETLANDS

The study finds that visitors derive an annual consumer surplus of LKR 3,890 million (or USD 35 million) from the recreational benefits provided by the Diyawanna Oya wetlands. This is equal to LKR 0.4 million (or USD 3,560) per perch (local measure of area). This, in turn, is equal to approximately one third of the land value of the area (which is LKR.1-1.5 million per perch). It is important to note that the total value of the wetlands is, in reality, much higher than this estimate, as the estimation does not incorporate any of the wetland's other use- and non-use values.

In its assessment of the collection of revenue through an entrance fee, the study shows that an entrance fee of LKR 50 could generate LKR 5.4 million rupees per year. This level of income would, in turn, enable the government to increase its budget for the development of the environmental sector in Sri Lanka.

However, the study indicates that a fee may not be very practical given the multiple recreational sites (without exact boundaries) that exist throughout the wetlands. Thus, any financing method used to improve and maintain the wetlands should be carefully designed so that any negative social implications are avoided. However, considering the estimated potential revenue that could be generated from the wetlands, the government should definitely think of possible alternative ways of raising money from users. Nearly 80 % of visitors come to the Diyawanna Oya wetlands by vehicle. Hence imposing a vehicle-parking fee may be a more effective strategy than an entry fee. Such a fee could also help reduce congestion and pollution caused by vehicles entering the wetlands.

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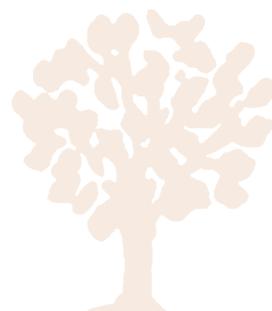
## INVESTING IN THE FUTURE OF THE WETLANDS

The study highlights two issues that should be taken into consideration: the preference of visitors for there to be an enhancement in the quality of the wetlands; and the willingness of people to pay for the recreational services provided by the wetlands. The study therefore recommends that the authorities should design recreational projects which pose the least disturbance to the natural environment. These could include eco-friendly restaurants on stilts, waterfront snack bars, nature trails, board walks and decks on stilts, and viewing decks/towers, especially for bird watching.

**Table 2: Summary Statistics and Visitor Views**

Visitors	Average
Age (years)	31
Monthly wage (LKR)	20,545
Travel distance (km)	7
Travel cost per visit w/o time cost (LKR)	68
Travel cost per visit with time cost (LKR)	238
Monthly visits	7
Group size	4
How should the park be financed? (%)	
Charge an entry fee	13.6
Charge a vehicle parking fee	5.4
Private donations	16
Through the government budget	65
Willingness to pay an entry fee (%)	
Yes	43
No	57
Willingness to pay for new projects (%)	
Yes	50
No	50

Overall, the high recreational value of the Diyawanna Oya wetlands suggests that every effort should be made to maintain, and perhaps enhance, the area. It is also clear that it is time to include the most sensitive areas of the Diyawanna Oya wetlands in Sri Lanka's protected area network and to declare it a wetland sanctuary.



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