

Amenities for Encouraging Ecotourism in Diyawanna Area

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Introduction

Diyawanna Oya is located 11 km away from the city of Colombo. It is ecologically and historically important water body, which flows through the current administrative capital of Sri Jayawardanepura Kotte. It has a long history, since the regime of King Parakramabahu-VI and also it is a great significance wet land, covered with verdant fields and ever green vegetation with rich bio-diversity. Therefore, it is an important environment for wildlife and to develop recreational benefits; such as exercise, sports and family outings, fishing, cattle grazing, collecting reeds, rushes and fuel wood to the general public. Further, it provides important hydrological services and is a rich habitat for a wide variety of fauna and flora. Accordingly, the Diyawanna Oya wetlands contribute significantly to the social wellbeing of the surrounding urban and sub-urban environment, as well as the communities. As a result, Department of wildlife declared Diyawanna Oya as a “bird sanctuary in terms of Fauna and Flora Protection Ordinance (section No 1 of 1994,) and subsequent Gazette notification.

Diyawanna evergreen wet-land was subjected to the modernization with the construction of new parliamentary complex in 1979 and subsequently declaration of Sri Jayawardanepura Kotte as the administrative capital of Sri Lanka in 1980. Thus, the area around

Diyawanna underwent for radical changes, both topographically and environmentally due to the land clearance, illegal reclamation and constructions and the dumping of garbage. At present, a large number of administrative, commercial and public institutions have come up in this area, such as Isurupaya, General Hospital of Sri Jayawarthanepura, the Open University, Folk Arts Centre *etc.* In addition, the phenomenon of urbanization, population growth and the construction of human settlements too have caused environmental impacts in this area. The area today faces the threat of floods, due to the obstruction caused to the flow of water in the low lying areas. Further, it faces environmental damages, due to non-environmentally conscious economic development activities.

Background of Diyawanna Oya area

Diyawanna Oya spreads over Sri Jayewardenepura Kotte and Kaduwela Municipal Councils administrative boundaries and lies about 3 km east to the Colombo commercial hub. The marshland is connected to the Diyawanna Lake, which is part of Diyawanna Oya (stream) and is drained by Kirulapone Canal *via*. Dehiwala and Wellawatta Canal to the sea, playing major role in conveying surface drainage and flood waters. Apart from direct uses that the local people derive, such as recreation, bathing, washing and for other domestic purposes, other indirect benefits such as scenic beauty, use of the area as a nature reserve, diverting their surface drainage into these canals, are too vital and most important intrinsic functions. Illegal discharge of grey water from residences and, commercial establishments, dumping solid waste into water bodies and encroachment are common problems that pollute the water resources in the area. Further, the Sri Lanka Land Reclamation and Development Corporation (SLLRDC) have identified the Diyawanna Lake and its close proximity and its environs including the marsh and canal system as a flood retention area.

Accordingly, this area has approximately 100 hectares of low-lying land area, which is designated as flood detention area by the Department of Land Reclamation. The land area is undulating at an average of 2 m above MSL to + 10 m MSL. As average annual rainfall of 2,427.8 mm and average maximum and minimum temperatures during the year are 31⁰ C and 24⁰ C respectively.

Figure-1: Location Map of Diyawanna Oya



Source: Ruzaik F., 2017

As stated above, multiple modernizations, changes and expansions to fulfill development objectives have been taken place and there is a plan for constructing a golf course instead of a bird's sanctuary in this area. Accumulation of all these activities caused environmental impacts in this area and lead to threat of floods. The best example of its impact is the flood witnessed in 1992 and 2010, due to illegal filling and unplanned construction activities, which have made the areas more flood prone. In addition, haphazard disposal of waste to the land and water bodies by dwellers and various commercial establishments, washing of vehicles, consumption of Alcohol etc. has shown an increasing trend in this area, caused both land and water pollution. Therefore, it is required to consolidate all stakeholders in to a center point to protect the beauty of Diyawanna.

Basic Characteristics of Diyawanna Area

Diyawanna area has below characteristics to promote ecotourism services and facilities as declared by Dilhani & Manoj (2010).

- Biological and cultural diversity of ecosystems and possibilities of its protection and conservation.
- Possibilities to sustain the well-being of local people.
- Many establishments both Government and Non-Government are available to interpret/learn environmental and cultural knowledge and share experience.
- Existing establishments both Government and Non-Government would take responsibility and act accordingly on the part of tourists and the tourism industry.
- Opportunity to serve primarily by small-scale businesses.
- Excessive resources in terms of land and rich biodiversity can be utilized at a minimum level to lower the consumption of non-renewable resources.
- Possibilities of local participation, ownership and business opportunities, particularly to rural people.

Existing Amenities and Resources in Diyawanna Area

Diyawanna area has great potentials for ecotourism development, assisting in resource conservation and community development. But, it is required a guidelines and unique characteristics that need special management plan for obtaining both economic and environmental benefits. Accordingly, Diyawanna area had numerous potential to promote ecotourism as depicted below.

Diyawanna Oya Wetlands

The Diyawanna Oya wetlands comprise a vast area of marshlands and wooded areas and a network of waterways. The wetlands lie over four Divisional Secretariat Divisions, *i.e.* Nugegoda, Colombo, Kaduwela and Kollonnawa. The focus of this study is the most popular recreational site, which is approximately 200 ha in extent and surrounded to the Parliament complex. This area has a high faunal and floral diversity. The Diyawanna Oya wetlands are surrounded by both suburban middle class and low-income neighborhoods. The occupants use the wetlands for activities such as fishing, cattle grazing and collecting reeds, rushes and fuelwood. Due to the poor planning, city dwellers use 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.

Bio-diversity of Diyawanna area

The site is located close to the parliament complex abutting Diyawanna Oya, with very high scenic beauty and bio-diversity. In 1984, this area was gazetted as a Wildlife Sanctuary by the Department of Wild Life Conservation, considering its bird habitation. Diyawanna Oya has rich biodiversity together with various types of reptiles, birds, fresh water fish varieties, mammals etc. Among the flora, this study found that there are a number of plants species both indigenous and exotic to Sri Lanka. Some of prominent plants are listed below.

Table-1: Existing flora species in Diyawanna area

Common Name	Scientific Name
Velatha,	<i>Annona glabra</i>
Velalakola	<i>Colocasia esculenta</i>
Japan jabara	<i>Eichhornia crassipes</i>
Bowitiya	<i>Osbeckia parvifolia</i>
Kirilla	<i>Clochidion stellatum</i>
Nuga	<i>Ficus bengalensis</i>
Mango	<i>Mangifera indica</i>
Madan	<i>Syzygium cumini</i>
Madatiya	<i>Adenanthera pavonina</i>
Na	<i>Mesua ferrea</i>
Mara	<i>Samanea saman</i>
JaK	<i>Artocarpus heterophyllus</i>
Ehala	<i>Cassia fistula</i>

Source: Perera *et al.*, (2012): Journal of Tropical Forestry and Environment

Bird Sanctuaries

Diyawanna Oya has a rich faunal diversity, together with various types of birds, butterflies together with open decks, bird watching, resting place, bird watching tower *etc.* Eco-friendly activities will protect the wetland bio-diversity by preserving a preferred environment, especially for fauna varieties. Further, it creates an opportunities for students and naturalists to learn/explore about wetland birds/animal species. This will improve the area as a tourist attractive site with providing recreational facilities.

Table-2: Migrated bird species found around Diyawanna area

Common Name	Scientific Name
Kentish	<i>Charadrius placidus</i>
Pacific golden plovers	<i>Pluvialis fulva</i>
Grey plovers	<i>Pluvialis squatarola</i>
Little stints	<i>Calidris minuta</i>
Pintail snipes	<i>Gallinago stemura</i>
Yellow bitterns	<i>Ixobrychus sinensis</i>
Grey wag tail	<i>Motacilla cineria</i>
Yellow wag tail	<i>Motacilla flava</i>
Common sand piper	<i>Actitis hypoleucos</i>
Marsh sand piper	<i>Tringa stagnatilis</i>
Greenshank	<i>Tringa nebularia</i>
Black wing stilt	<i>Himantopus himantopus</i>
Green bee eater	<i>Merops orientalis</i>
Blue tailed Bea eater	<i>Merops philippinus</i>
Barn swallow	<i>Hirundo rustica</i>
Whiskered tern	<i>Chlidonias hybridus</i>
Brown shrike	<i>Lanius cristatus</i>
Asian paradise fly catcher	<i>Terpsiphone paradise</i>

Source: Metro Colombo Urban Development Project

Wetland of Diyawanna is a remarkable biodiversity hot spot with the direct economic and environmental importance in the ecosystem and can be used in a sustainable way to contribute the development of ecotourism. The encroachment of exotic species and degradation of indigenous species caused by the human interference in the development of the lowland area in Sri Lanka poses a threat to the pristine habitats.

Historical and archeological values

Diyawanna possesses a historical and archeological value since 14th century, due the ancient city of Kotte. This city of Jayawardenapura Kotte was initially called as “Darugama”. The land area of the fort of Kotte is nearly one square mile. The rampart is 35 feet wide and 8 feet high. The shape of the city was triangular and the rampart was full with “Cabook” bricks. On two sides of the Kotte was a deep stream and on the other sides two deep moats and the marshy land area. In the four corners of the rampart there were four “devalas” dedicated to the four Gods, Upulwan, Saman, Vibhishana and Kandha. The fortress city came to be known as Sri Jayawardenapura Kotte in 1391 A.D. after prince Sapumal captured the Jaffna peninsula, during the reign of King Parakramabahu VI; who unified Sri Lanka. Sri Jayawardenapura Kotte became the capital and unification of the country brought about peace prosperity and fast development in all fields. Some archeological features of Diyawanna oya area are given below.



Source: <https://amazinglanka.com/wp/tomb-of-alakeshwara/>

A few main features to witness the archeological value of the area is given below.

- King's palace (in the east) with a beautiful flower garden and water springs *etc.*
- Three storied Dalada Maligawa with Buddha's sacred tooth relic in it (Temple of the tooth).
- Five storeyed "Arama", where sixty Buddhist Bhikkus resided, with a Sangha Nayaka (a high priest) as the chief incumbent.
- 'Kotavehara' the only Buddhist temple of the city at Veherakanda the moat and rampart.
- Kings Treasury House (in the north).
- The Royal cemetery at Baddagana (Veherakanda memorial).
- The "Angampitiya" the military parade and training ground just inside the training grounds by Veherakanda
- Excavation at Veherakanda in Baddegana has revealed two tombs, which are believed to be that of King Parakaramabahu-VI and his queen Swarnamanikya.

Kotte was the capital of our island from 1415-1565 AD and flag that they have used during the regime was given below. **The Kotte Flag –Kingdom of Kotte**



Source: <https://amazinglanka.com/wp/tomb-of-alakeshwara/>
accessed on 12.12.2020

Ambalama (Resting place)

The 'Gal Ambalama' or a resting place for the weary traveler could be found right in the middle of the Pita Kotte junction, its sister edifice the 'Mati Ambalama' being destroyed. Currently, this Ambalama is used as elders' home and a picture of which is given below.



Stakeholders

Many supporting institutions/organizations are available in the Diyawanna area such as; Ministry of Environment, Central Environmental Authority, Road Development Authority, Sri Lanka Land Reclamation and Development Co-operation, the Wildlife Department, Private Sector Institutions, Non-Governmental Organization and several Temples around Diyawanna area are in the team that can be contributed to promote this eco-tourism activity. Any development activities can be succeeded with the co-operation of above stakeholders with well planed tourism activities along with optimal use of available resources produce a sustainable eco-tourism in Diyawanna area. As a result, it's increase the value of the environment, which has a good asset to the surroundings a well as to the nation of Sri Lanka.

“Diyatha Uyana” horticultural sales zone

Establishment of Diyatha Uyana-new horticultural sales zone on the banks of the Diyawanna Oya together with walking path, flower shops, children park, restaurant *etc.* in a systematic manner enhance the beauty of the city of Sri Jayawardenapura , Kotte. This has become a floor for selling local flora and tropical flowers and also other gardening equipment. It comprises of 85 sales outlets. The spectacular water fountain built at the place also adds much beauty, glamour and magnificence to the whole area. A few photos are given below.



Diyawanna Oya walking track

The Diyawanna Oya walking track, an area for jogging and exercising was declared officially opened for the use of the public with a large parking slot adjacent to Diyawanna Oya, which made it easy to access this beautiful area.



Benefits of ecotourism

Diyawanna oya area has large amount of marshy and abandon land area, owed by the state, which has an environmental value; can be converted to enable government archive sustainable value both economic and environment. Diyawanna has many potential benefits in terms of ecotourism, where domestic and international tourist can be attracted. Through this local community would be reaped tremendous benefits by creating new employment, generating foreign exchange income as well as stimulating the economic development of the area. Since Diyawanna is ecologically rich, this area should be utilized for the purpose of ecotourism, rather than the using for any other development activities; anticipating te yield of environment protection and economic benefit that can be transformed to local communities in a most desirable manner. Then, the local communities can play an important role in the planning, development as well as management of the process of area.

SWOT analysis

The identification of strengths, weaknesses, opportunities and threats of the Diyawanna area in the context of ecotourism management is given below, which will become a tool for preparing a productive management plan.

Strengths

- Diyawanna was declared as a sanctuary as per the Gazettement under Wildlife Sanctuary Act of 1984.
- Availability of rich bio-diversity.
- Availability of rich scenic beauty.
- Environmentally and ecologically sensitive area.
- Unique features (Diyawanna lakes and biodiversity parks etc).
- Historical/Archeological value of the area.
- Easily accessible by tourists.
- No admission fee.
- Research station at Beddagana bio-diversity and butterfly garden.
- Positive attitude and dedication of relevant stakeholders including public.
- Availability of environmental conscious community.
- Increasing trend of infrastructure development.
- Availability of environmental societies.

- Distribution of solid waste 'bin' free of charge by CEA.

Weakness

- Most of the area is environmental sensitive.
- Absence of strict rules for entering in to the Diyawanna area for development activities.
- Absence of proper solid waste management system for the area.
- Absence of proper zoning and fencing around the park area.
- Poor awareness among the general public.
- No proper system for collecting domestic waste.
- Lack of effective monitoring system in terms of environmental management.
- Room for illegal activities.
- High Political influences.
- Poor communication linkage among the co- stakeholders.
- Non availability of previous records/statistical records in relation to typical habitats of the area.

Opportunities

- Possibilities to generate income through entrance fees and through other avenues with the support of all stakeholders.
- Central Environmental Authority (CEA) organizes environmental awareness and education program for all stakeholders for the betterment environmental safety.
- Availability of technical financial support from foreign donor organizations.

- Possibility to utilize available of community based environmental societies for the benefits of environment.
- CEA has Field Environmental Officers, who can be used for environmental management purpose.
- Availability of technical and financial support from local and foreign organizations.

Threats

- Lack of bare land for infrastructures development.
- Political intervention.
- Risk in destruction of unique features.
- Encroachment and illegal activities.
- Theft of flora and fauna from the area.
- Lack of communication and coordination among the stake holders.
- Lack of knowledge of dwellers pertaining to the environmental management.
- No proper plan to conserve the Diyawanna Oya area.
- Increasing trends of population and development activities.
- NGOs expects self-benefit through the participation on environment management.

All strength and opportunities for the Diyawanna area can be utilized maximum in order to grow as a major ecotourism site. In SWOT analysis context, how area is powered with numerous characteristics, which may be utilized or under utilized and also opportunity means potentials present to conduct or carry out an activity in order to increase the efficiency or improving the quality of management of any kind of

organization. An opportunity that has been identified, taken up and applied successfully could also be regarded as future strength.

Weakness on the other hand indicates the presence of a negative state of the area, which could result in lesser efficiency of an activity being carried out. Since weakness is an unfavorable condition, which could lead to reduced productivity of the area. It indicates, what could be done to avoid the said adversary. In terms of weaknesses the Diyawanna is environmentally and ecologically sensitive according to Metro Colombo Urban Development Project (2011). As such, no major developments must be carried out in the wet land area or in the vicinity. According to Perera, W.P.N. and Perera, R.N. (2004) ecosystem on the Diyawanna lake is also very sensitive to environmental changes. Expansion of water volume in the lake may cause major casualties to the freshwater fish species at Diyawanna lake as those fishes are unable to withstand the contaminated water body.

Basically, threat is a statement of intention to cause or inflict damage on anything through unwanted action. But in SWOT analysis, threat means an obstacles, which is currently faced which could lower down the chance of success of the area. If the threats were to be 'realized', then they would turn into weaknesses in the future. The main aim is to overcome or avoid such threats to prevent any inefficiency on any projects or undertakings.

Strategies to overcome the weakness and threats

Below are some suggestion to over come negative sides.

- Forming of partnership between business people (hotel/ restaurant owners), local community and key stakeholders for the management of Diyawanna area.
- Introduce a minimum entrance fee.

- Improve a partnership with higher education sectors, both government and public to attract international researchers.
- Partnership with NGOs to create a holistic environmental education hub at the Diyawanna area, strict enforcement of gazettelement and strong political will.
- Severer fines for poachers and plant theft or degradation of biodiversity.
- Forming of partnership with universities to manage part of the bio-diversity park.
- Conflict resolution with all stakeholders.
- Development of borders/fencings around the parameters of Diyawanna eco-tourism area.
- Planning of proper solid waste management and collection system.
- Planning of solid waste rules and regulations for visitors.
- Integration of solid waste management plan into environmental education.

In order develop the effective management plan for eco-tourism, the strengths and opportunities factor in the SWOT analysis could be utilized to overcome the weaknesses and the future threats.

From an environmental context, smart partnership with the University of Colombo could be further improved to attract more international/ local researchers to the Diyawanna. In addition to that, partnerships with environmental based NGOs, and so forth could be forged to create a holistic environmental education hub at the Park in Diyawanna area.

Environmental education in this context is important in raising environmental awareness especially for the surroundings.

By further exploiting the external opportunities several internal weaknesses could be countered. With the imposing of entrance fees, the fees could be utilized to develop a proper solid waste management and collection plan. For example more garbage bins could be installed around the Diyawanna. Recycling activities could also be carried out to engage visitors as well as increase the parks revenue. Rules and regulations on solid wastes could be refined to limit the carrying of plastic drinking bottles and food into the parks. Solid waste has always been an issue as it is not properly managed due to frequent camping and recreational activities. In addition to that, solid waste management plan could be integrated in the environmental education plan to create and increase awareness on the solid waste issue in Diyawanna Eco tourist area.

Through maximizing the internal strengths to counter the external threat, very strong political will and strict enforcement are needed to counter the land scarcity issue. No major developments should be allowed within and around the Diyawanna area to prevent any negative effects as a result of the park's sensitivity. In addition to that sustainable income through ecotourism as well as international recognition could be tapped in order to prevent any major development of the Diyawanna due to land scarcity. Partnership with the University of Colombo or related institution could be further forged to allow parts of the national park to be managed by the University for Research Purposes. This strategy could be seen in some countries such as Japan. For example, even in Sri Lanka Yairala Forest were given to the University of Sri Jayawardenepura for forestry research and management. With this strategy development of this ecologically sensitive area could be prevented.

Conclusion

Diyawanna is considered one of the ecologically sensitive area and has all the potentials to serve as a tourist destination for ecotourism activities. With the right management and policies will combined with smart-partnerships with NGOs, related institutions and local communities, there is no reason why ecotourism cannot be developed for the Diyawanna. However, a balance needs to be struck between ecotourism development and environmental conservation to ensure sustainability. However, through the minor and major aspects identified in the SWOT analysis, it is possible to overcome each weakness and threat by strategizing the management plan to turn the Diyawanna into a nationwide known ecotourism site. Potentials and opportunities must be tapped to gain sustainable income and in turn, fully utilize the income to develop and maintain the facilities in this area.

Furthermore, integrated with conservation planning and management, ecotourism and other special interest tourism can be highly preferable that prevent leakage of economic benefits while enhancing the quality of life of the local people with minimal negative social and environmental impacts. With its extensive nature reserve networks and diverse culture heritage, Diyawanna has great potential to create new value-added tourist products that cater to upmarket eco tourists. Careful planning and managing are particularly essential in promoting tourism development in cultural/archaeological sites and ecologically sensitive areas such as Diyawanna.

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