OPEN ACCESS

Manuscript ID:
ECO-2022-11015793

Volume: 11

Issue: 1

Month: December

Year: 2022

P-ISSN: 2319-961X

E-ISSN: 2582-0192

Received: 20.09.2022

Accepted: 25.10.2022

Published: 01.12.2022

Citation:
Bhuvanesvari, S., and R. Manikandan. "Economic Value of Major Lakes in Coimbatore City." *Shanlax International Journal of Economics,* vol. 11, no. 1, 2022, pp. 46–50.

DOI:
https://doi.org/10.34293/economics.v11i1.5793

Economic Value of Major Lakes in Coimbatore City

S. Bhuvanesvari
Ph.D. Research Scholar, Department of Economics
Bharathiar University, Coimbatore,Tamil Nadu, India
https://orcid.org/0000-0001-9245-4963

R. Manikandan
Assistant Professor, Department of Economics
Bharathiar University, Coimbatore ,Tamil Nadu, India
https://orcid.org/0000-0001-7558-4790

Abstract
Lakes are recognized as freshwater resources in rural and urban areas. In the last few decades, lakes situated vicinity of cities are rapidly degraded due to lack of maintenance and economic development. Lakes areas were encroached, converted into buildings and house plots because and people were not aware of the intrinsic value of lakes. Coimbatore is one of the tier II cities in India, it has several lakes in and around the city limits. In 2016, Coimbatore is one of the city selected under the smart city mission. Under the Smart City mission, Coimbatore city municipal corporation restores the water bodies. But, lakes around household activities and lake visitor's activities affect the lake quality and ecosystem. The main reason was the people were not aware about the intrinsic value of lakes. Therefore, this study estimates the total economic value of ecosystem services derived from major lakes in Coimbatore city. The total hectare of major 9 lakes was647.61 ha and its ecosystem services value was 608.36 crores/year. Kurichi lake has the highest catchment area, its ecosystem services value was 127 crores per year. The monetary value of lakes makes awareness about the significance of lakes ecosystem services and people are co-operate with lakes restoration activities.

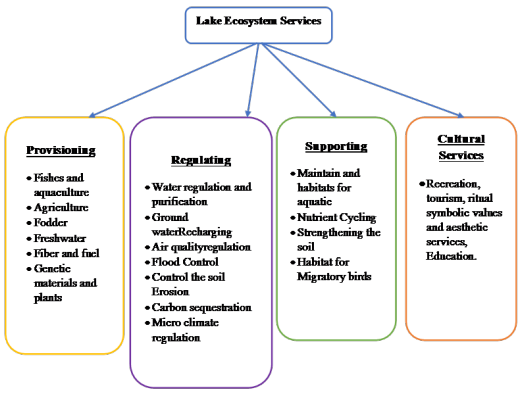
Keywords: Lakes, Economic Value, Freshwater, Ecosystem Services.

Introduction

Lakes are the main source of freshwater resources and it provide enormous services such as drinking water, fish, recharging the groundwater controlling flood in urban areas, and habitats for aquatic life. Ecosystem services are the benefits people obtain from ecosystems (Millennium Ecosystem Assessment, 2005). It was classified into 4 categories such as Provisioning, Regulating, Supporting, and Cultural Services. But in recent decades, the rapid growth of urban cities pressure on urban ecosystems, especially in water ecosystem services. Urbanization, infrastructure development, and economic development of urban cities are the opportunity cost of natural resources such as freshwater, air, land, and forests**.** According to the Tamil Nadu Public works department official's report in 2016, stated that in 4 decades, Tamil Nadu lost 1000 waterbodies due to Encroachment (buildings and housing plots) lack of maintenance, and unplanned development. But 4 decades ago, Tamil Nadu had 39,202 water bodies and currently 38,202 water bodies are functioning in Tamil Nadu.

Coimbatore is the second largest city in Tamil Nadu, Manchester of South India and it is one of tier II Indian cities. In the last few decades, Coimbatore city people are facing heavy water shortage problems because the freshwater bodies in Coimbatore city are polluted and dry, groundwater depletion and changing in life style . In 2010, Coimbatore City Municipal Corporation took over the lakes within city limits, from Public Work Department, and in 2015, Coimbatore City Municipal Corporation plan to restore the lakes under the Smart city mission. Without people's co-operation and support, Government actions didn't get success. Therefore, Coimbatore Corporation should make awareness to people about the economic value of lake ecosystem services (Manikandan and Bhuvanesvari, 2022) because economic valuation is a powerful tool to assess the use value and non-use value of lake ecosystem services. It helps to improve and manage the lake ecosystem services sustainably. Hence, this study mainly focuses to estimate the total economic value of ecosystem services derived from major lakes in Coimbatore city.

Chart 1 Various Lake Ecosystem Services



Objective of the Study

To estimate the economic value of lakes in Coimbatore city.

Scope of the Study

This study helps to calculate the economic value through the ecosystem services of major lakes in Coimbatore city and make an awareness to people about the intrinsic value of lakes, support to protected the lake ecosystem services in urban areas.

Review of literature

Manikandan and Bhuvanesvari (2022) elucidated the causes and consequences of urban lakes pollution in Coimbatore city. The study found out that household sewage, industrial effluents, and people activities are malicious to lake water quality, and its ecosystem services and fisherman are more economically affected due to urban lake pollution.

The study point out the Government should make awareness to people about the economic value of lake, usefulness and implement the proper method to control wastewater discharge into lakes.

Raghavendra and Shalini (2018) analyzed the Physicochemical parameters and Economic value of lake ecosystem services in Walajah Taluk, Vellore. The study was conducted in Periya lake and Chinna lake in Vellore. This study tested a few physicochemical parameters and for the economic survey, 75 people are randomly selected from a nearby village. The average economic value generated by two lakes is Rs. 3041 per sq. km per day. The study revealed that lake value is declining due to human activities and poor maintenance of the lake. It implies the need for effective strategies for restoration and recovery of the lake benefits.

Rajashekariah et al. (2015) estimated the value of ecosystem services of Kunigal lake in Tumkur District, Karnataka. This study adopted various ecosystem valuation methods such as market price method, productivity approach, and benefits transfer method. The study found out, that the total value existing in kunigal lake ecosystem services was Rs. 1030.45 million. The study concludes that kunigal lake ecosystem services significantly contributed to household income and sustainable managing of the environmental resources are benefits to the local community.

Costanza et al. (1997) estimated the value of the world's ecosystem services and natural capital. The study estimates both direct and indirect use values. The study identified the 17 ecosystem services and estimated the global average value of ecosystem services was 33 trillion dollars/year.

These studies discussed the importance of ecosystem services and analyzed the economic value of water bodies. The causes and consequences of water bodies contamination. The economic valuation of water bodies helps to make awareness among the people about the lake restoration and protect its ecosystem services.

Materials and Methods

The Coimbatore city lakes have chosen as the study area of this research. Krishnampathy, Selvampathy, Kumarasamy, Narasampathy, Selvachinthamani, Ukkadam lake, Valankulam, Singanallur lake, and Kurchikulam are the major lakes are selected for this study. The secondary data was collected from Public Work Department, Strengthening Coimbatore City Plans, The Perspective of Water Bodies and Informal Settlements report, and SACON ENVIS Reports.

The Centre for Urban Biodiversity Conservation Education (CUBE) organization estimated the actual value of Singanallur lake ecosystem services based on the United Nations calculated the global average value of a wetland as Rs.93.94 lakh/hectare/year. CUBE found out the Singanallur lake ecosystem services value was Rs.108 crore per year (Times of India, 2017). Based on this estimation, this research paper calculated the economic value of major lakes in Coimbatore.

Economic value of lake = Total Spread area of lake (ha) ×Global average value of Ecosystem services[93.94 lakh]

Result and Discussion

Table 1 Estimation of Economic value of lakes in Coimbatore

Sl. No	Name of the lakes	Lake spread area (Acres)	Lake spread area (Sq.km)	Lake spread area (Hectares)	Global average value of Ecosystem services	Economic value of lake
(crores)/ year	Krishnampathy	176.185	0.7129	71.29	Rs. 93.94 lakh/hectare/ year	66.96
2.	Selvampathy	70	0.2832	28.32		26.60
3.	Kumarasamy	93.90	0.380	38		35.69
4.	Narasampathy	124	0.502	50.2		47.15
5.	Selvachinthamani	37	0.149	15		14.09
6.	Ukkadam lake	320	1.295	129.5		121.65
7.	Valankulam	160	64.8	64.8		60.87
8.	Singanallur	285	1.153	115.3		108.31
9.	Kurchi lake	334	1.352	135.2		127
				647.61		608.36

Sources: Authors

Table1 Indicates the economic value of lakes in Coimbatore. As per UN estimation, the global average value of wetlands was 93.94 lakh per hectare. Therefore, Each lake spread area was converted into hectares and multiplied by 93.94 lakhs, finally getting the average value of lake ecosystem services. The Krishnampathy lake spread was 71.29 hectares (ha), and the approximate value of its ecosystem services was Rs. 66.96 crores per year the Selvampathy lake spread was 28.32 ha, and Rs. 26.60 crores value of ecosystem services derived from this lake for per year, Kumarasamy lake spread was 38 ha and its value was Rs. 35.69 crores/year, Narasampathy lake spread area was 50.2 ha and ecosystem derived from lake value was Rs. 47.15 crores/year, when compared with other lakes Selvachinthamani lake is the smallest lake, it spread area was 15 ha and ecosystem value was Rs. 14.09 crores per year, Ukkadam lake

is one of the largest in Coimbatore city 129.5 ha and it ecosystem services value was Rs. 121.65 crores/year, Valankulam had 64.8 ha and its value was Rs. 60.87 crores/year, Singanallur lake spread area 115.3 ha and lake ecosystem value was Rs. 108.31 crores/year, Kurchi lake is one of the largest lakes with 135.2 hectares, the economic value of ecosystem services was Rs.127 croresper year. Kurchi lake ecosystem services have the highest economic value compared with other lake values. The major lakes in Coimbatore city have, a total 647.61 hectares, and the total economic value of ecosystem services derived from these lakes is around Rs. 608 crores/ year. The economic value of lakes is an approximate value, it may be changed, due to pollution, changes in ecosystem services, and inflation.

Conclusion

The economic valuation of lake ecosystem services makes awareness and knowledge to people about the intrinsic value of the lake. Economic valuation is a powerful tool to know the use value and non uses value of lakes. The monetary value of the lake helps to recognize thecurrent value and loss value of ecosystem services. It supports for conservation and maintenance of the lake ecosystem services in a sustainable manner. It also creates awareness among the people and they will co-operate with Government activities to uplift the water resources values and gain values forever.

References

Advisory on Conservation and Restoration of Water Bodies in Urban Areas. Central Public Health and Environmental Engineering, Ministry of Urban Development, Government of India, 2013.

Boyd, James. *Economic Valuation, Ecosystem Services, and Conservation Strategy*. Gordon and Betty Moore Foundation, 2011.

Coimbatore Smart City, https://www.coimbatoresmartcity.org/Introduction

Costanza, Robert, et al. "The Value of the World's Ecosystem Services and Natural Capital." *Nature*, vol. 387, 19997, pp. 253-60.

Ecosystems and Human Well-being: Synthesis. Millennium Ecosystem Assessment, Island Press, 2005.

Jeshi, K. "Can we Look Forward to Clean Lakes in Coimbatore?" *The Hindu*, 2017.

Lenin, R. "In 40 Years, TN has Lost Thousands of Water Bodies to Buildings: Study." *DT Next*, 2016.

Manikandan, R., and S. Bhuvanesvari. "A Study on Causes and Consequences of Urban Lakes Pollution in Coimbatore City." *International Journal of Creative Research Thoughts*, vol. 10, no. 6, 2022, pp. 184-89.

Mittermeier, Russell A., and Cristina Goettsch Mittermeier. *Megadiversity: Earth's Biologically Wealthiest Nations*. CEMEX, 1997.

Pragatheesh, A., and Pushp Jain. *Environmental Degradation of the Coimbatore Wetlands in the Noyyal River Basin*. EIA Resource and Response Centre, 2013.

Protection and Management of Urban Lakes in India. Centre for Science and Environment, http://www.saconenvis.nic.in/publication/Lake%20Protection%20and%20Management%20of%20Urban%20Lakes%20in%20India.pdf

Quadros, Goldin, et al. *Lakes of Coimbatore City*. ENVIS Publication, 2014.

Rajashekariah, Kiran, et al. *Economic Valuation of Ecosystem Services and Resources from Kunigal Lake, Tumkur District, Karnataka, India*. 2015.

Smart Cities Challenge City-wide Concept Plan for Coimbatore. Coimbatore Municipal Corporation, Government of Tamil Nadu, 2015, https://payment.ccmc.gov.in/DwnldForms/SMARTCITY/SMART_CITY/f.%20Report%20on%20City%20wide%20Concept%20Plan.pdf

Srinivasan, Gokul Raghavendra, and Shalini Palani. "Physicochemical Analysis and Economic Evaluation of Lake Ecosystem - A Case Study of Lake System in Walajah Taluk, Vellore (India)." *Water and Energy International*, 2018, pp. 52-55.

Strengthening Coimbatore City Plans – The Perspective of Waterbodies and Informal Settlements. Sustainable Urban Knowledge & Actionable Learning Platform, 2018.

Tanks and Catchment of the river Noyyal Basin, http://saconenvis.nic.in/cbe_wetlands.htm

"A Price Tag on Singanallur Lake." *The Times of India*, 2017.

Author Details

S. Bhuvanesvari, *Ph.D. Research Scholar, Department of Economics, Bharathiar University, Coimbatore,Tamil Nadu, India,* ***Email ID****: sbhuvanesvari2906@gmail.com*

R. Manikandan, *Assistant Professor, Department of Economics, Bharathiar University, Coimbatore , Tamil Nadu, India,* ***Email ID:*** *manikandan@buc.edu.in*