

ECONOMIC ANALYSIS FOR SUSTAINABLE MANAGEMENT OF MARINE PROTECTED AREAS IN UJUNG KULON NATIONAL PARK

ANALISIS EKONOMI UNTUK PENGELOLAAN BERKELANJUTAN KAWASAN KONSERVASI PERAIRAN DI TAMAN NASIONAL UJUNG KULON

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ABSTRACT

The protection of ecosystems and natural resources continues to be a top priority for the management of the Marine Conservation Area (MCA) of Ujung Kulon National Park (UKNP). Managers haven't given management of the economic and social use issues much thought. In reality, if it is properly managed, the MCA UKNP's economic potential can contribute to raising the economic well-being of the neighbourhood. Estimating the MCA UKNP's economic value and examining its economic and financial viability are the two goals of this manuscript. Survey research is used as the research methodology, together with overall economic valuation and financial and economic feasibility study. The findings of the study are as follows: 1) The mangrove environment, which is worth IDR1,215,105,470,571, and the coral reef ecosystem, which is worth IDR1,390,406,119,529, together make up the overall economic valuation of the MCA UKNP, which is IDR2,605,511,590,100. 2) The financial and economic feasibility analysis's findings indicate that the financial NPV is 1,963,392,508,016 and the economic NPV is 1,927,390,315,754 > 0, the financial Net B/C value is 21,28 and the economic Net B/C value is 19,30 > 1.0, and the financial IRR value is 39.54 and the economic IRR is 39.43% > 20% (MARR). The analyses' findings support the MCA UKNP's declaration that its determination was practicable.

Keywords: economic valuation, marine protected area, sustainability, *Ujung Kulon*.

ABSTRAK

Pengelolaan KKP TNUK saat ini masih memprioritaskan aspek konservasi sumberdaya alam dan ekosistem. Sementara pengelolaan aspek pemanfaatan secara ekonomi dan sosial belum mendapatkan perhatian yang serius dari pihak pengelola. Padahal potensi ekonomi KKP TNUK apabila dikelola dengan baik dan sungguh-sungguh bisa membantu meningkatkan kesejahteraan ekonomi masyarakat sekitar. Mengestimasi nilai ekonomi KKP TNUK, serta menganalisis kelayakan ekonomi dan finansial KKP TNUK adalah tujuan dari penelitian ini. Metode penelitian yang dilakukan melalui penelitian survei, dengan menggunakan analisis valuasi ekonomi total (*Total Economic Valuation*) dan analisis kelayakan finansial dan ekonomi. Capaian dari makalah ini adalah: 1) Valuasi ekonomi total KKP TNUK Rp 2.605.511.590.100 yang terdiri dari nilai ekonomi ekosistem mangrove Rp 1.215.105.470.571 dan nilai ekonomi ekosistem terumbu karang Rp 1.390.406.119.529 dan 2) Hasil analisis kelayakan finansial dan ekonomi menunjukkan nilai NPV finansial sebesar Rp 1.963.392.508.016 dan NPV ekonomi Rp 1.927.390.315.754 > 0, nilai Net B/C finansial yaitu 21,28 dan Net B/C ekonomi sebesar 19,30 > 1,0, nilai IRR finansial ialah 39,54 dan IRR ekonomi 39,43% > 20% (MARR). Berdasarkan hasil analisis tersebut, penetapan KKP TNUK dinyatakan layak.

Kata kunci: valuasi **ekonomi**, **kawasan konservasi perairan**, **keberlanjutan**, *Ujung Kulon*.

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INTRODUCTION

A marine conservation area (MCA) is an intertidal or subtidal area along with the potential within it which is reserved through applicable regulations or by other means with the aim of maintaining the potential biodiversity of the area (Picone, 2020). Added by Brander *et al.* (2020), a marine conservation area is a geographical area that is managed legally and effectively to realize sustainable management with related ecosystem services and cultural values. Furthermore, Buonocore *et al.* (2019), stated that marine conservation areas were established to protect the potential of marine biodiversity within them, natural capital, ecosystem functions and cultural values from various anthropogenic threats to coastal and offshore marine ecosystems. Several developed and developing countries have adopted the marine conservation model by closing fisheries activities and making them marine conservation areas or marine conservation areas which are intended as an effort to protect and restore endangered resources and ecosystems (Roberts and Polunin, 1993). Although efforts to contain protected areas continue to vary in size, distribution, and level of protection, concerns about actions in protected areas are also increasing (Allison *et al.*, 2012).

The Ujung Kulon National Park marine conservation area (UKNP-MCA) is part of the UKNP area management which has a total area of 105,694.46 Ha, consisting of a land area (terrestrial) covering an area of 61,357.46 Ha and a water area covering an area of 41,337 Ha. The habitat groups within the MCA UKNP area are rocky beaches, mangrove forests, seagrass beds, swamp coral reefs and muddy land with several islands, namely the Handuleum Islands, Peucang Island, Panaitan Island, and the Ujung Kulon Peninsula. The designation of an area as a marine conservation area on the one hand provides high benefits and advantages, especially from the aspect of ecological sustainability. However, from a social aspect, the establishment of conservation areas will limit local communities' access to extract resources, such as; restrictions (prohibitions) on fishing and other aquatic biota. This is as stated by Kusumastanto (2000) that marine conservation areas that prioritize conservation aspects will find it difficult to accommodate the needs of the surrounding community where they have been earning a living and depend on the existence of the area.

MCA UKNP is in charge of managing the terrestrial conservation area of Ujung Kulon National Park. The lack of funding for projects and budgets, as well as the availability of human resources in the marine sector in terms of quantity and capacity, are signs that the management actually pays priority to terrestrial areas over aquatic ones. It is thought that if this condition is not rectified, the ecosystem of the marine conservation area will be disturbed due to the high activity and level of dependency on the region by local residents (fishers). To ascertain whether the MCA UKNP's presence benefits the area, an economic analysis of environmental conditions and natural resources is required. Therefore, it is essential to carry out this research in order to safeguard and improve the MCA UKNP's sustainability. The study's goals are to: 1) determine the MCA UKNP's total economic value; and 2) assess the project's financial and economic viability.

RESEARCH METHODS

The research method used in this research is a survey research method. Kusumastanto (2016) said that the survey research method is carried out by collecting data, where the number of samples represents the population based on statistically correct sampling methods. Furthermore, the data collected is analyzed according to scientific principles so that research results are obtained that are valid and can be generalized to the population studied. The research location is in a marine conservation area (MCA) which is a buffer area for UKNP (Ujung Kulon National park).

In this study, respondents were chosen through accidental and purposeful sampling. using questionnaire-based interviews. 80 tourists who visited the UKNP MCA were used as respondents for the Travel Cost Method (TCM), 40 of which were visitors to mangroves and 40 to coral reefs. A total of 80 fishermen (entrepreneurs) and tourists participated in the Contingent Valuation Method (CVM) survey, along with 40 each from the mangrove and coral reef habitats. In the meantime, to gather secondary data, a literature review on economic values and other information pertaining to regional economic analysis was done.

The data analysis method is based on the research objectives, namely: 1) economic valuation of natural resources and the environment of the UKNP MCA and 2) financial and economic analysis of the UKNP MCA. The method for answering the economic valuation value of natural resources and the environment from the UKNP MCA is the Total Economic Valuation (TEV) approach. Mathematically, TEV can be shown in the equation (Tietenberg, 2001 in Adrianto *et al.*, 2016).

$$TEV = UV + NUV \quad (1)$$

$$TEV = (DUV + IUV + OV) + (BV + EV) \quad (2)$$

Description:

- TEV or Total Economic Value
- UV or Use Values is the direct use of natural resources obtained by individuals.
- DUV or Direct Use Value is commercial or non-commercial value obtained from direct use of resource consumption and the environment, such as: fishing, mangrove wood, etc.
- IUV or Indirect Use Value is commercial or non-commercial value obtained from indirect uses of resource consumption and the environment.
- OV or Option Value is a choice to utilize resources and the environment.
- NUV or Non Use Value is the value of indirect use of natural resources obtained by individuals.
- BV or Bequest Value is the inherited value of resources given to future generations who have not yet been born.
- EV or Existence Value is the intrinsic value of efforts to maintain biodiversity potential and has nothing to do with use.

The benefits of having mangroves and coral reefs are numerous and quantifiable, as seen in the list below.:

a. Direct Use Values

Using the TCM (Travel Cost Method) method, the tourism component of the mangrove and coral reef ecosystems' presence is used to determine the direct benefit value. The demand curve and consumer surplus created from the findings of the research are used to determine the benefits of tourism in mangrove and coral reef ecosystems. Making a hypothesis about the demand function for tourist attractions is the first step in this TCM method (Fauzi, 2004).

$$Ap = ATr + (AKr + AKh) + ADk + ALn \quad (3)$$

Description:

Ap = Travel budget

ATr = Transportation budget (Rp)

AKr = Consumption budget (Rp)

AKh = Daily consumption budget (Rp)

ADk = Budget documentation (Rp)

ALn = Other budgets (Rp)

b. Indirect Use Values

Indirect Use values from mangrove ecosystem derives its values from the role it plays in protecting the coastline from erosion and keeping it stable. The computation is performed using the method of constructing a defensive wall. The value of the mangrove ecosystem's ability to shield coastal areas from seawater erosion can be calculated as the price of constructing a protective wall. The equation looks like this (Mandela, 2020).

$$PBB = \frac{TC - (r \times TC)}{UE} \quad (4)$$

Description:

PBB = Construction of abrasion-resistant buildings (Rp/year)

TC = Total cost (estimated value of making a breakwater x length of coastline)

R = The reference interest rate uses the BI rate (%)

UE = Economic age (year)

The value of indirect benefits is determined using coral reefs' role as carbon sinks. The dosage response approach is used to determine the economic value. This method can detect output reduction (as a reaction) from a resource as a result of environmental quality (dose) degradation. The output loss can be estimated using market pricing or based on shadow prices to calculate the expenses associated with damage or pollution. The following equation can be used to determine the carbon sink function of the coral reef ecosystem (Mandela, 2020).

$$MPK = Lak \times L \times p \times std UMK \text{ (tonC/h/year)} \quad (5)$$

Description:

MPK = Benefits as carbon storage (Rp)

Lak = Accumulation rate (tonC/h/Tahun)

L = Coral reef area

Std UMK = Regional Minimum Wage standardization

c. Option Value

Option value is obtained from choosing to preserve goods and services from the ecosystem in the UKNP MCA. The calculation is approached using the CVM (Contingent Valuation Method) method, through interview techniques or interviews with the community, fishermen and tourists about their willingness to pay (WTP) or receive (WTA) using the following formula (Wahyuni et al., 2014).

$$MP = \frac{[\sum_{i=0}^n MPi]}{n} \quad (6)$$

d. Bequest Value

The heritage value of mangrove and coral reef ecosystems is estimated based on the value that the community wishes to give or pay for resources that they wish to maintain or preserve and provide for future generations. Heritage value is usually not traded on the market, so it is often difficult to measure. To obtain its economic value, it is approached using the CVM (Contingent Valuation Method) method. The respondents expressed their willingness to pay (WTP) and receive (WTA) verbally and in writing to the community, fishermen and tourists in maintaining the ecosystem in the UKNP MCA, using a formula (Wahyuni et al., 2014).

$$MW = \frac{[\sum_{i=0}^n MWi]}{n} \quad (7)$$

e. Existence Value

The benefits of existence are estimated based on the benefits of providing fish catchment areas and mariculture areas. These two things show the importance of the function of mangrove and coral reef ecosystems. To obtain the value of the two ecosystems, the Continget Valuation Method (CVM) method is used. The formulation to see the WTP value of the benefits of existence using the CVM approach is as follows (Wahyuni, et al., 2014).

$$MK = \frac{[\sum_{i=0}^n MKi]}{n} \quad (8)$$

Data analysis used to answer the feasibility of determining the UKNP MCA includes:

1. Net Present Value (NPV) is a formula to determine the deviation of the amount of capital towards the amount of net profit (Almeida et al., 2004).

$$NPV = \sum_{t=0}^n \frac{(B_t - C_t)}{(1+r)^t} \quad (9)$$

Description:

B_t = Profit value (t-th year)
 C_t = Cost value (t-th year)
 r = Discount factor (%)
 t = Year (t)

2. Net Benefit Cost Ratio (Net B/C) is a formula to determine the comparison between the amount of revenue in a business unit to the capital spent in an effort to get that revenue (Basten et al., 2010).

$$Net\ B/C = \frac{\sum_{t=1}^n \frac{(B_t - C_t)}{(1+i)^t}}{\sum_{t=1}^n \frac{(C_t - B_t)}{(1+i)^t}} \quad (10)$$

Description:

B_t = Nilai keuntungan (tahun ke-t)
 C_t = Nilai biaya (tahun ke-t)
 i = Nilai diskon (%)
 t = Tahun (t)

3. Internal Rate of Return (IRR) is a benchmark for the efficiency of a type of business or project which is one of the economic feasibility indicators (Harding et al., 2018).

$$IRR = i_1 + \frac{NPV_1}{NPV_1 - NPV_2} \times (i_1 - i_2) \quad (11)$$

Description:

i₁ = Discount value for NPV (+)
 i₂ = Discount value for NPV (-)
 NPV1 = NPV (+)
 NPV2 = NPV (-)

RESULT AND DISCUSSION

Economic Valuation of the Ujung Kulon National Park Marine Conservation Area (MCA UKNP)

The results of economic calculations for the mangrove ecosystem are as shown in Table 1.

Table 1. Economic Value of Mangrove Ecosystems

No	Types of Benefits	IDR/Ha/Year	IDR/Year	%
A	Benefit Value	188,402,316	599,360,519,321	49.33
1	Direct Benefits	74,058,995	235,602,399,321	19.40
2	Indirect Benefits	35,642,257	113,388,000,000	9.33
3	Choice Benefits	78,701,604	250,370,120,000	20.60
B	Not Benefit Value	193,552,580	615,744,951,250	50.67
4	Inheritance Benefits	102,820,357	327,100,345,000	26.92
5	Benefits of Existence	90,732,223	288,644,606,250	23.75
Total Economic Value (A + B)		381,954,896	1,215,105,470,571	100.00

Table 1 shows the results of economic valuation calculations for the value of the mangrove ecosystem. The direct benefit value was calculated from the tourism function using the TCM approach with a total of 40 respondents. The areas of origin of some tourists come from Serang, Tangerang, Jakarta, Bekasi, Depok, Bandung and Bogor, as well as a small number of foreign tourists. The number of mangrove tourist visits in 2019 was 23,423 people, where each tourist spent approximately IDR 1,626,555.00 and a Consumer Surplus (CS) value of IDR 10,058,592 obtained an economic value of IDR 235 billion per year.

The replacement cost method is used to calculate the indirect use value of the mangrove ecosystem which is taken from its benefits as a coastline guard (abrasion). The cost component for building abrasion protection is calculated based on the cost of building the wall per meter. Based on data from the Banten Province Public Works Department in 2020, it was found that the cost of building procurement per meter was IDR 17.2 million per meter, the length of the coastline in the UKNP marine conservation area was approximately 6,600 meters, so the cost of constructing a protective wall was IDR 113 billion per meter. year.

Benefits of choice, inheritance and existence using the CVM (Contingent Valuation Method) approach using Stated Preference data. The data used are the results of interviews with the community, fishermen and tourists totaling 40 respondents. The population is 24,167 people, so the value of 1) optional benefits with a WTP value of IDR 149.23 billion, and WTA IDR 351.51 billion, has a value of IDR 250.37 billion per year, 2) inheritance benefits with a WTP value of IDR 190, 80 billion and WTA IDR 463.40 billion has a value of IDR 327.10 billion per year, and 3) the benefits of existence with a WTP value of IDR 169.80 billion and WTA IDR 407.52 billion have a value of IDR 288.64 billion per year .

Next, the results of calculating the economic value contained in the coral reef ecosystem are as shown in Table 2.

Table 2. Economic Value of Coral Reef Ecosystems

No	Types of Benefits	IDR/Ha/Year	IDR/Year	%
A	Benefit Value	234,227,101	688,203,725,779	49.50
1	Direct Benefits	105,756,895	310,733,852,456	22.35
2	Indirect Benefits	30,611,700	89,942,990,823	6.47
3	Choice Benefits	97,858,506	287,526,882,500	20.68
B	Not Benefit Value	238,991,486	702,202,393,750	50.50
4	Inheritance Benefits	126,646,467	372,111,382,500	26.76
5	Benefits of Existence	112,345,019	330,091,011,250	23.74
Total Economic Value (A + B)		413,555,785	1,390,406,119,529	100.00

Table 2 shows the results of economic valuation calculations for the value of coral reef ecosystems using the TCM approach with a total of 40 respondents, and some of the tourists came from Cilegon, Serang, Jakarta, Tangerang, Jakarta, Bekasi, Depok and Bandung, plus foreign tourists. Benefit value directly calculated from the function of coral reefs as tourist attractions. The number of tourist visits to coral reefs in 2019 was 23,423 people, where each tourist spent approximately IDR 1,613,250 and a Consumer Surplus (CS) value of IDR 13,266,185 obtained an economic value of IDR 310.7 billion per year.

Indirect benefits of coral reefs are taken from the function of coral reefs as carbon sinks. The calculation of carbon uptake values refers to Nybakken (1998) where coral reefs are capable of absorbing 1,500 – 3,500 g C/m²/year of carbon or 15 – 35 tonnes C/Ha/year. The carbon price refers to the results of the 2020 IPCC (Intergovernmental Panel Climate Change) report, namely the value of 1 ton of carbon is \$ 60 tons/Ha/Year, using an assumed price of US\$ 1, namely Rp. 14,577. So with an area of coral reefs in the UKNP MCA of 2,938.19 Ha, the economic value is IDR 89,942,990,823 per year.

Benefits of choice, inheritance and existence using the CVM (Contingent Valuation Method) approach using Stated Preference data. The data used are the results of interviews with the community, fishermen and tourists totaling 40 respondents. The population is 24,167 people, so the value of 1) optional benefits with a WTP value of IDR 158.54 billion, and WTA IDR 416.52 billion has a value of IDR 287.53 billion per year, 2) inheritance benefits with a WTP value of IDR 205 billion and WTA IDR 539.32 billion has a value of IDR 372.11 billion per year, and 3) the benefits of existence with a WTP value of IDR 181.10 billion and WTA IDR 479.11 billion have a value of IDR 330.10 billion per year.

Details of the total economic value of UKNP MCA resources which consist of mangrove and coral reef ecosystems, are as shown in Table 3.

Table 3. Total Economic Value

No	Ecosystem Type	IDR/Ha/Year	IDR/Year	%
1	Mangrove Ecosystem	381,954,896	1,215,105,470,571	46.64
2	Coral Reef Ecosystem	413,555,785	1,390,406,119,529	53.36
Total Economic Value (A + B)		795,510,680	2,605,511,590,100	100.00

Table 3 shows the total economic value of UKNP MCA resources worth IDR. 2,605,511,590,100 consisting of mangroves IDR 1,215,105,470,571 (46.64%) and coral reefs IDR 1,390,406,119,529 (53.36%). Table 3 shows that the economic value of coral reef ecosystems is higher than mangrove ecosystems. This means that the coral reef ecosystem in the UKNP MCA has a higher benefit value than the mangrove ecosystem. Ecologically, coral reefs are the leading ecosystem in protecting other ecosystems such as seagrass beds and mangroves, therefore coral reefs are often referred to as the "tropical rainforest" of the ocean. Coral reefs provide protein and carbohydrates through various types of reef fish and protect coastal areas from storms and waves. According to research results, coral reef ecosystems throughout the world provide goods and services equivalent to 375 billion US dollars per year (Bryan et al., 1998). According to Tomascik (1993), marine tourism areas such as Bunaken, Gili and the Thousand Islands depend on the quality of coral reefs.

Economic Analysis of the Ujung Kulon National Park Marine Protected Area (MCA UKNP)

Economic analysis is intended to estimate the feasibility of managing the UKNP MPA, namely by comparing benefits and costs. Costs compared to benefits aim to find out whether the business being run is getting benefits or not (Suwarsono 2000). Benefit is a description of the profits obtained by managers, entrepreneurs and the community from the UKNP MCA, while costs are the capital or budget spent to maintain and maintain the UKNP MCA. More detailed value of UKNP MCA benefits is as shown in Table 4.

Table 4. Estimated Benefits of MCA UKNP

No	Benefits	Amount	Unit	Price (IDR)	Amount (IDR)
1	Canoeing	1,377	Person	25,000	34,425,000
2	Surfing	18	Person	25,000	450,000
3	Fishing	165	Person	25,000	4,125,000
4	Entrance ticket				
	a. Indonesian Tourists	22,409	Person	10,500	235,294,500
	b. International Tourists	1,014	Person	153,000	155,142,000
5	Forest Exploration	3,221	Person	5,000	16,105,000
6	Snorkeling	731	Person	15,000	10,965,000
7	Ship docking costs	1,079	Trip	100,000	107,900,000
8	Research Activities	1	Person	1,140,000	1,140,000
9	Wildlife Observation	2,940	Person	10,000	29,400,000
10	Camping	156	Person	5,000	780,000
11	Commercial Video Creation				
	a. Indonesian Tourists	1	Package	10,000,000	10,000,000
	b. International Tourists	2	Package	20,000,000	40,000,000
12	Ship/Boat Rental	1,079	Trip	3,500,000	3,776,500,000
13	Villa/Cottage Rental	3,350	Villa	750,000	2,512,500,000
14	The beneficial value of coral reefs	1	Ecosystem	330,091,011,250	330,091,011,250
15	The beneficial value of mangroves	1	Ecosystem	288,644,606,250	288,644,606,250
Total					619,381,347,311

The high diversity of ecosystem potential in the MCA UKNP provides high tourism potential, including beach tourism (sunset, sunrise, sun bathing, panorama and others) and marine tourism (snorkeling, diving and fishing). Paying attention to data from UKNP, it is found that tourism income from tourist tickets/entrance tickets is IDR 390,436,500 per year. This value is obtained from the proceeds from the sale of tickets to enter the area. If you look at the potential and breadth of the area and the various tourism potentials within it, the income value from tourism is still considered low because accessibility factors and promotional factors are still relatively lacking.

Specifically, the estimation of the benefit value of coral reefs and mangroves is obtained using the WTP (willingness to pay) approach. The approach technique used to estimate the WTP value of the UKNP marine conservation area is the CVM method. Meanwhile, the MCA UKNP costs are as shown in Table 5.

Table 5. Estimated Costs of MCA UKNP

No	Fees	Amount	Unit	Price (IDR)	Amount (IDR)
1	Initial investment fee				
	a. PT, Wana Wisata Alam Hayati	1	Package	21,647,625,000	21,647,625,000
	b. UKNP	1	Package	3,150,000,000	3,150,000,000
2	UKNP area maintenance costs	1	Year	331,250,000	331,250,000
3	Operational costs for the UKNP area	1	Year	853,960,000	853,960,000
4	Social costs (potential fishery income) from fishermen/community	1	Year	14,246,237,000	14,246,237,000
5	Pay taxes on investor expenses				
	- PT, Wana Wisata Alam Hayati	1	Year	251,250,000	251,250,000
	- UKNP	1	Year	645,726,500	645,726,500
6	Security/security costs				
	- UKNP	1	Year	704,090,000	704,090,000
7	Licensing fees and environmental documents				
	- PT, Wana Wisata Alam Hayati	1	Package	649,300,000	649,300,000
Total					42,479,438,500

Determining the UKNP MCA as a tourist area certainly requires costs, such as; operational costs, social costs, initial investment costs, security costs, maintenance costs, taxes, and licensing costs. The annual routine costs for managing the UKNP MCA are operational costs that must be incurred. Social costs are costs arising from changes in the function of water areas from natural resource utilization areas to conservation areas. This change causes a loss of potential income for fishermen who were initially able to catch fish in the area, becoming unable to catch (prohibited) because the area has changed its function to a conservation area. In other words, there has been a change in the natural resource management regime from an open access regime to a state poverty regime.

The survey results showed that there were three types of fishermen groups, namely; Bagan, Cantrang and Purse Seine fishermen groups. The research results showed that the three groups had potential income from catches after deducting fishing operation costs of IDR 14,246,237,000 per year. The loss of potential income is due to the loss of access to extract fish resources. Changing the status of an area to a conservation area means that community (fishermen) access to resources becomes limited and even disappears. These overall costs become cost variables in regional economic analysis calculations. Where the economic analysis of the UKNP MCA is estimated into three main criteria, namely; NPV, Net B/C, and IRR. The following are the results of the UKNP MCA economic analysis (Table 6).

Table 6. Results of Analysis of Financial and Economic Aspects of MCA UKNP

No	Parameter	Financial Analysis	Economic Analysis	Indicator	Decision
1	NPV (Rp)	1.963.392.508.016	1.927.390.315.754	> 0	Feasible
2	Net B/C	21,28	19,30	> 1,0	Feasible
3	IRR (%)	39,54	39,43	> 20% (MARR)	Feasible

Based on the data in Table 6, it shows that the NPV value, both financial and economic, is > 0, so the investment can be declared feasible. Brigham & Houston (2011) added that if an investment is to be considered worthy, it must have an NPV value that is positive or more than zero. Thus, it is found that the establishment of the UKNP MCA can provide quite high profits in the future.

Net B/C is defined by Ha (2009) as a comparison between all benefit values and all cost values. Or it could also be that Net B/C provides an example of how much profit will be obtained from the costs that investors or entrepreneurs incur in an activity or project that will be carried out (Cellini & Kee, 2015). In other words, Net B/C in analyzing an activity or project can provide an idea of the ratio of profits that will be obtained (Sen, 2000). The analysis results show that the Net B/C value is 19.30 or > 1.0, which means that determining the area as a UKNP MCA provides benefits or is feasible. In other words, if the UKNP MCA is determined, a profit of 19.30 times will be received by the government or the community from the initial investment capital invested.

IRR is used as a benchmark to gain efficiency in a business or project (Harding et al. 2018). IRR is one of the indicators of economic feasibility. A business or project being carried out is considered good when the IRR value is greater than the MARR value. According to Gallo (2016), MARR is the minimum interest rate of return that is attractive for the business to be invested. In other

words, if someone has capital to invest in a business, he will receive an increase in the value of his money by a certain percentage, which is of course higher than the interest on the money when it is only deposited (saved in the bank) (Psacharopoulos, 1994). In this business feasibility analysis, the MARR assumption used is 20%. The results of the analysis obtained an IRR value of 39.43%, which means it is much greater than the MARR value of 20% ($IRR > MARR$). These results mean that the designation of the area as a UKNP MCA is feasible.

Observing the results of the economic analysis calculations, it is concluded that the determination of the UKNP MCA is declared feasible. This statement provides an understanding that the existence of the UKNP MCA has great potential from an economic perspective. Therefore, sustainable management must be carried out so that society and the government can utilize and obtain this economic potential.

CONCLUSION AND SUGGESTION

Conclusion

The results of the economic valuation show that non-use value has a higher economic value than use value. This shows that the community still has high concern and awareness that the MCA UKNP, which has high resource economic value, must be protected and preserved for both current and future generations. Furthermore, from the results of the financial and economic analysis, the MCA UKNP was declared feasible to be implemented. These results show that the establishment of the MCA UKNP will provide benefits for the management and the community of IDR. 1.93 T, for investors 19.30 times the amount of investment capital and will increase the value of the money by 39.43% compared to saving it in the bank.

Suggestion

The MCA UKNP is a conservation area that needs to be protected in order to maintain its existence and sustainability, and the results of the economic valuation analysis show that the MCA UKNP has a very high value. Additionally, the results of the financial and economic analysis show that establishing the MCA UKNP is feasible. Given the findings of these two analyses, it is crucial to manage the maritime conservation area of Ujung Kulon National Park sustainably in order to preserve the ecosystem and natural resources.

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