

Analysis Benefit Costs, Number of Tourist Visits (Domestic & International) and Per Capita Income on Conservation Forest Management in Jambi Province

Muhammad Safri*

Lecturer at the Faculty of Economics and Business, Jambi University, Indonesia; E-mail: m_syafri@unja.ac.id

Abstracts: This study aims to analyze the effect of benefit costs (X1), the number of visits by domestic tourists or foreign tourists (X2) and per capita income (X3) on the management of Jambi Province's conservation forest (Y). The data in this study were analyzed using Benefit Cost Ratio (BCR) analysis and multiple linear regression tests. Benefit cost analysis is carried out to calculate the amount of benefits and costs required from a project, if $BCR \geq 1$ then the project is considered feasible and vice versa if $BCR \leq 1$ is considered not feasible. And multiple linear regression analysis is used to determine the effect between variables. The results of the BCR calculations all get results ≤ 1 , then there is an influence given by the variables X1, X2, X3 on variable Y. So it can be concluded that the project was declared not feasible.

Keywords: Benefit Costs, Tourist Visits, Income Per Capita, Conservation Forest.

1. INTRODUCTION

Forest is a natural resource with high socio-economic value. Forest areas are complex natural resource areas, rich in biodiversity (Marwanto, 2022). Forests are natural resources that will never run out, providing great benefits for living organisms (Melaponty et al, 2019). Therefore, the survival system that exists there must be maintained and preserved through good forest management (Hajawa, 2005, p. 59). In the Forestry Law no. 41 of 1999, according to its function, forests in Indonesia are divided into conservation forests, protected forests and production forests. Conservation forest is a forest whose main function is to maintain and protect the diversity of plant, animal and ecosystem species contained therein (Salataholy et al, 2022). Protected forest is a forest area whose main function is to protect life support systems, regulate water management, prevent flooding, prevent erosion, prevent sea water infiltration, and maintain soil fertility. Production forest is a forest area created intentionally, with the main function of producing and providing forest to meet production needs without disturbing the primary forest ecosystem. Production forests include annual production forests, limited production forests and converted production forests. with the main function of producing and providing forest to meet production needs without disturbing the primary forest ecosystem. Production forests include annual production forests, limited production forests and converted production forests. with the main function of producing and providing forest to meet production needs without disturbing the primary forest ecosystem. Production forests include annual production forests, limited production forests and converted production forests.

However, there is a tendency for humans to encroach on forests to fulfill their desires, original forest lands are cleared and used as agricultural, livestock and industrial lands (Kartodiharjo & Supriono, 2000). There are times when community activities in forest areas threaten forest conservation and protection efforts (Diantoro, 2010). To prevent this, the government through the Ministry of Environment and Forestry really supports and appreciates local governments in efforts to develop and protect forests. By allocating funds for forest development and protection.

The allocation of APBN funds for the Forestry Sector from the central government to the UPT Forestry and the regional government of Jambi province is devoted to forest conservation. The management of the budget is handed over to the Ministry of Forestry of Jambi Province. As mentioned above, the main purpose of this funding is to conserve forest areas, however conservation forest management generates Non-Tax State Revenue (PNBP). Things like this are commonly done by the central government to regional governments where there are national parks or conservation lands (Tara, 2014).

Later in its development, the forest that has been managed can be used as a tourist area for educational, recreational and economic support for the community around the forest. To attract tourists, forest areas should be managed as well as possible without forgetting the aspect of forest conservation. The more tourists who are interested in visiting, it is hoped that the life of the people around the forest area will improve.

Based on the background described above, the researcher wants to examine the effect of the benefits costs incurred by the government, the number of visits by domestic and foreign tourists and income per capita on the management of conservation forests in Jambi Province.

2. METHOD

The method used in this study uses secondary data analysis and observation methods. Secondary data analysis method is the process of analyzing existing data without conducting interviews, surveys, observations, and several other data collection techniques. The data sources used are sources collected and managed by BPS Jambi Province for the 2002-2016 period. The secondary data analysis method was used to determine the effect of the number of visits by domestic and foreign tourists and Jambi province's per capita income on conservation forest management in Jambi Province.

Benefit cost analysis is carried out to calculate the amount of benefits and costs required from forest conservation projects (Utami and Indriyani, 2013). In this research to find out the comparison between the total value of benefits and the total value of sacrifice (cost) for funding conservation forest areas led by the central government for Jambi province, a Benefit Cost Ratio analysis has been made.

$$BCR = \frac{PVB \text{ (Present Value Benefits)}}{PVC \text{ (Present Value Cost)}}$$

Information :

BCR = Benefit Cost Ratio

PVB = Present value of revenue

PVC = Present value of expenses

- If $BCR \geq 1$, the benefits of the project are said to be greater than the sacrifices incurred, so the project is acceptable or feasible.

- Conversely, if the $BCR < 1$, the benefits of the project are said to be less than the sacrifice or the project is not feasible.

The multiple linear regression analysis method was used to determine the effect of the benefits costs incurred by the government, the number of domestic and foreign visitors, and per capita income of Jambi Province with the following formula (Sugiyono, 2008):

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + e$$

Information:

- a = Constant
- b1 – b3 = Regression coefficient
- e = Error
- X1 = Benefit Cost
- X2 = Number of tourist visits (domestic & foreign)
- X3 = IncomePer Capita

3. RESEARCH RESULTS AND DISCUSSION

3.1. Research result

3.1.1. Cost Benefit Analysis

The calculation of the benefit cost ratio (Benefit Cost Ratio) is a method of calculating investment feasibility. The cost-benefit ratio is the comparison between the benefits and costs of a project. Basically, calculating the feasibility of this investment method focuses more on the benefits and sacrifices (costs) of an investment, both business and projects (Dadimesa, 2020). In general, the type of investment that is commonly used is a government project whose type of return is a direct benefit, that is, a benefit that is felt directly by many people.

In this case, if $BCR \geq 1$, then the benefits of the project are said to be greater than the sacrifices incurred, so that the project is acceptable or feasible. Conversely, if $BCR < 1$, the project is considered not feasible. Based on the calculations performed, the results of the cost-benefit analysis are as follows.

Table 1. Cost Benefit Analysis of Conservation Forest Management in Jambi Province

| Year | Tax Free Income | Government Spending | B/C Ratio |
|------|-----------------|---------------------|-----------|
| 2002 | 32,184,500 | 5,422,400,370.00 | 0.005935 |
| 2003 | 32,763,200 | 7,083,100,394.00 | 0.004626 |
| 2004 | 25,296,000 | 10,061,370,497.60 | 0.002514 |
| 2005 | 36,617,000 | 12,422,358,828.80 | 0.002948 |
| 2006 | 32,723,000 | 6,845,664,185.00 | 0.004780 |
| 2007 | 38,780,000 | 8,752,884,112.20 | 0.004431 |
| 2008 | 38,458,200 | 8,497,252,345.60 | 0.004526 |
| 2009 | 30,351,075 | 9,057,849,957.40 | 0.003351 |
| 2010 | 36,134,700 | 11,845,448,109.00 | 0.003051 |
| 2011 | 42,631,040 | 20,308,433,499.40 | 0.002099 |
| 2012 | 70,837,615 | 23,779,625,163.40 | 0.002979 |
| 2013 | 72,481,660 | 27,627,973,317.40 | 0.002623 |
| 2014 | 186,730,679 | 21,389,993,885.00 | 0.008730 |
| 2015 | 101,686,500 | 23,737,121,346.20 | 0.004284 |
| 2016 | 177,092,000 | 19,992,306,558.40 | 0.008858 |

Based on the results of the RAC analysis in Table 1, it can be seen that the RAC ratios obtained were all < 1 , so that based on the feasibility of project financing, the project was not feasible. However, in this case, the conservation forest management project is managed not for the real use of forest products such as wood and other forest products such as rattan, resin, etc., but for environmental services, which in this case are very valuable, so that the maintenance of managed reserves continues.

3.1.2. Multiple Linear Regression Analysis

Because there is more than one independent variable, multiple regression is used to see the effect of the independent variables on the dependent variable. This analysis was conducted to determine the effect of the number of domestic visitors, the number of foreign visitors, Jambi province per capita income, foreigners per capita income and PNPB in Jambi province. From the analysis performed with the evIEWS version 8 program, the results of multiple linear regression analysis were obtained as follows.

$$Y = -10109506 + 251578.9X_1 - 10625179X_2 + 3.062298X_3 + e$$

$$\text{Sig}X_1 = 0.2564$$

$$\text{Sig}X_2 = 0.3371$$

$$\text{Sig}X_3 = 0.0000$$

$$R\text{-Square} = 0.728907$$

$$\text{Adjusted } R\text{-Square} = 0.712770$$

$$F\text{-Statistics} = 45.17126$$

$$\text{Prob } (F\text{-Statistics}) = 0.000000$$

From the statistical probability value F (significant F) obtained 0.5, then the ability to explain the response variable of the predictor is strong. Whereas if the value < 0.5 , the predictor is not strong enough to explain the response variable. In panel data regression, an R-Square value of 0.728907 is obtained, which means that the predictor variable has good explanatory power for the response variable.

Adjusted R-squared is the overall effect size or predictive power of variance for explaining the response variable by observing the standard error. The interpretation is the same as for R-Square, but this value has been corrected for standard error. Based on the test, the adjusted R-squared value is 0.712770, which means that the predictor variable has a stronger explanatory power than the response variable.

3.2. Analysis of Number of Domestic & International Visitors

3.2.1. Analysis of Number of Domestic Visitors

Simple linear regression test which gets the following results.

$$Y = -54349462 + 85856.09X + e$$

$$\text{Sig} = 0,0000$$

$$R\text{-Square} = 0.548863$$

$$\text{Adjusted } R\text{-Square} = 0.543376$$

The equation above obtains a sig value < 0.05 , which means that there is a significant effect individually on the number of domestic visits on Non-Tax State Revenue (PNBP) for conservation forests in Jambi Province. This is reinforced by the R-square and Adjusted R-Square tests, each of which has a value of 0.548863 and 0.543376, which means that the predictor variable is strong in explaining the response variable. The number of domestic tourists fluctuated in the 2013-2018 period. In 2016 it decreased by 5%, then increased again in 2017 by 105% in 2018, an increase of only 60% of the previous total national tourist visits (Adrianto et al., 2018).

3.2.2. Analysis of Number of International Visitors

Simple linear regression test which gets the following results.

$$Y = -53489095 + 4275191X + e$$

| | | |
|--------------------------|---|----------|
| <i>Sig</i> | = | 0,0000 |
| <i>R-Square</i> | = | 0.547301 |
| <i>Adjusted R-Square</i> | = | 0.542157 |

The above equation obtains a sig value <0.05, which means that there is a significant effect individually on the number of foreign visits on Conservation Forest Non-Tax Revenue (PNBP) in Jambi Province. This is reinforced by the results of the R-square test and Adjusted R-Square which each get a value of 0.547301 and 0.542157, which means that the predictor variable is strong in explaining the response variable.

Based on research by Adrianto et al (2018), there were fluctuations in the number of foreign tourists to Jambi Province, especially Kerinci in 2013-2018. The highest number of foreign tourists was recorded in 2016 with 7,465 foreign tourists. In 2017 it decreased by around 61%, then increased again in 2018 by 115%.

3.3. Income per capita

Simple linear regression test which gets the following results.

$$Y = 2570475 + 2.586583X + e$$

| | |
|--------------------------|----------|
| <i>Sig</i> | 0.0000 |
| <i>R-Square</i> | 0.639217 |
| <i>Adjusted R-Square</i> | 0.635117 |

The equation above obtains a sig value <0.05, which means that there is a significant influence individually on Jambi Province per capita income on Non-Tax State Revenue (PNBP) for conservation forests in Jambi Province. This is reinforced by the results of the R-square test and Adjusted R-Square which each get a value of 0.639217 and 0.635117, which means that the predictor variable is strong in explaining the response variable.

4. DISCUSSION

From the analysis of the cost benefit ratio it is known that the BCR ratios obtained are all <1. This suggests that it is not economically feasible to manage protected areas because the costs involved do not generate economically viable benefits. The value of the benefits generated in this calculation include benefits derived from entry fees for protected forest areas, tourism activities, parking fees, research costs, related vehicle costs, etc. related to nature tourism, wildlife resettlement and environmental services in the area. area. form of social costs to social externalities of conservation). However, in this case, the feasibility of managing a protected area does not only consider the economic benefits but also the services from the protected area.

As is known, the environmental benefits brought by protected forests are maintaining the balance of ecosystems, the use of living natural resources and their ecosystems in a sustainable manner is expected to be side by side with efforts to maintain their sustainability. All the environmental benefits provided by protected forests are very beneficial for human life and welfare. However, the value cannot be calculated with certainty, so it is not calculated as a benefit in rupiah. Even if possible, this value is still much higher than the PNBP used as an estimate when calculating benefits in the calculations carried out in this study. This is a limitation of this research, in particular there is no data that takes into account the environmental services of protected forests. In this case,

In fact, environmental services are difficult to value in monetary units, so BCR pricing is not an option because it is difficult to answer the question "how much is environmental services worth in terms of money, for example?". The difficulty in answering this question is that biological resources and environmental services in protected areas have not been measured at market value, so there is no clear market value.

The number of local and foreign tourists is also another variable that has a positive and significant effect on the NTSR. This effect is very clear, the more visitors, the higher the NTSR value. A positive and significant influence on the number of tourists comes from donations from ticketing services, tourism activities, parking fees, research costs and vehicle costs related to nature tourism.

Per capita income has a major influence on NTSR because per capita income is directly proportional to the ability to prepare travel expenses. The higher the per capita income of Jambi residents, the greater the ability to finance travel. In fact, the cost of visiting the nature reserve is quite expensive because it is far from the city (located inland). To travel to the Kerinci Seblat National Park conservation area, for example, the trip will take at least 10 hours if tourists from Jambi take the road from Jambi City to Sungai Full. If you come from West Sumatra, you can use several alternative routes. One of them went from Padang to Tapan then to Sungai Full. This route takes about 7 hours on the road. There is also another alternative, namely through Muaralabuh, South Solok Regency. This route is closer, around 5-6 hours (<https://www.place.co.id> accessed 10 February 2018). The huge cost to enjoy the natural beauty of the Jambi Province Nature Reserve requires the availability of tourism funds. This is why per capita income plays the most important role in the NTSR.

From the Adjusted R-Square and R-Square values, it is known that the highest values are Jambi province's per capita income, the number of domestic visits, and the number of foreign visits.

CONCLUSION

Based on the research that has been determined it can be concluded that:

1. From the BCR calculations that have been carried out, all of them get results ≤ 1 , which results indicate that the benefits costs incurred by the government do not directly affect the economy of the community around the conservation forest area but have a direct impact on the forest environment. Which impact on the forest environment has a value that cannot be measured in monetary terms.
2. The number of domestic tourists and foreign tourists affects the economy of the community around the conservation forest and also has a direct impact on the management of the conservation forest.
3. Per capita income has a significant influence on conservation forest management. The greater the per capita income, the more you can budget for tourism to conservation forests. Which can support the management and development of conservation forests.

Suggestion

1. Government expenditure that has been disbursed as benefit costs should be used more wisely and efficiently for the sake of better sustainable management of conservation forests.
2. It is hoped that all communities and related agencies can work together to manage conservation forest areas so that visitors, both local and foreign, can be attracted to visit managed conservation forests.
3. If the conservation forest area is considered good, then people with high incomes can budget for tourism trips to conservation forests.

REFERENCES

- [1] Alam, Syamsu and Hajawa, (2007), "The Role of Forest Resources in the Economy and the Impact of Forest Rent Collection on Forest Sustainability in Gowa District", *Perennial Journal*, 3(2), p. 59-66 .
- [2] Djajadiningrat, Surna Tjahja, Yenis Hendriani, Melia Famiola, (2014), *Green Economy*, Bandung: Engineering Science.
- [3] Hasni, (2016), *Law on Spatial Planning and Land Use in the Context of UUPA-UUPR-UUPPLH*, Third Edition, Jakarta: PT Raja Grafindo Persada.

- [4] Jambi in Figures, (2017), Jambi: Jambi Provision Central Statistics Agency.
- [5] John, Kathy Mackinnon, Graham Child, Jim Thorsell, (1990), Management of Protected Areas in the Tropics, Translated by Harry Harsono Amir, Yogyakarta: Gadjah Mada University Press.
- [6] Kartodihardjo, Hariadi and Agus Supriyono, (2000), "The Impact of Sectoral Development on Conversion and Degradation of Natural Forests: Cases of HTI and Plantation Development in Indonesia", Periodic Paper, Number 26 (I), p. 1- 17.
- [7] Jam, F.A., Khan, T.I., Zaidi, B., & Muzaffar, S.M. (2011). Political Skills Moderates the Relationship between Perception of Organizational Politics and Job Outcomes.
- [8] Muljana, BS, (2001), National Development Planning, National Development Plan Development Process with a Focus on Repelita V, Jakarta: UI Press.
- [9] N., B. Hendryo, (2017), Environmental Buffer Forest and State Competitiveness, First Edition, Yogyakarta: Taman Pustaka Foundation.
- [10] Soemarwoto, Otto, (2011), Self-Organization: New Paradigm of Environmental Management, Environmentally Friendly Development, Pro-People, Sustainable Economy, Yogyakarta: Gadjah Mada University Press.
- [11] Sugiyono, (2013), Administrative Research Methods, Bandung: Alfabet.
- [12] Sukirno, Sadono, (1981), Introduction to Economic Theory, Jakarta: Publishing Institute of the Faculty of Economics, University of Indonesia.
- [13] Widada, (2008), Supporting Effective Management of National Parks Through Developing a Prosperous Conservation-Aware Society, Jakarta: JICA (Japan International Cooperation Agency)

DOI: <https://doi.org/10.15379/ijmst.v10i3.1768>

This is an open access article licensed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>), which permits unrestricted, non-commercial use, distribution and reproduction in any medium, provided the work is properly cited.