Developing green tourism to create the sustainable landscape: evidence from Community-based Coffee Tourism (CbCT) in Puncak, Bogor, Indonesia

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Abstract. Indonesia went through 3.5% growth in 2019, over the last five years in the travel and tourism sector, while the global economy increased by 2.5%. Currently, this condition encourages the creation of new jobs. Surprisingly, nowadays, there is increasing awareness of people contributing to the triple bottom line of sustainable development through initiating green tourism. Community-based Coffee Tourism (CbCT) has been running in the Puncak area for about five past years as green tourism has drawn people to come. Over time there are some significant changes in an area relating to several aspects of the three bottom line of sustainability. Through this study, we are going to 1) identify the impact of green tourism on the environment/landscape through the ecological approaches using the Social Ecological System (SES) framework and 2) to identify the contribution green tourism to the local economy using the Basic Income analysis and Benefit and Cost analysis methods. Based on the SES framework, the results show that there are some aspects from the SES framework that will be effective in the context of the case study, if there is a combination between the conservation activities and economics, which gives a direct impact on the local income. This study indicated that green tourism through CbCT has contributed to the increasing individual community income from 13.19% or IDR 2,375,000/year/person to 76% or IDR 13,680,000/year/person. Based on B/C ratio analysis, it shows that green tourism is financially reliable to be developed at 5% and 10% of growth level, even at zero growth of the business. Hence, CbCT should be continuously developed as green tourism practices that contribute significantly to the community's income and ecological improvement to support a sustainable landscape management strategy.

Keywords: Community-based coffee tourism, Ecological approaches, Green tourism, Social-ecological system, Sustainable landscape

1. Introduction
Over the past five years, Indonesia experienced a growth of 3.6% in 2019 in the travel and tourism sector while the global economy increased by 2.5% [1]. Tourism creates new jobs, generating employment and making an ample opportunity to make money [2] but at the same time has a negative influence on the environment and social aspect.

Nowadays, the awareness of people to nature is increasing since it has promoted the quality of life through health, relaxation, and benefit from environmental services [4]. People utilize natural resources for livelihood, looking for food, and other benefits [5]. Conflicts might happen regarding the use of natural resources. There should be an excellent exit to resolve the conflicts which consider environmental aspects by conserving it [6], economic by generating some economic benefits [7] and social by encouraging the stakeholders’ participation [8]. Cibulao’s people, who live in the mountain area, employ natural resources as a center to create tourism attractions. Understanding how the system worked within the community is significant to ensure the sustainability of the environment
and community. Cibulao’s people offered green tourism named Community-based Coffee Tourism (CbCT) as their appreciation for the extraordinary nature they have.

2. Literature review

2.1. Landscape, green tourism, and sustainable tourism
Landscape is seen as a mosaic of interacting ecosystems. This definition is strengthened by [9], who clarified landscape as a heterogeneous land area composed of a cluster of interacting ecosystems. How people meet their needs in many aspects can contribute to the landscape alteration. The landscape provides many natural features to be used as tourist attractions like experience of landscape such as mountains, forests, rivers, lakes, lawns, waterfalls, etc. According to UNEP and UNWTO [10], sustainable tourism is tourism that considers economic, social, and environmental impacts, in the present and future. Green tourism is one of the sustainable tourism, which nowadays, is seen as a way to conserve the destination from a negative impact on the sustainable landscape.

2.2. Coffee, Rural tourism and tourism impacts
According to WTO [11], rural tourism has become potential because it experienced around a 6% expected growth rate, which is faster than the overall growth rate for international tourism arrivals. Coffee is one commodity that is primarily planted in rural areas and recently started to attract urban people to taste the coffee on site. The coffee tour expressed the identity economy that has grown exponentially in the past decades [12]. Gunn [13] argued that tourism would have a more social impact on a community than any other form of economic development because tourism will bring people outside as visitors or tourists and also as investors to develop the tourism industry into the host communities. He added that when the number of visitors outpaces the number of locals, there will be some consequences like some social response, both negative and positive. Tourism can create significant pressure on local resources that somehow may already be in short supply, such as biodiversity, energy, land, forest, and water. Tourism also exposes an opportunity in a change of local identity of local value.

2.3. Concept of the Social-Ecological Systems (SES)
Great concern on tourism is the negative impacts that might exist on the natural environment [2, 3, 14] and the local community [13, 15]. In some areas, tourism highly relies on landscape character and landscape quality and resulted in high-pressure conditions of the natural landscape, and the surrounding environment like exploitation due to the tourism development. According to Kirchhoff et al. [16] and Levin et al., [17] there is a system called social-ecological to understand synergies between tourism and landscape because this viewpoint suggests that tourism and landscape are an integrated system. A Social-ecological system (SES) is a set of critical resources (natural, socio-economic, and cultural) whose flow and use are regulated by a combination of ecological and social systems [18].

3. Research methodology

3.1. Study area
The study was conducted at Cibulao Hamlet, for one year through 2018. Geographically, Cibulao Hamlet is located in Tugu Utara Village, Cisarua District, Bogor Regency, West Java (Puncak Area) inside a tea plantation area and is surrounded by a forest area managed by Perhutani (state-owned forestry enterprise). Tea plantation has been established since the Dutch colonial era (1811), known as the Cilivung tea plantation. Cibulao Hamlet has existed
since 1992, with an initial population of 12 families. Currently, the population has increased to 139 families[19].

People at Cibulao Hamlet all work as labor at PT Sumber Sari Bumi Pakuan (SSBP) as infrastructure workers and tea pickers. They work for about 6 hours and spend the rest of their time farming and taking care of the small area of the coffee plantation next to their neighborhood. Endowment with a great forest, people started planting coffee in 1998 to take advantage of previously eroded forests. This effort is deemed illegal by the authority, while many people cut trees to make the land for vegetable farming. Until 2009, this attempt continued, some people who are members of the Cibulao Hijau Forest Farmers Group (FFG) have managed to plant coffee with an intercropping system in the forest and have obtained permission from the Perhutani officials with a cooperation certificate. A large area of the forest nowadays has been covered by the coffee plot. Besides, it has attracted people to have Cibulao Hamlet as a tourism destination. Nowadays, the Cibulao community has developed the CbCT (Community-based Coffee Tourism).

3.2. Data collection
The study uses a case study method, which allows researchers to understand the contextual conditions with in-depth analysis of the case [20]. The focus of SESs was the tourism systems of Cibulao Hamlet. Data collection was carried out through primary sources using field observation and interviews. Secondary data collected included annual reports and minutes of meetings. The targeted respondents in the semi-structured interview were tourism stakeholders, including tourism entrepreneurs, NGOs, Community-Based Organizations (CBO), and residents.

Selected participants were determined by the researchers through the close relationship during the community facilitation over the years. The interview process continues until the required information is reached [21]. All interviews were conducted in Cibulao Hamlet and Tugu Utara village for a year. Interview guides have been prepared in advance to establish that the interview process takes place with a focus on the relevant topic [21,22].

3.3. Data Analysis

3.3.1. The impact of tourism on environment/landscape Analysis
The SES framework, known as Ostrem framework was initially modeled for the application of common-pool resource management circumstances. Eight variables will be indicated by the SES framework to understand the relationship among them. The eight variables referred to as first-tier variables: resource systems (RS), resource units (RU), governance systems (GS), actors (A), interactions (I), outcomes (O), social, economic, and political settings (S), and related ecosystems (ECO).[23-25].

| Table 1 The second-tier variables of the SES framework for Cibulao Hamlet tourism systems |
|-----------------------------------------------|-------------------------------|-------------------------------|
| Social, economic and political settings (S) | Actors or stakeholders (A) | Resource Unit (RU) |
| S1 Population | A1. Number of relevant actors | RU1 Resource unit |
| S1.1. Size | A1.1. group size | mobility |
| S2 Economic Development | A1.2. Type of actors | RU2 Growth rate |
| S2.1 Livelihood options | A2. Socioeconomic aspects | RU3 Interaction among |
| S3 Markets | A3. Background of tourism | resource units |
| S3.1 Tourism market | management | RU4 Economic value |
| S3.2 Competition | A4. entrepreneurship | RU5 Number of units |
| S4 Political situation | | |

3
In the framework there are resource units (RU) as part of a resource system (RS). Resource systems will set conditions for focal action situations (with interactions among actors to yield outcomes). Resource units are inputs for focal action situations. Vice versa, focal action situations will indirectly influence resource systems and resource units. Another variable is governance systems (GS) to define and set rules for actors (A) and determine procedures and set conditions for focal action situations related ecosystems (ECO), and in social, economic and political settings (S). Actors (A) are an essential part of participating in focal action situations in the forms of interactions and outcomes. In the centre of this framework, there are action situations where the actors interact and yield outcomes. They all are illustrated below. This study used this Ostrom framework [24] because it is known as a tool to analyze the SES of the community since it equipped organizational clarity, and hierarchical structure.

After setting the eight first-tier variables, researcher constructed the second-tier variables of the social-ecological system framework for tourism systems. Each first-tier variable has some second–tier variables reasonable to the context of Cibulao Hamlet study area. The second-tier data could be seen in Table 1.

3.3.2. The contribution of green tourism to the local economy
The contribution of green tourism is analyzed by calculating CbCT income obtained by community groups and individuals. The community group income was calculated by using the basic income equation according to Angelsen and Lund [26] to analyze income from self-employment, such as the tourism business. The equation used is as follows:

\[ I = \sum_{i=1}^{n} p_i y_i - \sum_{j=1}^{m} q_j v_j \]
Where, \( I \) — Nett CbCT income; \( n \) — types of CbCT packages; \( p_i \) — CbCT package price; \( y_i \) — a quantity of CbCT package sales; \( m \) — Types of CbCT packages Input; \( q_j \) — Price of CbCT packages input; \( v_j \) — number of tourists.

Furthermore, individual income from CbCT is analyzed by calculating revenue and profits from several works in CbCT earned by each community for a year. To analyze the CbCT contribution to increasing individual income, the primary income of the Cibulao community (tea plantation laborers) was used as a baseline, i.e., IDR 1,500,000 per month or IDR 18,000,000 per year per person [19].

The benefit and cost analysis is used to analyze the financial feasibility of CbCT and determine whether a CbCT will result in a net profit [27]. The benefit and cost analysis, i.e., Nett Present Value (NPV), Internal Rate Return (IRR), Nett Benefits/Costs Ratio (Nett B/C Ratio), is used with several sensitivity variables to analyze the CbCT business dynamics. Sensitivity analysis is done by comparing the growth of business turnover, and operational costs at 0%, 5% and 10% level per year for five years of business economic life.

4. Analysis and problem solving

4.1. The impact of CbCT on environment/landscape through the ecological approaches using the SES framework

4.1.1. Social, Political, Economic and Ecological Contexts of the CbCT (S)

Cibulao Hamlet is located in Puncak Area with an altitude ranging from 650 to 1200 m (ECO1). Cibulao has 06.683400°S Latitude and 106.928040°E Longitude with an elevation of 921. The altitudinal is included in the tropical area. The annual rainfall is about 2178 mm (ECO2). The geographical and climatic in the tropic climate has produced diverse flora and fauna. Cibulao is located next to the Ciliwung Upstream, the most important river in the Jabodetabek area (ECO3) [19].

Cibulao Hamlet has a population of 138 families (S1.1). Most people work as labor in tea plantations as infrastructure workers and tea pickers. Few people spend their leisure time after work by farming in the forest (planting coffee and vegetables). With the development and high appreciation of the quality of Cibulao coffee, some members of the community focused on the coffee business and offered tourism from the coffee attraction (S2.1). These economic activities then developed become Community-based Coffee tourism and have specific markets from diverse societies ranging from student, researcher, bikers, hikers, nature lovers coming from various regions and countries (S3.1). Since the Puncak area is considered a tourism destinations, so there are many tourism areas that existed in Puncak which potentially become a competitor for CbCT of Cibulao. Fortunately, Cibulao has specific attractions that are unique and authentic. It is proven from the risen numbers of tourists who visited Cibulao CbCT over the years starting 2017 to 2019, after winning competition of Specialty Coffee (S3.2).

Some potential resources have driven communities to elaborate it become tourism destinations. Cibulao Hamlet, located next to the forest, belongs to Perhutani and is laid on the buffer zone of Taman Nasional Gunung Gede Pangrango (RS1). Before 2009, people in communities cannot freely access the forest to open the farm for vegetables or the coffee field. After years of attempting to propose cooperation to Perhutani, finally, this institution let the communities (Cibulao Hijau FFG) access the 4 hectares of the forest to open the coffee field, and now it has to enlarge become 34 hectares (RS2 and RS3). There is some specific area they plotted to organize various of the tourism they offer. For the bike park area, they have a bike track along 16,700 meters. For coffee tourism, they have 36 hectares area of agroforestry coffee. For hiking and camping, they explore the next forest around the neighborhood within the buffer zone conservation forest of Taman Nasional Gunung Gede.
Pangrango, and part of the forest belongs to Perhutani (RS2 and RS3). For each kind of tourism, they have human-constructed boundaries. People in the communities built bike tracks within the forest belong to Perhutani and regularly maintain the area for various types of bike mountain class from the beginning to advance class (RS4.2). For coffee tourism, they have a small coffee café next to the coffee field, some gazebo, and camping area (RS4.2). For the attractions, the communities offer the bike attraction, coffee tourism, camping, and hiking. For the specific of coffee tourism, they offered some attractions such as harvesting the coffee, hiking, camping, brewing and cupping (tasting the coffee), and learning about the coffee plants (RS4.1).

Coffee is the RU since it is the focus of the destination. The coffee field has dynamically increased since the rising awareness from various institutions that have same interest in developing coffee while conserving the forest (RU1). We have no specific number about the growth rate of coffee, yet there are significant increasing numbers of coffee planted, and the coverage of area grew coffee plants (RU2).

The interaction between resource units can be negligible, since coffee plants stay in the same place (RU3). The total net income of the community group from coffee tourism is IDR 22,800,000 per year, this calculation does not include the amount of profits from the sales of adoption tree seedlings from nurseries developed by the group (RU4). The area planted with coffee has been expanded to 36 hectares and people can harvest 5 tons of coffee beans (RU5).

There are some government institutions have an interest in coffee elaboration. Perhutani is one of the government institutions that allow the community access to the forest through scheme of social forestry [(Pengakuan dan Perlindungan Kemitraan Kehutanan (KULIN-KK)]. It created Cibulao Hijau FFG to ease the assistance. Another institution is the Agriculture agency that created a farmer group (Kelompok Tani-POKTAN) to let the people access the aid from this institution (GS1). There are some non-government organizations have the same interest in coffee namely Rumah Kopi Ranin, The Consortium of Save Puncak and some individual coffee entrepreneurs (GS2). For property-right system, there is cooperation between Perhutani and Cibulao Hijau FFG to an agreement to manage the area to be grown by coffee through the scheme of social forestry (GS3). This scheme is prevailed not the private interest but for the communities, especially the Cibulao Hijau FFG. Since there is agreement on land use from Perhutani, there is responsibility for the community (Cibulao Hijau FFG) to use the forest wisely with the agroforestry system while conserving the forest (GS4). There are potential conflicts that took place since there are two identities for one community to access the help from government institutions, namely the Cibulao Hijau FFG and the POKTAN group, which are each of them are precisely the same person/members (GS4.1). Nevertheless, it finally depends on the member itself to manage the two groups that are the same members since it is merely the administrative matters.

The main actor (A1) is the Cibulao Hijau FFG. Since 2009, there is an agreement between Perhutani and Cibulao Hijau FFG to use the forest area as a Pengelolaan Hutan Bersama Masyarakat (PHBM) Program (Joint the Community Forest Management) for the coffee field[15]. The area has 4 hectares large to grow coffee plants and has now expanded to become 36 hectares. The members of Cibulao Hijau FFG had 12 people at the beginning and now become 38 members in 2019 (A1.1). There are at least 7 types of actors that have a role in coffee cultivating development in the social forestry area in Cibulao Hamlet. (A1.2). There are internal agencies and external agencies based on their respective role. The first role manages land access mechanism (Ministry of Environment and Forestry, Perum Perhutani, LMDH (forest village community agency) Puncak Lestari); the second role is in community empowerment and development (The Consortium of Save Puncak, P4W LPFM IPB, Rumah Kopi Ranin) and the third role is in promotion of the coffee product (Bogor Regency Agriculture and Plantation Service (A1.2). Cibulao Hijau FFG is considered as the main actor that has a strong spirit of conserving the forest and has no
capital to expand their coffee field. The opportunity from Perhutani, and capacity building from external agencies have helped the community to escalate their capacity and capability (A2). From the beginning, only three people actively ran the tourism in Cibulao Hamlet. After the establishment of Cibulao Hijau FFG, the management of tourism (especially in coffee tourism) has been handled by Cibulao Hijau FFG members (nowadays have 38 members) (A3). The initial intention to maintain the forest from degradation has been developed to become something that has an economic value from the environment that they have preserved. Planting coffee to maintain the forest from erosion has generated high-quality coffee products which are popular and attract tourists to visit and explore coffee tourism (A4).

There is some potential of tourism that can be developed by the communities. Before developing coffee tourism, people had established a bike park area for mountain bikers for years and had loyal customers to visit regularly every week (I1). After Cibulao coffee became famous, they develop coffee tourism (I1). Bestowed by the beautiful scene and forest, the community also elaborated similar kinds of tourism that explore the beauty of nature, such as hiking, camping, and tea walk (I1). Through the experience this community has, there are some conflicts that arose both internally and externally. Cooperative members have established democratic, and accountable deliberative processes, and both internal and external conflicts are resolved in the assembly (I2). Cibulao Hijau FFG has actively built and expanded its tourism infrastructure, such as pathway, gazebo, toilet, café. (I3.2). Some of them are attempted self-sufficient, and others by joining with other institutions to build a café. (I3.2). Cibulao Hijau FFG keeps growing the new coffee plants in the Perhutani area with assistance from Bogor Regency Agriculture and Plantation Service and P4W LPPM IPB for the seeds and knowledge about growing coffee and making a good harvest (I3.1). The leader of Cibulao Hijau FFG, along with their members, has participated actively in many programs about increasing coffee quality products and their skill in serving coffee (I4). Frequently, cooperative leaders establish commercial networks with local café in Bogor and Puncak and other markets from other cities (I5). Cibulao Hijau FFG has some buyers for their coffee from café in Bogor, so that they have to maintain their quality. Some café like Rumah Kopi Ranin is one of the customers that always gives observation about the quality management of Cibulao coffee. Besides, Cibulao Hijau FFG members regularly attended the training to escalate their capability to run the coffee business. Cibulao Hijau FFG has its regular meeting with the community to engage their cooperation and discuss problems in the field and evaluate their business progress (I6).

The social performance of their activity is high. Community participation in CBCT (labor) has 52 people (34 men, 18 women) who were involved in CbCT. The frequency of group meetings increased to 2 times a month from previously irregular and unscheduled. Forest monitoring/patrol activities are carried out by community groups once a week, following by maintenance activities for coffee tourism trails and adoption trees that have been planted (O1). The 3800 multi-purpose tree species (MPTS) trees have been planted by CBCT activities. The 12.7 hectares area have been enriched and improved by the community through CBCT. Zero illegal activity in the surrounding Cibulao area in 2019 (O2). The economic performance of the CBCT has provided financial benefits that vary to an individual. However, higher economic benefits are felt more collectively, especially in group income (22,800,000 per year), employment (52 people), increased skills (tour guides, tourism organizers, etc.), and strengthening social capital in the relationship among members of CbCT (O3).

4.1.2. The contribution of CbCT to the local economy
The results showed 3,040 local tourists and 260 international tourists coming to Cibulao in groups with 15-120 members in 2019. Following the equation (1), the total net income of the community group is IDR 22,800,000 per year, this calculation does not include the amount
of profits from the sales of adoption tree seedlings from nurseries developed by the group. A total of 52 people were involved in CbCT activities and benefited economically from various types of supporting activities at CbCT such as tour guides, cooking laborers, photographers, etc. (Table 2).

In Table 3, we can see that there is an increasing income from 13.19% or IDR 2,375,000/year/person to 76% or IDR 13,680,000/year/person. Of the total types of CbCT activities that have involved in the community, tour guides have become the most significant revenue contributors for the individuals involved. Whereas the smallest revenue derived from the income of homestays rental. In the Cibulao context, the types of works in CbCT that require unique expertise such as tour guides, coffee roasted bean sellers, photographers, maintenance workers of edutour tracks, and adoption trees have contributed directly to a significant increase in individual income. Even, in work as tour guides, the community has earned more than their primary income (tea plantation laborers).

**Table 2** Contribution of CbCT to the community group income in 2019 (IDR/year)

| Production Inputs       | Production Sales | Net Income of CbCT ( IDR000) |
|-------------------------|------------------|-----------------------------|
|                         | \( m \) \( v_j \) | \( q_j \) \( p_j \) \( y_i \) |
|                         | \( q_j v_j \) \( p_j y_i \) | \( p_j y_i - q_j v_j \) |
| Entrance Ticket         | 3,80 \( 0 \) \( 0 \) | 38,000 \( 10 \) \( 3,04 \) \( 180 \) | 547,200 |
|                         | 2 Days 1 Night   | 760 \( 60 \) \( 760 \) \( 390 \) | 296,400 |
| Tour Guide              | 3,04 \( 30 \) \( 60 \) | 91,200 |
| 1 Day Trip              | 0 \( 0 \) \( 2 \) \( 760 \) \( 155 \) \( 3 \) | 152,000 |
| 2 Days 1 Night Trip     | 760 \( 15 \) \( 11,400 \) | 117,000 |
| Meals                   | 3,80 \( 40 \) \( 2 \) | 152,000 |
| 1 Day Trip              | 0 \( 0 \) \( 2 \) | 7,600 |
| 2 Days 1 Night Trip     | 760 \( 15 \) \( 3 \) | 11,400 |
| Coffee Cupping          | 3,80 \( 40 \) \( 2 \) | 152,000 |
| First Aids              | 0 \( 2 \) \( 7,600 \) | 7,600 |
| Edutour Tracks maintenance | 3,80 \( 0 \) \( 3 \) | 11,400 |
| Tree Adoption           | 3,80 \( 40 \) \( 0 \) | 152,000 |
| Homestay                | 760 \( 25 \) \( 15 \) | 19,000 |
| Fish pond rental        | 760 \( 30 \) \( 22,800 ) | 11,400 |
| Photograph              | 760 \( 30 \) \( 22,800 \) | 22,800 |
| Total                   | 820,800 \( 0 \) | 843,600 \( 0 \) | 22,800 |
Source: Primary data, 2019.

\[ n - \text{types of CbCT packages}; \quad p_i - \text{CbCT package price}; \quad y_j - \text{quantity of CbCT package sales}; \quad m_0 - \text{Types of CbCT packages Input}; \quad q_j - \text{Price of CbCT packages input}; \quad v_j - \text{number of tourist} \]

### Table 3 Direct contribution of CbCT the individual community revenue (in IDR/year)

| No  | Types of Income                                      | Number of people | Amount           | Mean          | Shared (%) |
|-----|------------------------------------------------------|------------------|-----------------|--------------|------------|
| 1.  | Tour Guides (man)                                    | 10               | 136,800,000     | 13,680,000   | 34.94      |
| 2.  | Cooking laborers (women)                             | 15               | 38,000,000      | 2,533,333    | 06.47      |
| 3.  | Maintenance workers of Edutour tracks and adoption trees | 5             | 30,400,000      | 6,080,000    | 15.53      |
| 4.  | Homestay rental                                      | 8                | 19,000,000      | 2,375,000    | 06.07      |
| 5.  | Fish pond rental                                     | 3                | 11,400,000      | 3,800,000    | 09.71      |
| 6.  | Photographers                                        | 5                | 22,800,000      | 4,560,000    | 11.65      |
| 7.  | Roasted bean sale profits                            | 6                | 36,731,750      | 6,121,958    | 15.64      |
|     | Total                                                | 52               | 295,131,750     | 39,150,291   | 100        |

Source: Primary Data, 2019

In analyzing the financial feasibility of CbCT, we used the latest historical financial data in 2019. The initial investment is IDR 50,000,000. A total of IDR 45,000,000 is used for working capital to develop a nursery garden, buy a roasting machine, and coffee brewing tools package as well as IDR 5,000,000 for CbCT operational costs. The discount rate is 7%, and the economic life of the investment is estimated to be five years, following with the national regulation on the interest rate for small business loans (Kredit Usaha Rakyat) in 2019. The national tax rate for small businesses is 1% about the total turnover in a year. The CbCT turnover in 2019 is IDR 843,600,000, and tourism activity costs are estimated at IDR 820,800,000. The detailed information of CbCT business turnover and costs can be seen in Table 2.

The results of B/C ratio analysis have shown that CbCT is financially feasible in all levels of sensitivity analysis (Table 4). In moderate analysis at 5% growth level, during its economic life (5 years), CbCT still provides the business profit, i.e. NPV=IDR 11,014,645; the interest rate return (14.23%) of CbCT can cover capital interest (7%) at the end of the economic life of the business; the CbCT business is profitable due to the benefits are much higher than the costs (Net B/C ratio=1.22).

Moreover, at the zero level of growth, which means the turnover and costs are stable every year following the data 2019, CbCT is still beneficial to be developed by the Cibulao community.

### Table 4 B/C ratio analysis of CbCT

| Analysis Tools | Variable of Sensitivity | Analysis\(^a\) | Criteria | Results |
|----------------|-------------------------|---------------|----------|---------|
|                | 0%                      | 5%            | 10%      |         |
| NPV\(^b\)      | 1,957,702               | 11,014,645    | 20,967,426 |        |
| IRR\(^b\)      | 8.43%                   | 14.23%        | 18.59%   |         |
| Nett B/C Ratio\(^b\) | 1.04               | 1.22          | 1.42     |         |

\(^a\) The sensitivity variable used is the growth of turnover and operational costs per year for five years.

\(^b\) Nett Present Value (NPV), Internal Rate Return (IRR), Nett Benefits/Costs Ratio (Net B/C Ratio).

\(^c\) Discount Rate 7%
4.2. The CbCT in the context of economic improvement, social capital and sustainable landscape management.

Through this study, we identified that CbCT (Community based Coffee Tourism) in Cibulao Hamlet has their own governance system like self-enforcement management to support the sustainable landscape. It shows that there is an implicit code of conduct that the community upholds from the main actor of the Cibulao Hijau FFG to keep the spirit in maintaining their environment as a vision in developing many activities. This self-enforcement becomes a distinctive role in keeping their measurements and development on their right track. Besides they have mutually beneficial cooperation between farmers and Perhutani to guarantee their sustainable coffee field by agroforestry system to maintain the forest from devastation that is become their essence for CbCT (GS1, GS3). The community has their facilitator to help in monitoring and evaluating the effort to conserve the landscape while developing green tourism. In economic, CbCT was able to increase individual people's income from 13.1 9% -76%. CbCT also has good business financial feasibility at various levels of sensitivity of the B/C analysis. The economic value of the CbCT will incentivize the local actors to make efforts to conserve the resources.[28, 29]

In social aspect, most of the people in Cibulao are relatives and neighbors so they have close relationship each other. In Cibulao, they have local rules of collective-choice which represent the democratic value and equity among them to hold the coexistence and cohesion of the local community network. The system prevails and remains resilient through many challenges the community face for years. This become social capital when they have system to establish the social resilience.

The existence of environmental, economic and social benefit in Cibulao hamlet is a proven that through CbCT, the sustainable landscape will be achieved with some requirements. This study found that the main menaces to the sustainability of the landscape of forest/buffer zone next to Cibulao Hamlet, in the natural system are heavy rainfall resulted in landslide and land erosion. Related to human system the threats are 1) the breaking up of cooperation (agreement) between community and the authority (Perhutani) that will restrict the forest accessibility; 2) the extended growth of the interest for tourist services; 3) the ecological impact from other tourism destination and attraction development around the village that has no relation with quality environment improvement; and 4) illegal tree cutting.

5. Conclusions

Based on the study, through the SES framework, the researcher found some positive impacts of tourism on the Cibulao landscape/environment. There are good interactions between actors and resources and the local governance system as well, which ended up in good social and economic performance as an outcomes. The economic performance represented with increasing income is an crucial element to attain the sustainable use of resources guided by effective local governance rule. The social performance is reflected by the capability of the community to make a decision at the local level by establishing collective rules that allow an equitable distribution of resources, which support cohesion to the system. This social performance created the community-based governance that will establish their social resilience to pursue their sustainable tourism and sustainable landscape/environment since their sense of appropriation of the resources of Cibulao well-formed. This study implies the central government for establish the general rules for people next to the forest to access the forest and extract the resources through the social forestry scheme.

There is a recommendation that CbCT should be continuously developed as green tourism practices that contribute significantly to the community's income and ecological improvement to support a sustainable landscape management strategy. Local governance systems succeed in managing their tourism system because there is the main actor who
leads the vision of tourism management to protect the forest and environment. The cooperation with other organizations and institutions that have the same interest in guarding the forest, has a good impact on monitoring and evaluation of the tourism system to help protect the forest from devastation (including illegal tree cutting and natural disasters).

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