

# Assessment of Tourist and Community Perception with Regard to Tourism Sustainability Indicators: A Case Study of Sinharaja World Heritage Rainforest, Sri Lanka

L. P. K. Liyanage, N. R. P. Withana, A. L. Sandika.

**Abstract**—The purpose of this study was to determine tourist and community perception-based sustainable tourism indicators as well as Human Pressure Index (HPI) and Tourist Activity Index (TAI). Study was carried out in Sinharaja forest which is considered as one of the major eco-tourism destination in Sri Lanka. Data were gathered using a pre-tested semi-structured questionnaire as well as records from Forest department. Convenient sampling technique was applied. For the majority of issues, the responses were obtained on multi-point Likert-type scales. Visual portrayal was used for display analyzed data. The study revealed that the host community of the Kudawa gets many benefits from tourism. Also, tourism has caused negative impacts upon the environment and community. The study further revealed the need of proper waste management and involvement of local cultural events for the tourism business in the Kudawa conservation center. The TAI, which accounted to be 1.27 and monthly evolution of HPI revealed that congestion can be occurred in the Sinharaja rainforest during peak season. The results provide useful information to any party involved with tourism planning anywhere, since such attempts would be more effective once the people's perceptions on these aspects are taken into account.

**Keywords**—Kudawa conservation center, Sinharaja world heritage rainforest, sustainability indicators.

## I. INTRODUCTION

SINHARAJA is considered as the country's last viable area of primary tropical rain forest which remains intact. It is a popular destination among tourists for bird watching, hiking, trekking, and educational purposes, while some tourists are interested in listening to the sounds of nature and have relaxation of mind. Kudawa conservation center is the easiest way to enter Sinharaja world heritage rainforest from Colombo, which is the Capital of Sri Lanka. Sinharaja world heritage rainforest is one of the most valuable watersheds in Sri Lanka. It contributes to sustain the Kalu and Gin rivers. It is a shelter for many mammals, birds, reptiles, butterflies and flora species which are mostly endemic [1].

Indicators are the criteria to measure what are the current

issues and their status. It represents problems that can be raised in the future, the threats and potential need for action, as well as helping to recognize and measure the effects of an action. Sustainable indicators can be either qualitative or quantitative sets of information. The World Tourism Organization (UNWTO) has initiated to identify, develop and execute tourism sustainability indicators since 1992. As a result of their efforts in 1995 to 1996, they have prepared a manual for indicator developments based on investigations in the USA, Argentina, Mexico, Canada, and Netherlands. According to guidance from the manual, they have organized regional workshops and case studies related to Sri Lanka, Mexico, Argentina, and Hungary. The UNWTO has identified benefits of good indicators such as helping to make better decisions to reduce costs and risks, identify emerging issues and prevent them, to recognize effects of an action and remedies, performance of executed plans and management actions, limits and opportunities that exist within a plan. Further, it provides reliable information for the stakeholders and other parties while providing continuous improvements of tourism industry. Sustainability indicators are significant for providing opportunities to define and implement estimation of Tourism carrying capacity [2]-[4]. In the case of Arches National Park (USA), research about carrying capacity assessment suggests that formulation of indicators and standards of quality of the tourist experience, which help to define and manage Carrying Capacity Assessment (CCA). Visitation of this park has dramatically increased in the current scenario. Visitor Experience and Resource Protection (VERP) method and the resource component of carrying capacity has been used simultaneously to solve this problem. They have used interviews with tourists, local community residents and staff members to identify indicators [5]. A site becomes a world heritage if it is meeting at least one of the 10 criteria of Outstanding Universal Value (OUV) recognized by the UNESCO in the Operational Guidelines for the Implementation of the World Heritage Convention [6]. UNESCO has recognized Sinharaja rainforest as a Natural World Heritage site at 1990 [7], [8]. Sinharaja possesses legally protected 11,187 ha as a core area of the biosphere reserve. In addition, there is an external buffer zone outside the rainforest [9]. Previous management plans have recommended strategies to make maximum protection for legally protected core area. The buffer zone is used for

Liyanage Pasindu Kushan Liyanage is a research student of Divisional forest office, Forest Department, Rathnapura, Sri Lanka (e-mail: lpkushan@gmail.com).

Niranjan Ravindra Prasad Withana is Divisional Forest Officer, Forest Department, Rathnapura, Sri Lanka (e-mail: wdnrprasad@yahoo.com).

Abeyasinghe Lasantha Sandika is senior lecturer from Department of Agricultural Economics and Agric. Extension, Faculty of Agriculture, University of Ruhuna.

traditional practices and livelihood without damaging to the protected forest [10].

## II. METHODOLOGY

This research was conducted at Kudawa which is located close to the Sinharaja world heritage rainforest in Ratnapura district, Sri Lanka. Kudawa area has recorded 247 resident families. Tourist arrivals are managed by Kudawa conservation center which is under the Department of Forest Conservation. Climatic conditions of the area are similar to the recorded climatic conditions of the Sinharaja world heritage rainforest.

Research methodology was mainly based on “Indicators of Sustainable Development for Tourism Destinations: A Guidebook” published by the UNWTO in 2004. Convenient sampling survey was used to determine indicators of sustainable development for tourism. Community survey was prepared to determine indicators of tourism benefits on the host community, community satisfaction, and effects of tourism towards community and suggestions from community. The sample size was selected as 50 residents from the village. A tourist survey was prepared to determine indicators of motivation for tourism, tourist satisfaction, management capacity and suggestions from tourists. The sample size was 60 (30 from each local and foreign tourist).

Under the section of research and organization, boundaries were defined by considering unique characteristics, where immediate actions are needed and considered only tourist and community perception-based indicators. We shared experiences with the community and understood the situation of the destination. We connected with Kudawa primary school principal and teachers and Kudawa community-based organization. Areas which were more interesting to the tourist in the destination were identified. For example, Kudawa area is more popular for bird watching. There are four trails mostly used by tourists; namely, Mulawella, Galyen Yaya, Research center, and Giant Nawada tree trails. The main effects of tourism in the Kudawa area were identified along with factors that should be addressed for sustainable tourism development within the area. Under the indicator development process, first, we identified key issues which were directly related with the ecotourism development. Data sources were studied initially. There were some difficulties in participating in the survey due to factors such as different literacy levels in the community, attitudes and individual personal characteristics etc. The research team took every effort to minimize disturbance to the community and avoiding inconveniences to people. We made an inventory to identify which sources are the most suitable for accountability of research. In indicator development relevance of the indicator, feasibility of the needed information, creditability of information, understandability for users and comparability over time were used as criterions and suitable procedures were identified for their evaluation. Under the implementation process, each indicator was re-evaluated to identify specific sources, unique characteristics of data and data collection frequency. Convenient sampling method was used to collect data, while

percentages, ratios and raw data were used in the data analysis section. Visual portrayal was used to represent the analyzed data. As key sustainability indicators, the HPI and TAI were applied. The HPI was calculated by adding resident population and floating population during 2014 to 2016. The resident population was determined using data obtained from Grama Niladhari division. Equation (1) was used for calculating TAI [4]. Three years of tourist arrival data from 2014 to 2016 were used.

$$TAI = \frac{\text{Avg.number of visitors per day in summer}}{\text{Avg.number of visitors per day during the year}} \quad (1)$$

## III. RESULTS AND CONCLUSION

According to the community survey, gender representation was 70% male and 30% female. School teachers and government officers were also included in the sample. Tourism benefits towards the host community were assessed by the first two questions of the questionnaire. In the sample, most of the participants agreed that the statement that tourism is fit for the community, while a mere 2% of participants stated that it is not good for community. Results have revealed that tourism cause benefits to the community. Infrastructure development and income generation were identified as major benefits received by the community. About 46% of total participants stated that they have personal benefits from the tourism industry and 22% of participants stated that they have no benefits from the tourism industry. A higher percentage of participants have accepted that they have personal benefits from tourism. Most of the community dwellers depend on tea plantations. There are some government employees, guides who work for Kudawa center and some of those maintain small tourist resorts. In this workforce, tea planters and government employees do not have much time to engage in the tourism sector in Kudawa. The guides and tourist resorts gain personal profits from tourism activities in that area. The survey revealed the following specific effects of tourism to the community.

TABLE I  
SURVEY RESULTS FOR EFFECTS OF TOURISM ON HOST COMMUNITY

Effect	Accepted percentage	Rejected percentages
Creates jobs for local residents	88%	0%
Employs local youth	86%	0%
Causes rise in crime rates	44%	32%
Harms moral standards	44%	28%
Disrupts local activities	46%	30%
Harms the environment	54%	26%

A majority of participants have stated that tourism industry creates jobs for members of the local community. No one had stated the negative responses. It is shown therefore that tourism has a positive impact on the creation of jobs for the community. For instance, only locals are hired by the center as guides, safari jeep drivers, laborers, hotel employees etc. Some home stays, as well as local businesses such as local food corners, provide livelihoods for some community

members. At the same time, it was attempted to identify, perception on creation of new jobs for local youth. A very high majority of participants have stated that tourism has employed local youth, while none opposed. Therefore, it can be indicated that tourism has created many job opportunities for local residents and has a positive impact. Local youth gets the opportunity to participate in training programs such as tour guide training. Moreover, they are keen on starting new business ventures to attract tourists.

A considerable number of participants (44%) have stated that tourism results in a rise in crime rates, while about 32% stated that the rise in crime rates had no connection with the tourism industry. It has been identified that crime increases dramatically during the tourist season. Particularly, local youth learn inappropriate behaviors from tourists such as consuming drugs, which leads to the disturbing social system of the area. A high proportion of participants (44%) have stated that tourism causes harm to moral standards in the area, while 28% of participants stated that tourism does not cause harm to moral standards. This fact directly effects on the increasing crime rates of Kudawa. Most of the local people believe tourism has negatively affected on the moral standards of the community. These results should be considered by the relevant authorities to minimize the negative impacts on moral standards. Improper behaviour of tourists such as the use of alcohol and other narcotics in village common areas leads local youth to being misguided. According to the survey, most of participants (46%) have stated that tourism disrupts to local activities but 30% of participants stated that tourism does not disrupt local activities. With the increase of human pressure on the site, it cause disturb to the local activities Arrival of tourists increases consumption of natural resources of the area to meet their demands. Furthermore, the arrival of different cultural and ethnic groups to the area clashes with the day today routine of the villagers as well as disturb their privacy. These results should be taken into account by the relevant authorities. High proportion of participants (54%) has stated that tourism harms the environment of the Kudawa area; whereas, 26% of participants have stated that tourism does not harm the environment. There was clear evidence that increasing tourism has negative impacts upon the environment. Hotels and resorts that grew up in the area have problems in solid waste and waste water disposal. This effects on flora and fauna in the area harmfully. Tourists dump non-degradable waste material around the buffer zones creating harm to the environment. Sustainable tourism and ecotourism practices are needed to address and to reduce the negative impacts on the environment. Educating and empowering the local community are important methods to reduce the negative impact on environment due to tourism.

In further interviews with this regard, 54% of participants stated that tourism harm to the environment, while 96% of participants allege local tourists are responsible for degradation of the environment in the area. Rest of participants (4%) has stated that foreign tourist also causes harm to the environment (Fig. 1).

Lack of knowledge and the attitudes of tourists have caused

harm to the natural environment. Reported incidents include local tourists dumping waste, improper behaviors such as consuming alcohol and dumping pieces of glass into water sheds etc. Foreign tourists are recorded for bio-piracy; taking biological samples like orchid species, fern species and medicinal herbs illegally. Results revealed that tourism has benefits on the community, but also it has caused negative environmental and social impacts.

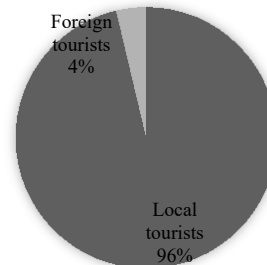


Fig. 1 Community perception on tourist contribution to harm

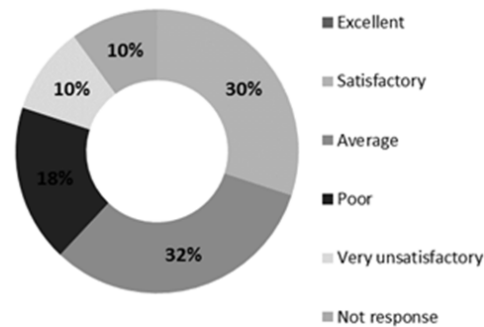


Fig. 2 Overall opinion of community over tourism

About 30% of participants have stated that the overall opinion of tourism in the area is satisfactory (Fig. 2). Further, 32% of participants have stated that the overall opinion about tourism is average. However, 28% of participants have stated that their overall opinion about tourism is unsatisfactory. These results depend on the perception of participants. As a total, it can be considered that community has an average satisfactory perception on tourism development. These decisions are primarily based on benefits and impacts on the community described above. In the community, the participants have stated their main concerns over tourism in the community. The highest number of participants (24%) is concerned over environmental protection, while 14% of participants requested facts related to reducing or eliminating disruption to local culture. Further, 12% of participants requested more benefits to the community and 10% of participants requested safety of community. These concerns again remind of the negative impacts of tourism on the community and environment.

The tourist survey included two populations as local and foreign tourists. The number of local tourists who participated in the survey totaled 32, while there were 30 foreign participants. The gender representation of the tourist's survey

was 63% male and 37% female participants. The survey results showed the primary reasons to visit as 64% for their leisure or holiday, 29% for educational purposes and 9% for bird watching, etc. The average duration of stay is a most important indicator for destination management. It was 0.7 nights for local and one night for foreign tourists. There were two sides; positive and negative impacts of the low average duration of stay. Reduced human pressure on the area acts as a positive impact, while reduced income generation is a negative impact. In strategic planning this should be focused on achieving an optimum value. We used the following statements to assess visitor satisfaction, and the results presented in Table II.

TABLE II  
SURVEY RESULTS ON VISITOR SATISFACTION

Statement	Accepted percentage	Rejected percentage
I enjoyed my experience in the destination	95%	1%
The state of the natural environment was good	91%	1%
Service staff were competent and helpful	87%	1%
Good souvenirs and crafts were available	29%	27%
I had good opportunities to enjoy the local cuisine	46%	24%
I was bothered by garbage in public areas	27%	54%
I was bothered by the messy appearance of built areas.	22%	41%
I felt safe and secure during my visit	93%	0%
I would visit the destination again	90%	0%
I would recommend the destination to my friends	93%	0%

Almost all of the visitors, both foreign and local, agreed that they enjoyed their visit. Sinharaja world heritage rainforest is a universal treasure, so it provides a higher satisfaction of natural experience for visitors. Most of the local and foreign tourists agreed that the state of the natural environment was good. Any nature lover can admire Sinharaja rainforest as it is priceless in natural value. Almost all tourists agree that the service staff was helpful, competent and they offered a high level of service. More than 80% of the tourists agree with those statements. Kudawa conservation center has well experienced and talented staff. Guides have more experience with the environment as they are living near the Sinharaja world heritage rainforest. They render a higher level of service for the tourists. However, availability of souvenirs and crafts is few, according to the tourists' views. Most tourists agreed that they had good opportunities to enjoy local cuisine. Food items such as Kithuljaggery, Kithul treacle, flour products like Pittu, Halapa from endemic plants such as Beraliya, Hal are available. However, about 24% of local tourists disagree with this statement. This can be caused due to mismanagement of marketing strategies, lack of awareness of quality and improvement, and a lack of resources and opportunities among the community to bring forth new products to tourists. Some tourists have accepted that they were bothered by garbage in public areas. These incidents are significant as it influences on tourist satisfaction. This can be happened due to the inappropriate behaviour of tourists (local tourists). According to observations and face-to-face interviews with community members, they have serious concerns about the waste

collection. Also, properly labeled waste bins should be provided for separating waste in the tourism area of Kudawa. There are no waste bins for collecting waste and tourists are suffering with this problem. Also, some tourists have admitted that they were bothered by the messy appearance of built areas. According to the observations, this can be caused due to lack of hygienic facilities in the tourism area. As it can reduce tourist satisfaction level, immediate actions should be implemented without damaging the natural environment.

A very high majority of local and foreign tourists have accepted that they felt safe and secure during the visit. Guides are always providing advice for tourists for the safety of the journey in the rainforest. This has given tourists a sense of safety and security. There is no disagreement with statements; that they would visit Sinharaja rainforest again and recommend to friends. As Sinharaja rainforest provides a high level of visitor experience, they are expecting to visit Sinharaja again and recommend for others. The portion of tourists who did not respond was also considered during the above calculations. Results revealed that the Kudawa conservation center should address two major problems regarding waste management and availability of good souvenirs for optimum visitor satisfaction. Tourists also suggested proposals for improvement of the visitor experience in the Kudawa conservation center (Fig. 3).

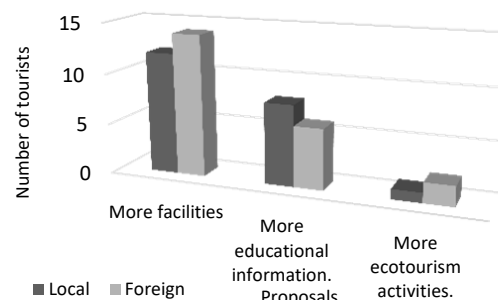


Fig. 3 Proposals for improvements

The study has shown that facilities should be developed up to the optimum level, especially sanitation facilities for tourists. The most important factor was that tourists have requested more educational information. Most of them requested educational information through posters and other sources at the entrance. Kudawa conservation center provides educational and extension services; however, due to its location being situated away from the usual visitor trail and visitors' tight time schedule, which hinders the chances of their visiting the center. Using a properly labeled trail map or creating updated posters and information at the entrance can be used to avoid such inconveniences.

HPI and TAI were determined using secondary data obtained by Kudawa conservation center and the Grama Niladhari division. The peak season is during December to April. According to three-year tourist arrival data, TAI was calculated using the following equation:

$$TAI = \frac{126.61}{99.64} = 1.27$$

If this index is equal to 1, it represents that the distribution of tourists is homogenous over the year. In the case of Kudawa conservation center, the results showed that seasonal tourist arrival variations occur. According to the Gramasewa Niladhari of Kudawa Grama Niladhari division, the resident population was 776 persons. Then considering the floating population (tourists) from 2014 to 2016, monthly the HPI is represented as follows (Fig. 4).

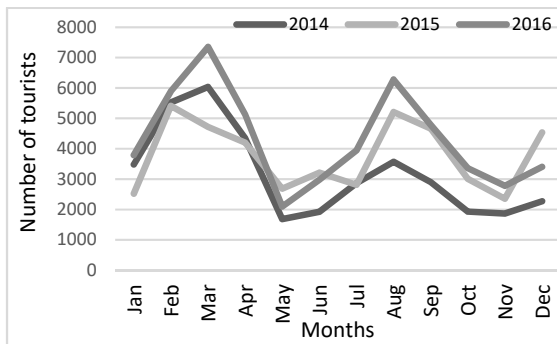


Fig. 4 Human pressure on Kudawa area

#### IV. CONCLUSION

Sustainable development is a great challenge in developing countries like Sri Lanka, especially when rural areas are exposed to mass tourism. Tourism carrying capacity is a planning tool for sustainable development. Researchers should identify key issues and conditions of tourism within the destination before estimating such an index. The tourism sustainability indicators assessment reveals the information that researchers should address in a tourism carrying capacity assessment. In the case of Kudawa conservation center, there are several facts which affect to the host community. It represents significant indicators like benefits to the community such as increased job opportunities, economic development and international recognition of a priceless natural treasure, as well as negative impacts on the community such as increased crime rates, degraded moral standards and polluted environment. A significant fact is that local tourists are mostly influencing in a harmful manner. Also, the community has requested efforts towards environmental protection, more benefits to the community and safety of the community. According to the results obtained by the tourist survey, it indicates significant information for further development of tourism. When considering tourist overnight stays, most visitors do not spend the night at the destination. Lower average nights of stays effect positively and negatively. Reduced human pressure on the destination has a positive effect, yet it also reduces the benefits to community with lower-income generation from the limited time schedule. Furthermore, results have shown that Kudawa conservation center needs a proper waste management system. A waste separation bin and proper waste collection system is essential

for the management of the destination. Motivations and incentives should be provided for local cultural events to attract tourists, such as traditional dancing and drumming. Providing opportunities for the marketing of local foods and crafts will also improve the income generation of the host community. TAI and HPI have indicated that tourist congestion can happen during peak season.

#### ACKNOWLEDGMENT

Special gratitude is due to Mr. K. D. A. P. Jayasinghe, Forester of Sinharaja world heritage rainforest for providing necessary infrastructural facilities and Mr. W. M. M. M. Weerakoon, Range forest officer of Sinharaja world heritage rainforest for supporting in practical situations. Also, it is with deep appreciation we acknowledge the entire staff of the Kudawa conservation center, Sinharaja Rainforest including guides for their continuous support and encouragement.

#### REFERENCES

- [1] A. H. M. Jayasuriya and S. D. Abayawardana, "A Study to Determine the Changes in the Biodiversity Values of Southern Sinharaja And Kanneliya Forests After the Implementation of Gef Medium Sized Project". 2008.
- [2] United Nations World Tourism Organization, Sustainable tourism indicators and destination management: National Workshop, Tagbilaran City, Bohol, Philippines. Philippines. 2007a.
- [3] United Nations World Tourism Organization. Sustainable Tourism Indicators And Destination Management: Regional Workshop Kolašin, Montenegro. Kolašin. 2007b.
- [4] World Tourism Organization, "Indicators of Sustainable Development for Tourism Destinations: A Guidebook" Madrid: World Tourism Organization, Spain. 2004.
- [5] US Department of the Interior, The Visitor Experience and Resource Protection (VERP) Framework: A Handbook for Planners and Managers. 1997.
- [6] World Tourism Organization (UNWTO). UNWTO: Annual Report 2011. Spain. 2012.
- [7] Sri Lanka Forest Department, *Project proposal – Sinharaja conservation project, Sri Lanka*. Forest Department, Ministry of Lands and Land Development, Sri Lanka, and WWF/IUCN. Colombo, Sri Lanka. 1988
- [8] Sri Lanka Forest Department, *Management plan for the conservation of the Sinharaja forest – phase II*. Forest Department, Ministry of Lands and Land Development, Sri Lanka, and WWF/IUCN. Colombo, Sri Lanka, 92p. 1993.
- [9] IUCN, Conservation Review of some Natural Forests in Sri Lanka. Forest Department, Environmental Management in Forestry Development, Battaramulla, 163p. 1993.
- [10] H. M. Bandaratilake, "Managing the buffer zone in Sinharaja World Heritage Forest". *Parks*, 1992, vol. 3(3), pp.15 -19.