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Crafting the Natural Capitals for Sustainability of Ecotourism in Tasik Chini Biosphere Reserve: The Host-Guest Perspectives

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Abstract: Ecotourism in biosphere reserve is highly dependent on the natural capitals and its sustainability does not only set on the local's responsibility but it is also a commitment of all stakeholders. However in many of the biosphere reserve, contradictory perspectives pertaining to the natural capital sustainability for among respective stakeholders are still understudied, especially in seeking a balance between conservation and ecotourism development. Given this background, this study seeks to assess the stakeholders' perspectives of natural capitals for sustainable ecotourism in the Tasik Chini biosphere reserve, a pioneering area endorsed in 2009. The findings reveal that while every stakeholder segment has their own positive and negative notions of what natural capitals mean, there exists an agreement that the value of natural capital in tourism is threaten and declining due to rapid encroachment of development projects. This unison of perspective would go a long way to realising the more holistic management of the tourism activities in the area which is the ultimate objective of the biosphere reserve.

Key words: Ecotourism, natural capital, sustainability, biosphere reserve, host-guest perspectives, Malaysia

INTRODUCTION

Ecotourism is highly acknowledged to resolve issues pertaining to marginalised livelihood, cultural destruction, endangered species and threaten biodiversity as well as to achieving sustainable development (Lai and Nepal, 2006; Gurung and Seeland, 2008; Honey, 2008; Reynolds *et al*., 2010). Being a sector that guarantees a real and serenity of natural attraction and experiences as well as low impact development (Goslings, 1999; Blangy and Mehta, 2006), ecotourism is a viable means for managing and sustaining natural resources for a designated area of a biosphere reserve (Lu *et al*., 2007; Wallner *et al*., 2007). The underlying reason is its significance and inter-relationship of the ecotourism functions with the biosphere reserve's function in valuing its natural capitals for conservation, development, recreation and learning (Dehghani *et al*., 2010). As of 2012, there are 546 biosphere reserves around the world and many had witness successful cases of ecotourism practices and development (Kusova *et al*., 2007; Bonheur and Lane, 2002; Wallner *et al*., 2007). One of the critical success components is the synergy of multi-stakeholders in crafting the natural capitals as the attraction of ecotourism (Groot *et al*., 2003; Reynolds *et al*., 2010). The natural capital, simply need to be crafted as an ecotourism resources at all levels of users, actors and beneficiaries and most important, the local community-tourist-tourism providers and the scientists community working in ecotourism.

Although, copious of knowledge in planning, development and management exist in the ecotourism literature (Gossling, 1999; Stronza and Gordillo, 2008; Honey, 2008), research on how natural capitals had been crafted in ecotourism positioning in the biosphere reserve from the host-guest perspectives-local community, tourists, tourism providers and academia are nevertheless fragmented.

Many existing studies preferably took one or two perspectives to explore on the natural capitals in ecotourism. In fact, it had been over-estimated in the economic or ecological perspective often from the eyes of the capitalists or outsiders compared to a more holistic perspective, especially from the eyes of the locals-the aboriginals. While ecotourism principles strike for a balance in utilising and managing resources, many of the

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findings that neglect the integration of natural capitals from local perspectives have resulted limited benefits to those locals residing in the area (Masozera *et al*., 2006; Liu *et al*., 2010).

In fact, Liu *et al*. (2010) agreed to the fact that ignoring local people's interests and excluding them from the planning, management and decision making for the protected areas is the main source of conflicts between local people and the designated areas. Vice versa, due consideration given to the local involvements had shown positive impacts including locals becoming the safeguard or crusader of the ecosystem (Vodouhe *et al*., 2010; Stronza and Gordillo, 2008). In fact, Novaczek (2008)'s research on three aboriginals communities, sasi of Maluku island, vanua of Fiji and Netukulimk of Prince Edward Island, provides strong support on how rituals add values on ecological conservation practices, thus affirm the community's commitment in protecting and conserving their own ecology.

More recently, the Natural Capital (NC) had been receiving more recognition in terms of its values and applicability for devising and assessing sustainable development. Natural Capital (NC) is the natural environment from which emanates the goods and services that sustain life. Being the basis for human activity and well-being, NC can be broadly described as renewable or active NC and non-renewable or passive NC (Constanza and Daly, 1992). In fact, the current research had move beyond the ecological approach of natural capital to a more critical natural capital and extend its locality to a wider regional measurement (Bailey *et al*., 2006; Groot *et al*., 2003; MacDonald *et al*., 1999). More recent, studies showed that the locals have their own understanding on the meanings of natural capital and given proper channels, their articulations has helped to generate more localised programme for natural resources conservation (Honey, 2008; Stanza and Gordillo, 2008; Bodin and Crona, 2008). Therefore, in assessing the state of natural capital for the purpose of achieving sustainable ecotourism, qualitative interpretation of those involved in the production should be considerably attempted. Like other biosphere reserves, Tasik Chini, accorded as the first biosphere reserve in Malaysia in 2009 is aiming at enhancing ecotourism to achieve sustainable development. Tasik Chini is endowed with rich biodiversity therefore without doubts undertaking ecotourism as a means for achieving sustainable Biosphere reserve is crucial. However, researches in the late 1990s and in the early 2000 had uncovered significant reduction of tourist arrivals, both locals and internationals. While previous studies assert on the inappropriate development as why these scenario had happened, little is known on the components of natural capitals that have been threaten and diminished and to an extent had been forgotten by the younger generations and tourism providers.

Even the locals had blamed on the development of infrastructures for mass ecotourism that had disturbed the natural ecological processes of the lake and also the authenticity of the aboriginals dwellings and roaming areas. More pertinent, the knowledge of natural capitals properties from various stakeholders perspectives, especially from the local community, tourists, tourism providers and the scientists working in the area were not fully utilised to provide, develop and promote ecotourism experiences in Tasik Chini. Therefore, taking the four tiers perspective in constructing the natural capital is in tandem with the biosphere reserve which encourages research for development, learning and implementation. Realising the pressing needs for conservation and restoration of natural capital not only to increase tourist arrivals and raise ecotourism attraction-experiences but in essence to practicing an authentic ecotourism, it is therefore vital to assess natural capitals in a holistic perspective. It is believed that the utilisation of the four tiers perspectives in assessing natural capitals, an integrated ecotourism development approach will be derived and agreed upon within those stakeholders who depend, work and live in the area. Based on the study undertaken in 2010 and 2011, this study aims to analyst the perspectives of the natural capitals from four stakeholders; community-tourist-tourism providers and scientists in crafting the natural capital for ecotourism in Tasik Chini biosphere reserve. This initiative in fact is in tandem with the increasing green tourism and sustainable tourism.

Defining natural capitals for sustainable ecotourism: There exist many literature on natural capitals; focusing on its definition and concepts, application and measurement, ranging from a simple concept as composing the natural environment or natural resources to the more complex dimension, exploring the criticality of natural capital and implementing the robust modelling of regional natural capital (Ekins *et al*., 2003; Azqueta and Sotelsek, 2007; Ulgiati *et al*., 2011). Being the most commonly cited definition, Constanza and Daly (1992) defined natural capital as the stock of natural ecosystem that yields a flow of valuable ecosystem goods or services into the future. However, Ruggeri (2009) suggests the existing definitions of natural capital contain sufficient differences to allow a breakdown into four categories. The first group identifies natural capital as a stock of natural resources used in the production of

market goods and services, the second group includes ecosystem services while maintaining a link between natural capital and the production of goods and services. The third group acknowledges the benefits of nature extend beyond traditional economic activities and the fourth group recognizes that natural capital as supports life and is essential for the survival.

The concept of natural capital also attempts to integrate both economic and ecological thinking by describing nature as capital rather than only a factor of production. To the ecologist and economists, natural capital is a means to convey a greater understanding between the interactions of society and the environment. On the other hand, the environmental economists had recognized natural capital as an important contributor to human welfare as a life support system that provides a supply of resources as a waste receptor and as provider of amenities (Cellados and Duane, 1999). More recently, it has been used as a tool by policy makers to establish programs designed to conserve the environment while maintaining/increasing human welfare in social, spiritual and cultural terms (Raymond *et al*., 2009; Azqueta and Sotelsek, 2007). Others stress on the risk and environmental security (Petrosillo *et al*., 2009, 2010), social capital and leadership at the community level (Bodin and Crona, 2008) and a balance perspectives especially when the locals livelihood is highly dependent on the natural ecosystem (Nyaupane and Poudel, 2011; Bennetta *et al*., 2011).

Nevertheless several studies showed some contradictions between the locals and tourism providers with regards to the understanding and knowledge of natural resources, rights and access to natural capitals. The society regards nature or some of its attributes as socio-culturally, historically or symbolically valuable and for some people such value cannot be meaningfully expressed in monetary terms (MacDonald *et al*., 1999; Hinterberger *et al*., 1997). On the other hand, the economic perspective on nature portrays it as an asset providing a flow of goods and services, physical as well as aesthetic, intrinsic and moral. The overall provision of natural capital is therefore diverse, a means of life support; materials or inputs used to produce a product, species *in situ* used for its standing value and the species used as cultural meaning for livelihood practices and enhancement (Groot *et al*., 2003; Raymond *et al*., 2009; Haines-Young *et al*., 2006).

Besides linkages with natural resources, key determinant for sustainable development among aboriginals stemmed on its social institution. Although, many agreed that members of the community may contribute and played different roles, several researchers assert on the priority be given to the women of indigenous. This is because women have long become the custodians of valuable indigenous knowledge related to management of natural resources including forests and their products. They often create their own locally adapted and accepted rules, especially for the use of forests that frame their local institutions. Therefore in assessing natural capitals, dimension from the women's perspective should also be given equal concern. Further from Bolland *et al*. (2006)'s study on the aboriginal ejido's practices in managing natural resources, stressed that the principles of segregating productive activities are by space, time and gender. Accordingly, different ecosystem is used for different productive activity; different activity is distributed throughout the year according to season and different work exists between men and women.

Why ecotourism is well acknowledged as a tool for sustainable development in BR can be drawn through various seminal works on ecotourism and also on the BRs (Honey, 2008; Boyd and Butler, 1996; Zhang and Lei, 2011). The underlying reason is central to what Boyd and Butler (1996) elaborate ecotourism as possessing multi-faceted characters that support directly in sustainable development including benefits to the resource as well as spin-offs of social, economic, political or scientific benefits.

While ecotourism is generally labelled as eco-friendly yet studies in protected areas and biosphere reserve had shown both negative and positive impacts of ecotourism. Negative impacts include denial of access to forest and natural resources and interventions of outsiders in areas (Lai and Nepal, 2006; Liu *et al*., 2010).

Positive impacts on the other side portray on the empowerment and poverty alleviation due to community based ecotourism and pro-poor tourism. More important their engagements help them to become a more serious safeguard of the ecosystem, increased in the sense of belonging to nature surrounding them and addressed poverty (Bennetta *et al*., 2011; Gurung and Seeland, 2008). Based on the above literature, it is pertinent that the natural capitals need to be assessed not only taking stocks of biological and physical assets but it is important to appraise in qualitative understandings, knowledge and usage of the natural capitals from various perspectives.

As ecotourism is the most viable approach to ensure sustainable ecosystem of Tasik Chini biosphere reserve, this study utilised a four tiers perspectives; the local community, the tourists, the tourism providers and the scientists in assessing the natural capitals to determine its contribution for achieving sustainable ecotourism in Tasik Chini biosphere reserve.

MATERIALS AND METHODS

Location of study area: Tasik Chini, located in the Southeast region of the state of Pahang is the second largest natural fresh-water lake in Malaysia. It is recognised as one of the rich area in biodiversity of wetlands. Being accorded as the biosphere reserve, Tasik Chini encompasses three functional zonation; core, buffer and transitional zones. The designated area was once a popular destination of ecotourism. In the 1980s, tourists of international origin as well as domestic tourists flock to Tasik Chini for its nature experiences. In the 90s, when ecotourism had been commercialised and commoditised many touristic infrastructures were developed including a weir or barrage which later had upsetting the nature of the lake. As a result, not only the ecosystem functions were disturbed, the ecosystem services of the lake were also ruined and weaken thus resulting in a drastic drop of tourist arrivals. Tasik Chini, endorsed as the first biosphere reserve in Malaysia, thus has many privileges to showcase sustainable approaches in undertaking conservation and low impact development in designated area.

Data collection and analysis: This study employed qualitative data derived from field visits conducted in 2009 and 2011. As the study seeks to apprehend natural capitals from four tiers of stakeholders, tourist, local community, tourism providers and the scientist community, therefore accordingly, the data derived from the following programmes and surveys were utilised in the study.

The community's perspectives were derived from several sources of data, especially from the public consultation in 2009 (Habibah *et al*., 2011). In depth interviews with the local leaders including Tok Batin and the women entrepreneur were also sought. The tourists' perspectives were derived from the tourist survey and questions pertaining to the natural capitals, tourist experiences and environmental awareness were solicited. The providers perspectives were collated from in-depth interviews and these include the individuals who run the tourism services, the chalet operator. Interviews provided views on conservation of natural capitals.

The scientists views were collected from their contribution in research and data included taking stocks of the biodiversity. Recent study for the establishment of strategic implementation plan for Tasik Chini was also utilised. With the above available data, descriptive analysis was used accordingly to prescribe the understanding of the natural capitals from the host-guest perspectives.

RESULTS AND DISCUSSION

The host community's perspectives: While Tasik Chini is considerably strong in its ecological diversity, the study seeks whether similar understandings and awareness exist among the community. Taking a wider views of the community, Table 1 shows four community's perspectives on the importance of natural capital to their livelihood, comprising the young, women, youth and household. Based on the community household survey held in 2009 and 2010, findings demonstrate the consumption of natural capitals, especially for the domestic uses and commercialisation in ecotourism. Partly of the local's livelihood is dependent on the existence of wetland, lake and forest such as bathing, washing and drinking water, the natural resources also provide ecological service functions for handicraft production, ecotourism, herbal medicinal and cultural tradition (Habibah *et al*., 2010). Compared to the other protected area, Tasik Chini as a biosphere reserve provides avenue to the local community to have access of utilising the resources. The community was aware that visitors were not allowed to fishing and this regulation has helped them to secure the protein resources within the vicinity of their livelihood. In fact, the local practices in fish harvesting is sustainable as only a small quantity is consumed in their daily intake. Apart from the positive views, the locals also expressed

Table 1: Natural capital and community's practices

Natural capital	Community members perspectives	Level of uses	Existing and potentials for ecotourism
Ecosystem of Tasik Chini	Household	Community, individual use	Natural capital consist of what being available here and resources include lake, forest, home and place to freely play. Provide information with guided activities for public consultation
Lake water bodies	Youth and headman	Individual and community usage	Lake ecosystem has high potential for ecotourism. However, the water quality and forest keep on been threaten. Youth can not contribute in total due to lack of capital and channels
Forests resources	Women, man, local entrepreneur	Community, households, individual	Forest is important for forest products. Women contribute in making handicrafts and herbal medicinal
Legends of the ecosystem	The community	Community, household and schools	Forest and lake contributes to the legendry of Tasik Chini. Believed in local legends

their concern of ecological depletion and threats. They could see the unplanned development, rapid land use change and unsustainable resource use jeopardising the rich biodiversity and ecosystem which the community and ecotourism industry rely on.

This study had also gauge the young or schoolchildren's views during the public consultation held in 2009. Taking a more positive viewpoint, the young's recognised that the natural environment as resources are freely used for leisure, learning, community livelihood and social well being. Their skills in fishing as well as wandering in nature, swimming and bathing in small streams are the traditions they could savour locally. The youths viewpoints stressed upon the provision of the natural capitals in generating economic benefits and active human capital that utilised their exposure and knowledge in forest and lake without depriving them from modernity.

The host tourism providers' perspectives: As a destination, Tasik Chini has a small number of tourism providers yet their concern of green and sustainable tourism experience is another essential ingredient for sustainability. As of 2011, there are several active tourism providers including the small scale resort, chalet, tour operators, boatman and local sourvenirs entreprenuers. From the study, diverse opinions on the natural capital as determinant for sustainability of ecotourism are also evidence and growing towards a better understanding. According to the key respondents even though they are of small scale operators, they are aware of the needs to enhance their knowledge on the current best practices and concern of sustainable practices yet due to limited capital, trainings and informations were hardly accessible to all of them.

From the tour operators feedbacks, findings depict on a declining environmental asset as the reason Tasik Chini was losing its charm to tourists. Lotus flowers, the main showcase of Tasik Chini have been declining significantly since, late 1990s. Meanwhile, hesitation from the tour agencies serving a wider market at the national and major attraction at state level to include Tasik Chini in the tourist itineraries is attributed to the environmental degradation affecting the natural beauty of Tasik Chini. Also observed, regular complaints from tourists indicating environmental attractiveness of Tasik Chini did not match the advertised descriptions.

Compared to the findings on gender differences in viewing the natural capitals whereby women often became a better safeguarding compared to men, results pertaining this issue in the study area show a more balance responsibility of both gender on managing the natural capital.The men of the Tasik Chini are involved in ecotourism, also played dominant roles in safeguarding the natural capital. Above all, the aboriginals even though still practise animism, believed that with equal roles between man and women, their livelihood were more stable and more connected to the surrounding ecosystem. In fact, among the tourism providers, their shallow understanding of natural resources is also changing. While they often look natural capital as only an input or resource of conducting businesses during their early involvement in ecotourism, currently, they are more aware of the value chain of natural capital. The ecosystem of the lake was not only referred to direct practice in providing them the lake attraction but the ecosystem also provides services and inputs to be utilised in handicraft production and also as the augmented ecotourism experiences especially in making the existance of its lake attaction.

The tourists as guest perspectives: Having a unique, pristine and rich in natural capital is a requisite for any ecotourism destination. Natural capital thus becomes the key attraction and foremost motivation to all eco-tourists. Vice versa, its deterioration will upset the tourists experiences and satisfaction upon their visit. From the tourist's survey undertaken in 2010-2012, the findings demonstrate on the emerging of tourists concern on the degrading quality of natural attractions as well as their preferences that the destination had on offer.

From the study, three categories of ecotourist shown in Table 2 are emerging. First, the individuals or group of eco-tourists who travelled either on tour agency's services or on their own initiatives. These types of tourists-individuals or groups spend several days in the aboriginal villages, stayed in the eco-lodge and engaged in ecotourism package, including eco-trails managed by the local operators.

Second, the planned eco-tourists whose travel itineraries were organised and managed by the research centre particularly the Tasik Chini biosphere reserve and their activities, satisfying on educational, learning and research purposes. These types of tourists support what have been called as S.A.V.E tourist, comprising the scientist, academia, volunteers and educational tourists.

Also apparent, these tourists put their interest and concern on the biodiversity of Tasik Chini ecosystem. They comments touch mostly on the murky water, loss of lotus as natural flora and fauna and eroding cultural uses of the natural capital-forest, water, fish and forest products as well as natural landscape of the aboriginals. In fact, the tourists tend to be more tolerance with the simplicity of travel experiences and facilities available at the site as only minimal comments received on the lack of quality accommodations, food and tourist facilities. Added to this, views and feedbacks from the knowledge ecotourist were also solicited. Based on the data extracted

Table 2: Natural capital and comments from tourists of Tasik Chini

Tourist categories	Types	Sources	Usage of natural capital	What tourists seek?	Implication for natural capital management
Individual or planned tourist by tourist operator	Mass tourist	Lonely planet tourism	Lake and rivers, local ecosystem and local food by locals and resort	Lake experience, ecotourism, local livelihood, cultural attraction	5 viewers giving rather unsatisfactory for their travel, natural assets been threaten, understanding of degrading quality of natural assets. Dam and river excursion, expression of concerned effort for sustainable practices, local chalet operator need to upgraded services, water quality-murky and scarce of lotus
	Backpacker	Singaporean group, blog writer	Lake and rivers, local ecosystem and local food prepared by the local tribes	Knowledge experiences and real life experience, socio-cultural experiences	Expected the simplicity of accommodation, unwind with the nature, http://thebro wnd ot.com/travel/?p=312 sharing experiences and local practices, introducing the canoeing while fishing. Even the young girls were taught to seek local food
Organised knowledge ecotourists	Students/ young tourist	Locals, domestic local ecosystem	Lake and rivers, experiences and local food, research station facilities, catering food prepared by locals	Knowledge and real life experience, scientific expedition	Conservationprogrammeofbiosphere reserve
	Youth tourist, mobility programme held annually; knowledge ecotourist. Save tourist	Locals and international segment	Lake and rivers, local ecosystem and local food, research station facilities, catering food by locals	Knowledge and scientific experiences and real life experience, local cuture	Visits filled with programmes related to conservation and understanding of sustainability
Day trippers or stopover	Families of youth, locals Pahang	Locals of various origins, ethnics	Lake and rivers, local ecosystem, resort facilities, local food	Leisure and lake ambiances	A place with better facilities now. A lake experience

Survey analysis, 2012

from mobility programs held in 2011 and 2012, the participants expressions on natural attractions and conservation initiatives seem to portray what biosphere reserve should be to locals and international audiences as follows:

> It is heading towards a sanctuary for biodiversity within its area. Bringing back the fishes is a good choice. I hope that in 3-5 years time when I come back with a net, I will not see small fish tangled up in my net. It is important that the trees to be conserved as well as the surrounding hills. I noticed many of them have bald spots. Imagining its long-term effects on the lake is horrible. Expanding the lake boundaries is a good idea as long as we are mindful of the indigenous people. Overall, it is for a good cause

> At first this lake just look like other lakes but after hearing the first lectures in the first day, I possess a great expectation in this place since it is a heritage lake

> Tasik Chini is a beautiful place that upholds various belief, legend and faith of indigenous people along with rich flora and fauna

> In a word, I think Tasik Chini is a fantastic place as biosphere reserve. It contains different kinds of fishes, birds and other wildlife. Therefore, it is a diversity place. On the other hand, the workers here are also very hard working. If everyone can continue paying their passion, this place will become better and better. The technology used here is also perfect

> It was great to see the lake, enjoy the boat trip as well as the forest journey. It was big and beautiful. It is full of love and energetic

> I see the effort paid in the program especially after the sharing of the lady during the forest visit. And I appreciate the attitude of UKM in protecting and sharing the conservation work during the mobility program

Make more improvement in how to present biosphere reserve to the public would make it more renowned and successful

Meanwhile, the day trippers seem to be interested with the sites, through relatives and friends word of mouth. Their activities include boating, visits to the orang asli's settlement and admiring scenic lake attraction. As a whole, although their contexts with real experiences are at different levels and purposes there seems an agreement of a mixed of positive and negative tourism images and more importantly, many tend to support conservation and restoration initiatives.

The scientific community as guest perspectives: Being a biosphere reserve, an educational function is essential as it intends to provide a learning model that other biosphere reserve can also learn and pursue. Therefore, scientific exploration, education and research are the key components need to be showcased in Tasik Chini. The data, researchers had collected confirm on the scientific perspectives of the natural capital. The area had received attentions from the scientific communities. While in the 1970's, the expedition explored on the properties of the lake and virgin forest in the 1980's, the scientific based program was more organised and the results were established to the society. Of current progress, the scientific community play more rigorous roles. Since, 2004 findings help to establish ecosystem of flora and fauna as well as the community. In fact based on several scientific expeditions, Tasik Chini still withholds a diverse natural capital, shown in Table 3. Being rich in biodiversity, Tasik Chini ecosystem comprises freshwater lake, fed by 12 feeder rivers, surrounded by state park rainforests and dominant hill areas also provides ecotourism activities of water-based and forest-based attractions. Ideally, a diverse range of natural assets, unique and pristine ecological attractions determine the existence of quality ecotourism. Apart from the water based and forest based attraction each of these natural capital provides ecological services, namely providing sources of food to inhabitants, flood or water retention, food chain and natural habitats to the local species. This certainly add values to ecotourism attraction. On recent development, a research centre was established, responsible to handling research, education and trainings. More pertinent in Tasik Chini, scientific programmes had been commenced since, 1980's and these initiatives were intensified in the 2000 until today. Interestingly, the natural capital explored by the pure scientist is concentrated in the selective components of water bodies or lake and rivers, flora and fauna,

Table 3: Ecological capitals for ecotourism

Natural capitals and components	Biodiversity status	Ecotourism purposes
Flora and fauna	About >144 species of fish, 260 plant species, 25 aquatic plants, 46 families of insects 304 species of non-aquatic vertebrates, 14 amphibians, 39 reptiles species from 12 families, 184 birds species from 40 families and 67 mammals species from 22 families	Diversity still a strong point of ecotourism Nature tourism, ecotourism birding, forest trails, sightseeing
Water bodies, lake and rivers	12 open water bodies called laut by local people. The second largest natural fresh-water lake, totalling 202 ha of open water	Water based nature and challenge; Scenic experience
Hills and undulating landscape	700 ha of Riparian, Peat, Mountain and Lowland Dipterocarp forest	Trails and serenity
Forest	Dipterocarp forest	Trails, expeditions, forest products, herbs production
Agricultural activities	Cultivate natural capital	Provide landscape and agro-based activities. Farm based aboriginal tourism
Climate	Humid tropical climate with two monsoon periods. Annual rainfall varies, 1488-3071 mm	Humid tropical climate as attraction. Shiny and bright landscape. Sunrise and sunset experiences
Local inhabitant	Indigenous Jakun tribe living around Tasik Chini	Community, actor and recipient in ecological capital

Data bank of Pusat Penyelidikan Tasik Chini, 2011

Table 4: Overall perspective on natural capitals of Tasik Chini

Aspect of natural capitals	Community	Tourism providers	Tourists	Academia or scientific community
Existing natural capital asset still undisturbed	No	Mix	Not sure	No
Tourists coming at slow pace	Yes	Mix	Not sure	Yes
Still accepting the nature and beauty of the lake	Yes, far from previous years	Yes, mixed	Yes but mixed	Yes but threaten and depleted
Natural capital-depletion occurs without control	Mix	Not sure	No sure	Yes
Vast potentials	Yes	Yes	Yes	Yes
Restoration, conservation of green technology. Control development and sustainable development practices	Yes, locals evolved with green surrounding	Yes, towards green eco tourism	Yes, towards sustainable destination	Yes, towards fostering the logistic functions of research, knowledge and development
Ecosystem depletion in total will cause interrelated impacts	Yes	Yes	Mix	Yes
Development of plantation, mining as threats	Yes, mixed	Yes, mixed	Not sure	Yes
Conservation effort and control development	Yes, not limiting development to locals	Yes, mix for business sustainability	Yes, not scarifying tourist needs and quality	Yes, equality to resources and development

hydrological issues there is a rising concern of the need for an integrated approach in research in social sciences, especially in ecotourism, social cultural interpretation of the aboriginal and the tourist behaviour. Added to this was the rising of the architecture and engineering of the river slopes studies undertaken by members of the research centre.

Natural capitals of Tasik Chini: Overall perspectives as shown and discussed in each of the perspective, the overall crafting of natural capital for sustainable ecotourism from the host-guest perspective is shown in Table 4. The host-guest of Tasik Chini seems to have a mutual understanding of what matters natural capital for ecotourism. Even though, some of the aspects received a total agreement yet the underlying factors whose responsibilities and capabilities should be employed, seem to have mixed agreement. Most important from the host guest perspectives, the conservation and control development had received an overall agreement yet their link to natural capital and development still unpinning by their priorities. Restoration and green technology as well as achieving sustainable development practices also saw how natural capitals act as foundation for sustainable development with different level of understanding and functions.

CONCLUSION

The results on the study show that there is an existence of common agreement on the importance of natural capitals when ecotourism becomes the central sector in enhancing sustainability of ecotourism sector. First, the natural capitals are now becoming the major input and outcomes in the process of sustaining ecotourism of this destination and each of the stakeholders pay some respect to the understanding of the natural capitals including the traditional knowledge of forest, myths or legend of the area. Second, almost all stakeholders agreed upon their responsibility to conserve the natural capitals, meaning that the safeguarding is not only the tasks of the locals but all the respective stakeholders involved in ecotourism. Third, was the consensus of only selective projects should be allowed to be developed as without mutual understandings of the constraints and capability that the natural capital has to bear, the ecosystem will be threatened.

Above all, the study concludes that the understanding of the natural capitals for the purposes of sustainability of ecotourism from the host-guest perspectives is closely related to the changing mindset on the importance of the area to become the national ecosystem that needs to be inherited, developed and managed in a sustainable approach. It is imperative that further understandings of the natural capital for educational ecotourism enhancements and tourism promotion to be explored as these enhancements serve a value chain in the logistic support and development of the biosphere reserve.

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