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Policy and Related Issues Pertaining Community Participation in the Management of Protected Area (PA): A Case of Pahang National Park, Malaysia

Ahmad Naqiyuddin Bakar

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Abstract

With the goal of significantly reducing biodiversity loss, the United Nations General Assembly declared 2011–2020 as the United Nations Decade on Biodiversity. As a signatory to the Convention on Biodiversity, Malaysia is obligated to safeguard the biodiversity through the protection and management of many protected areas (PAs). Achieving sustainability related targets by involving the local communities is an agenda of the day. Inclusivity is the key issue in which various stakeholders are brought to the fore, i.e., the Orang Asli and local villagers; yet, there are others being sidelined. This means, the effective management of these protected areas remained a debatable issue. Hence, this is a systematic inquiry on the governance of protected areas that reiterates the importance of the local communities' participation. Interviews are conducted with local communities that are living in Pahang National Park, specifically in Kuala Tahan vicinity. The data analyzes three features to a community engagement process: (i) the importance of building capacity for indigenous knowledge; (ii) the role of Department of Wildlife and National Parks (PERHILITAN) in facilitating sustainable and resilient communities, and (iii) empowering and harnessing the commitment of all stakeholders to conserve biodiversity. The results suggest that understanding the different needs and concerns of stakeholders are important to achieve sustainability related goals.

Keywords: protected area, PERHILITAN, biodiversity, Taman Negara Pahang, indigenous knowledge

1. Introduction

With regard to the sustenance of biodiversity and more balanced global growth agenda, United Nations declared 2010 to be the 'International Year of Biodiversity'. The priorities identified

by the United Nations General Assembly in 2011–2020 will continue to pursue the overall aim of reducing biodiversity loss, in conjunction with the United Nations Decade on Biodiversity. This commitment has been taken on by the United Nations Environment Programme (UNEP) which call for a fresh forward-looking approach on the international biodiversity agenda with the formation of the Strategic Plan for Biodiversity 2011–2020 [1]. This 10-year framework for action by all countries and stakeholders will be geared towards preserving the present and future biodiversity thereby bringing benefits for all society and economy. The consequences of this initiative have seen the development of biodiversity targets where '[...] by 2020, at the latest, biodiversity values have been integrated into national and local development [...] and reporting systems' [1].

Malaysia ratified the Convention on Biological Diversity (CBD) in 1994. As a signatory to the Convention on Biodiversity, Malaysia is obligated to safeguard the biodiversity through the protection and management of many protected areas (PAs). Following that, the first National Policy on Biological Diversity was formulated in 1998. This Policy addresses the impending challenges and concerted efforts that are needed to further develop and validate through new broad-based strategies that will enable the nation to protect its biodiversity in the coming years. Consequently, the National Policy on Biological Diversity 2016–2025 consolidates and ensures the continuity of efforts to conserve biodiversity and use it sustainably in the specific context of areas that are undergoing rapid socio-economic and environmental challenges. It also symbolises Malaysia's strategic response to the Convention on Biological Diversity's Strategic Plan for Biodiversity 2011–2020 [2].

However, the effective management of these PAs remained a debatable issue. Regarding the issue of policy and management, there is arguably lack of strong national leadership on sustainable development which restricts the effective implementation of consistent policies and necessary propagation of biodiversity issues. The existing policy framework for conservation and management of PAs as well as indigenous communities is sound but is not effectively implemented or monitored. Furthermore, there are inconsistent and conflicting policies between the Federal and state authorities and a lack of effective interagency coordination, including Federal-state coordination mechanisms to manage PAs. Furthermore, there is no national framework/system to standardise PA management practices. Given the fact that protected area tourism is lucrative and has become pervasive in society, intense and rapid developments have been undertaken for providing better and exclusive nature experiences. But frequently in the case of PAs, inexorable threats to the environment are unavoidable, where specifically, the development and benefits of the economic benefits (i.e. tourism industry) are enjoyed at the expense of nature and other social impacts. Therefore, there is an urgent need to conduct a systematic inquiry on the policy and governance of PAs that reiterates the importance of the local communities' participation.

This Chapter pursues several lines of enquiry. Considering some of the issues in the management of PAs, the aim of this Chapter therefore is to examine the issue pertaining to the community participation in the PA with particular reference to Taman Negara Pahang. The paper is structured as follows: after this introduction, the second section briefly reviews the concepts of PA. Following this, the third section looks at the Malaysia's PAs and some of the legislations that govern them. In the fourth section, some considerations are given to the research method of the study. The fifth section discussed specifically the case of Pahang

National Park, in relation to the roles of PERHILITAN. The sixth section puts presents and discusses the analyses of the findings. A very brief recommendations are proposed in the seventh section. Finally, the eighth section considers some way forward for future studies in the area of PAs management.

2. Protected areas

Generally, PAs are framed with a growing need to make the environment and its diversity more sustainable, and to preserve its pristine free from human occupation or at least the exploitation of its resources is contained. More universally adopted definition across literatures has been offered by the International Union for Conservation of Nature (IUCN) in its categorisation guidelines for PAs as follows:

‘A clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values’ [3].

In retrospective, even though PAs were generally acknowledged on a national scale, a precise conceptualization and definition remained elusive until 1933, when finally an international consensus on the standards and terminology of PAs was finalised at the International Conference for the Protection of Fauna and Flora in London [4]. The effect the Industrial Revolution had had on the world’s natural environment was recognised, and the need to sustain it for future generations was accorded at the 1962 First World Conference on National Parks in Seattle [5].

Since then, it has been a global commitment for the benefit of all citizens, the environment and the society, through regular revisions for the succinct categorisations to regulate and record PAs. The protection of representative examples of all major ecosystem types was endorsed by the Stockholm Declaration of the United Nations Conference on the Human Environment in 1972. This depicts the importance of jointly addressing global challenges among signatories to national conservation programmes. In effect, this also has formed part of the initiatives on conservation biology where this is of mutual benefit for all participating countries in subsequent resolutions – as stipulated by the World Charter for Nature in 1982, the Rio Declaration at the Earth Summit in 1992, and the Johannesburg Declaration 2002.

The world is on track to meet a 2020 target on the expansion of PAs, but more work is needed to ensure areas of importance for biodiversity and ecosystem services are prioritised for protection under equitably managed conditions. Issued by UNEP’s World Conservation Monitoring Centre (WCMC) in partnership with IUCN, and funded by the Swiss Federal Office for the Environment (FOEN), Protected Planet is keen to promote increasing cooperation on PA strategic priorities, while providing assistance to governments for accelerating progress with recommendations for action [6]. The report finds that 15.4% of terrestrial and inland water areas and 3.4% of the global ocean are now protected—highlighting growing global awareness of the need to safeguard the natural resources. Consequently, this specifies the priority areas for mutual beneficial cooperation, which will be reflected in the upcoming Sustainable Development Goals. Noting the fact that policy impacts of PAs are different individually and in combination, the conservation of species, ecosystems and the livelihoods should also

respond and adapt to as well as mitigating the impacts of climate change —for example, by reducing risks from natural hazards and providing a carbon sink through forests, 7.8 million km² of which are in PAs. The report facilitates how the work will support effectively PAs policy implementation in the countries' efforts in meeting Target 11 of the Convention on Biological Diversity's Aichi Biodiversity Targets. Since 2012, a total area of new PAs totalling of 1.6 million km² have been designated. Target 11 calls for effectively and equitably managed conservation areas covering at least 17% of the world's terrestrial areas and 10% of marine areas—the areas aimed at creating new opportunities for biodiversity and ecosystem services—by 2020 [6].

Over the years, the importance of PAs has been at the centre of global concern against the threat of human factors which should be incorporated within environment risk management and the understanding of the necessity to the broader international sustainability and climate change agenda in a sustainable manner. PAs impacts are inherently and increasingly acknowledged not only ecologically, but culturally; taking into account the spectrum of Indigenous and Community Conserved Areas (ICCAs). International programmes for the protection of representative ecosystems remain relatively progressive (allowing specific environmental challenges of globalisation with respect to terrestrial environments to be addressed), with less advances in marine and freshwater biomes [6]. Using the August 2014 version of the World Database on Protected Areas, the protected area coverage was calculated. In 2014, the database underwent a major update, based on the overwhelmingly positive response to a CBD request for parties to the convention. The UNEP-WCMC took step to compile the UN List of Protected Areas and found that until August 2014, 124 countries had submitted new data while 15 were in the process of submitting [6].

3. Malaysia's protected area

Malaysia has established a network of PAs for the conservation of biological diversity. Some of these permanent reserved forests, national parks, wildlife reserves and sanctuaries, nature reserves, bird sanctuaries and marine parks have been established as early as the 1930s. Terrestrial PAs (% of total land area) in Malaysia United Nations Environmental Program and the World Conservation Monitoring Centre, as compiled by the World Resources Institute, based on data from national authorities, national legislation and international agreements [7]. State governments are already gazetting important new areas to encourage further shift towards conservation, for example the Sedili Kecil Swamp Forest in Johor and the limestone hills in Perlis. As for Sabah and Sarawak, these both States have special status when they joined Malaysia in 1963 in which they have jurisdiction on wildlife and forests [8]. Among prominent PA managing authorities in Malaysia include PERHILITAN, Forestry Department Peninsular Malaysia, State Forestry Departments (Peninsular Malaysia), Department of Fisheries Malaysia, Department of Marine Parks Malaysia, Johor National Parks Corporation, Perak State Parks Corporation, Sabah Forestry Department, Sabah Parks, Sabah Wildlife Department, Sabah Foundation (Yayasan Sabah), and, Forest Department of Sarawak.

The National Forestry Act (1984) has earmarked permanent reserved forest located in various parts of the country. In 1992, the National Forestry Policy was revised to take into account the sustainable use of genetic resources, the importance of biological diversity conservation and as well as the role of local communities in forest development. For now, Malaysia has about 14.4 million ha of permanent reserved forests. Taman Negara Pahang or Pahang National Park is an ASEAN Heritage Park [8]. This, in part, explains the reason behind Government's commitment on protection of biodiversity with particular attention to vulnerable to exclusion community. Consequently, Malaysia is currently a party to several multilateral environmental agreements such as Convention on Biological Diversity (CBD), Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention), and Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (Table 1).

Level	Laws
Federal	Federal Environmental Quality Act 1974 Fisheries Act 1985 Pesticide Act 1974
Peninsular	Waters Enactment 1920 Malaysia Taman Negara (Kelantan) Enactment 1938 Taman Negara (Pahang) Enactment 1939 Taman Negara (Terengganu) Enactment 1939 (The State Parks from the above three Enactments constitute Taman Negara) Aboriginal Peoples Act 1954 Land Conservation Act 1960 National Land Code 1965 Protection of Wildlife Act 1972 National Parks Act 1980 National Forestry Act 1984
Sabah	Parks Enactment 1984 Forest Enactment 1968 Fauna Conservation Ordinance 1963
Sarawak	National Parks Ordinance 1956 Wildlife Protection Ordinance 1958 Forest Ordinance 1954 Natural Resources Ordinance 1949 Public Parks and Greens Ordinance 1993 Water Ordinance 1994

Table 1. Partial list of legislation relevant to biological diversity [9].

4. Research methods

A qualitative design was employed. Ref. [10] describe qualitative research as involving "... an interpretive naturalistic approach to the world". The researcher chose this design as it enables one to get quality look at a phenomenon.

Data was generated through unstructured interviews, covert observation and analysing documentations on Malaysia's National Park. An unstructured interview is an interview without any set format but in which the interviewer may have some key questions formulated in advance. In this research, local villagers as well as indigenous communities from Taman Negara Pahang were interviewed to establish circumstances that led them to feel engaged in the development of PA. In this study, the researcher assumed a quasi-covert observation as he mingles in the villages among the communities without status revelation. Seven respondents among local communities and researchers from the area near Taman Negara were purposively sampled for this research as they were the ones residing close to the vicinity.

5. Case study: Taman Negara Pahang

Taman Negara was established in 1938/1939 covering the area of Titiwangsa Mountains, Malaysia, as the King George V National Park. After independence, it was renamed to Taman Negara which means 'national park' in Malay. With standing reputation as one of the world's oldest deciduous rainforest, Taman Negara is estimated to be more than 130 million years old covering a total area of 4343 km² [1, 2].

Deforestation not only affect seriously people's health but bring tumultuous impact to environmental ecosystem, contributes to global soil erosion, climate change, drought and flooding [1]. More than half of plants species are found in the rainforest even though it only comprises less than 10% from total forest in the world, As a matter of fact, the native plants and animal species in the world's tropical rainforests are becoming extinct due to deforestation and agricultural expansion. Taman Negara is heralded as the most extensive protected area of pristine, lowland, evergreen rainforest in Malaysia. Thus, Taman Negara foresees the aim 'to utilize the land within the park in perpetuity, for the propagation, protection and preservation of indigenous flora and fauna'. Regarding the legislation of the Taman Negara, in retrospective, during the 1970s the importance of environmental legislation became more recognised at the federal level. The Protection of Wildlife Act, for example, was passed in 1972. Currently most environment-related legislation is sectoral based, meaning that conservation and protection responsibilities cross cut several departments. For example, the National Forestry Act (1984) is concerned with forestry conservation only. Concomitantly, wildlife and national parks management is the responsibility of the Department of Wildlife and National Parks. Under the Federal Constitution, land, water and forests fall under the jurisdiction of each state. Biodiversity conservation requires forests and land to be protected [8].

The history of Taman Negara can be traced back from as far as 130 million years ago, far earlier than of Africa and Latin America. Its location was far enough away from the ice during the ancient

Ice Ages when most of the Earth was covered with immense glaciers. For many of the planet's tropical rainforests, their evolution only begun at the point when the glaciers receded. Due to this, the Taman Negara is said to be far older than the Amazon or the Congo equatorial forests. Its uniqueness lies on the fact that Taman Negara has been the home of nomadic forest people, and treasured ancient civilisations that have been flourished as well as disappeared in its wilderness. Along with its mystiques, stories and legends, already archaeologists have just developed their interests here. Simultaneously, genetic biologists who study the wealth of life that Malaysia's forest can offer also have made exciting discoveries about new medicinal plants with potential cure for AIDS, cancer, and related illnesses. Standing tall with Gunung Tahan – the country's highest mountain in Peninsular which resides in Taman Negara, this is a homegrown to more than 10,000 species of plants, 300 species of mammals such as the Sumatran Rhinoceros, the Asian Elephant, tigers, sun bear and tapirs; 300 species of fish and over 380 species of birds [2, 11, 12].

In terms of legislation, due to its geographical location sharing by the three states in Peninsular – Pahang, Kelantan and Terengganu, the Taman Negara is governed by those three state's legislation. The Taman Negara Enactment (Pahang) No. 2 of 1939 is enforced in the state of Pahang, the Taman Negara Enactment (Kelantan) No. 14 of 1938 in the state of Kelantan and the Taman Negara Enactment (Terengganu) No. 6 of 1939 in the state of Terengganu. However, the contents of the legislations are rather generic. In terms of size, Taman Negara Pahang is the largest at 2477 km², followed by Taman Negara Kelantan at 1043 km² and Taman Negara Terengganu at 853 km². PERHILITAN as the body entrusted with the responsibility to manage the Taman Negara requires all visitors to obtain permits to enter the area. Beside Gunung Tahan, which is accessible through Kuala Tahan or Merapoh as the entry point [13], visitors can enjoy several other geological and biological spots available in the park. Canopy walkway was erected as one of the iconic symbol of the park - that fast becoming a must visit ecotourism destination in Taman Negara. With regard to richness of flora and fauna, National Park is home ground to some rare mammals, such as the Malayan tiger [13], crab-eating macaque, Malayan gaur (seladang) and Indian elephant. Bird species such as the great argus, red junglefowl, and the rare Malayan peacock-pheasant are still found here in some numbers. Tahan River has been preserved to protect the Malaysian mahseer (ikan kelah in Malay), a type of game fish.

5.1. Department of Wildlife and National Parks (PERHILITAN)

The Department of Wildlife and National Parks (DWNP) or PERHILITAN is an agency tasked with the management of national parks and wildlife reserves in Peninsular Malaysia. The management of these areas is aimed to the long-term conservation of PA while mitigating or reducing conflicts between human and the environment orientated around the planning and implementation of various activities. To ensure optimum benefit to human and prosperity to the environment for the present and future generation, the development of PA was done sustainably [7]. The swiftness of the response to the concern over the loss of biodiversity, in providing for the conversation agenda has been overwhelming. What is now important is how the rebuilding efforts are sustained. PERHILITAN has played a central role in the empowering communities to those living in the vicinity of Taman Negara through the provision of aid for immediate basic needs and also through the actions of many small community based NGOs. Along with other agencies such as Department of Orang Asli Development Malaysia (JAKOA),

this are orientated towards longer-term objectives in providing both a voice as well as practical assistance to specific segments of the population affected by the development. Through a cooperative approach, university researchers can also work along with communities more efficiently than in the past. In the case of nearby villages, the highly satisfactory results are in information for planning, improved local community consultation, improved enforcement and improved stakeholder engagement through the operationalising of formal governance mechanisms. Consequently, these are the strengths of the Taman Negara Pahang.

The networking of community and stakeholder engagement initiatives addressing multiple need of stakeholders including a diversity of communities - are significant achievements. The inclusion of various stakeholders is prerequisite for the project's success, improved technical and logistical capabilities coupled with more effective coordination on the ground have contributed to improvements in the overall park management [8].

6. Discussion

6.1. The importance of building capacity for indigenous knowledge

Communities living in or near the protected area, visitors and other stakeholders of PA will feel a far greater commitment to park management objectives and practices if they have the opportunity to be involved in managing the resource. In Kampung Gol, Kuala Tahan, the villagers, through the Taman Negara Bird Group (TNBG) have indulged seriously on bird watch activities when they collaborated with a group of researcher from Universiti Teknologi MARA (UiTM) – one of the Malaysia's public universities. This indicates an increased sense of ownership, the nature of traditional knowledge and cultural values represent the core for building a strong foundation that will ensure sustained growth. Arguably, therefore, that a first priority for developing efforts should be to exploit tacit knowledge by increasing participation of individuals and other local communities that could have a substantial impact on the process of development. Engage and empower indigenous peoples and local communities living in and around nature tourism sites as active participants in ecotourism planning and implementation so that their livelihoods are improved and the sites are better protected. It includes the incorporation of local knowledge and the power to input into the management process of these local resources which is often more important in supporting and providing the basis of local livelihoods to a majority of the population in a developing region such as Kuala Tahan and surrounding areas nearby Taman Negara.

Biodiversity, or the variety of life on earth, is something that we all critically depend on. It is essential to the well-being of the planet and, in particular, for the human beings who live on it [14]. In an effort to provide clarity, the World Bank explains that indigenous knowledge (IK) is the 'social capital of the poor, their main asset to invest in the struggle for survival, to produce food, to provide for shelter or to achieve control of their own lives'. The United Nations describe the importance of the local knowledge this way: 'Indigenous Knowledge is the basis for local decision making and problem solving in areas including, but not limited to, agriculture, health care, food preparation, education and natural resource management.

IK is tacit knowledge traditionally held by communities rather than individuals and is commonly embedded in community practices, institutions, relationships and rituals and therefore, difficult to codify' [15]. Generally, (1) the indigenous system is not well connected among various sectors of the economy including universities, private enterprises, government agencies and grassroots innovators. Owing to the inadequacy of scientific and technological research, low investment expenditures and poorly trained labour, the linkage of the traditional knowledge system with the modern knowledge system is inadequate to generate high backward and forward linkages. (2) Because of duality of the economic structure, indigenous peoples have remained isolated from modern sectors of the economy in which most modern technologies are employed. Under such circumstances, building technological capacity to foster growth is limited by lack of skilled labour capable of using, and access to training in, modern technology. (3) The modern knowledge system practised in developing countries is not well integrated into the global knowledge system. In these countries, inadequacy of international standards does not permit rapid improvement in the quality of technology and, therefore, engenders poor quality in products outputted in these countries. (4) The traditional knowledge system is disconnected from the educational and learning systems in developing countries. Accordingly, traditional knowledge systems to continue relying on traditional ideas and primitive practices with little input from modern knowledge. In isolation, the traditional knowledge system cannot promote global competitiveness. Only modern knowledge facilitates productivity through more efficient utilisation of IK. (5) It is not easy to codify and record IK and, therefore, sharing this kind of knowledge among communities and cultures becomes difficult [16, 17]. Most of these ideas are in the form of tacit knowledge stored in the mind of people who live in a given environment influenced by unique features related to their worldview. Some of these ideas have been in existence for thousands of years, which could further be developed in the light of the new knowledge and technologies [18].

Orang Asli in Taman Negara engage in predominately around the tourism industry and other activities that are inter-connected with this important industry such as fresh water fisheries. In developing countries, typical traditional rural communities benefits from a large number of species for medicinal purposes. This localised knowledge has been used by pharmaceutical companies in their search of new drugs, with high biodiversity and long tradition of the use of plants for medicinal purposes [2]. Biodiversity forms an essential part of the cultural life of Malaysia's indigenous people, including food and medicine from plant and animal species. For instance, both the availability of trees, rattans and aquatic plants as well as other natural offer motifs for carving and traditional weaving. The Dayak and Orang Asli, for example, incorporate designs of leaves, seed pods, tendrils, buds and flowers in their traditional carvings of houses. In echoing the cultural consciousness of the value of biodiversity to local community, towns and villages are named after important and useful plants, animals and characteristics found in nature, such that modern-day built-up environments persist [2]. A review conducted into management of PA in Taman Negara Pahang found that communities would show greater commitment to the Park's objectives if they were involved in the management process. The review recommended that all stakeholders should be engaged regularly to discuss decisions that will affect them. Further, PERHILITAN officer should continuously build relationships with all stakeholders, to establish a platform for dialogue, cooperation, and information sharing. Other studies have shown that a strong conservation ethic will arise from the community's

sense of ownership of their heritage and the ability to see the connection between their livelihoods and sustainable resource use. Experience in many locations has demonstrated that involving local stakeholders in community-based resource management requires a great deal of consultative work, trust and commitment. The process requires patience and understanding and it cannot be shortened or rushed. The lack of such consultation in Malaysia in part explains why externally developed management activities in the PAs have had limited success.

It is observed that, the informal sector tends to be larger in rural areas dominated by primary industry including agriculture and fisheries, when considering a broader international context [19]. Also typically elsewhere, the informal sector is of crucial significance to the tourism industry with no exception to Taman Negara Pahang. In the nearby villages, the communities involvement in the informal and agricultural sectors found to account for a conservatively estimated over half of employment. With a high proportion of the local communities dependent on income from the informal sector, the direction of social sustenance centred around livelihood support and social protection, needs to bear in mind underlying conditions impacting upon the target population. This is vital to ensure the effectiveness of any initiatives designed to foster a sustainable environment, which will underpin the long-term viability of both the economy and the natural environment upon which the economy depends. In the light of biodiversity loss such as deforestation, destruction of endangered fauna and flora, water pollution, sedimentation, decimation of water catchments, soil erosion, landslides, and downstream flooding, these problems have been worsened and turned into disasters due to the extremely fragile and sensitive nature of geographical ecosystems, which disrupts the ability of most of those affected as they did prior to the disaster. Organisations such as the Malaysian Nature Society (MNS) and the World Wide Fund for Nature-Malaysia (WWF-Malaysia) have played significant roles in scientific work as well as in advocacy in the conservation of biodiversity in Malaysia for the last few decades [8]. There is an effort to establish a framework for evaluating the effectiveness of PA management and governance, including developing appropriate criteria, methods, standards, and indicators for the National PA system, taking into account the IUCN-World Commission on Protected Areas (WCPA) Framework. For example, community groups have been formed in order to improve participation in local government decision making and rehabilitation initiatives including the rebuilding of the houses which were demolished by the massive flood in 2016. The need to look after our natural environments and their biodiversity is a matter of great urgency as species become extinct at ever increasing and alarming rates, almost entirely as a direct result of human activities [20]. Yet despite evidence of local resilience community resources can be further be optimised with careful planning and plan of action.

6.2. The role of PERHILITAN in facilitating sustainable and resilient communities

Through its role in environmental management, monitoring and reporting, PERHILITAN plays a significant role particularly when they are involved in initiatives that engage with local communities aimed at rebuilding livelihoods to facilitate sustainable and build resilience. A holistic approach focused on long-term solutions to significantly sustaining the PAs management for those living in the National Park is increasingly a focus of PERHILITAN. This agency has become a valuable and ongoing contributor to efforts to conserve biodiversity through its role in local management of the park. In terms of risk, a biodiversity resource such as a natural forest,

may be considered for economic use by one stakeholder but have a different usage for local inhabitants who may see its use as 'an inalienable right' [21]. Benchmarking Australia, under the Environment Protection and Biodiversity Conservation Act 1999, regional communities are obligated to provide lists of endangered and critically endangered species, vulnerable species, and nationally threatened species, populations and ecological communities and key threatening processes [22, 23]. Because the PERHILITAN has been in partnership and networking with various stakeholders as well as with university researchers, it is a leading government agency with local legitimacy. With close and trust based relationships that the PERHILITAN has built with local communities, other agencies can leverage on this unique networking. At the same time, PERHILITAN can become a facilitating conduit for other agencies to deliver aid and coordinate programmes on the ground, through establishing and engaging with the park communities. This positions the PA as pivotal in the park – government relationship. In addition, PERHILITAN, when partnering with local communities, can play an important role especially in context of the local knowledge they are able to offer. Typically, PERHILITAN have a greater understanding of the local area, the community, and the situation on the ground, and are generally the lead agency to champion and drive any initiatives for national park. NGOs on the other hand, with direct links and ties into local communities, have the capacity to ensure that local level stakeholders are included. This governance model of PERHILITAN and NGOs working together, has not only enabled local people to be more directly involved in PA initiatives but foster greater community involvement through actively engaging with local communities. Such an approach provides an additional benefit of enhancing local capacity and building community resilience in the face of challenges that may limit the effectiveness of PA management.

6.3. Empowered and harnessed the commitment of all stakeholders to conserve biodiversity

Conservation of biodiversity and the sustainable use of biological resources are complex and multi-faceted issues, which need to be determined and carried out at the national and local levels [24]. Realising this, the Government adopts a coordinated effort to manage the conservation of biodiversity in Malaysia. The initiative involves partners from the UN based in Malaysia, as well as a wide range of NGOs both at international and the local level who have significant influence on the intended changes and, at times, the capacity to fully determine the intervention approach and under what circumstances, thus having a direct impact on the biodiversity in local territory. However, part of the problem in relation to biodiversity responsibilities in Malaysia is fragmentation, with no single body, or collection of state bodies, assigned to undertake the systematic collection and reporting of biodiversity trends nationwide – pose a challenge for sustainable development. The management of the park is mainly enforcement rather than 'education' with limited funds, limited monitoring capabilities and limited expertise. Furthermore, complication in terms of governance across different authorities could leave communities disempowered when attempting to monitor or question arrangements, uses and conservation of biodiversity resources. Consideration of this in the context of the recent massive flooding seems particularly pertinent. Each sector has its own mandate and aspirations, all parties need to work together so that biodiversity conservation and sector-specific development go hand in hand – as both are crucial components for nation building.

In the National Policy on Biological Diversity 2016–2025, Malaysia outlined multiple insights highlighting to be taken into consideration in addressing biodiversity objectives. It is recognised that natural resource system is subject to depletion, degradation or use which exceeds sustainable yields [25]. Second, in Ref. [26], the anthropogenic factors and their correlation with biodiversity loss of mammals and birds are examined. They found that overuse of natural resources, albeit for survival, can severely degrade resources and eventually deny supply to the very people who need them. It should be noted that wholesale importation of inappropriate Western technologies has caused serious damage to indigenous culture and natural environment by suppressing traditional knowledge, increasing the risk of pollution, disrupting natural habitats and forcing migration [18]. In other words, decisions to promote development must take into consideration local factors that impact human transformation, be they cultural, religious, social, environmental, technological, economic or political. For that reason, the focus on developing and leveraging on local talents is more towards ensuring the local resilience and better protection of their well-being by investing in the strengthening the social capital, traditional knowledge and cultural values.

It should be noted that these indigenous factors are vital for accelerating economic growth and sustaining development. In most developing countries, the failure of development policies to achieve satisfactory levels of development has been correctly attributed to the neglect of local ingredients in the potpourri of development [18]. For instance, recruitment of local key staff with technical knowledge are underrated strategy as they are often less visible, and their rights are mostly ignored by many parties. Thus, relevant authorities or agencies need to employ local people with biology backgrounds as they understand the area ecosystems, threats and mitigation and this will lead to the better management of these vulnerable ecosystems. Learning from the model of Johor National Park Corporation (JNPC), there has been a unique practice in which they employ the local communities as caretaker and rangers to be responsible for environmental monitoring and enforcement that is essential for effective park management. This practice can be expanded to other park authorities at other locations. The importance of the relationship between government and community support for biodiversity safeguarding and management is a key focus underpinning the objective of livelihood sustainability; in fact, it is an important factor in the proper management of ecosystems [27].

In 2004, Malaysia strengthened its management of conservation at the federal level when the restructuring of the ministries led to the formation of the Ministry of Natural Resources and Environment (NRE). In addition, building stakeholder understanding is critical for positive management outcome. If stakeholders, e.g. local universities, local communities, and any other knowledgeable individuals, truly understand the ecosystem threats to the park management they will undertake their own management intervention to mitigate the threats e.g. the establishment of UiTM-PERHILITAN Research Station and the Centre for Biodiversity and Sustainable Development of UiTM will certainly add value to the sustainable practices of the area, as researchers from university who work closely with local communities knew the situation very well, with their own adaptive management intervention. Besides, they also able to supply relevant data voluntarily to local authorities regarding the severity of water contamination or potential landslides at some of the area.

7. Recommendation

In National Policy on Biological Diversity 2016–2025 Malaysia, a number of issues were to be addressed through all national and state development policies, plans and programmes. This is to ensure that there is an appropriate mechanism that is responsive towards biodiversity and incorporate sufficient safeguards to protect and conserve the biodiversity. All sectoral policies, including those on forestry, energy, agriculture, tourism, transportation, extractive industry and infrastructure, will need to address biodiversity conservation. To facilitate the process of development and strengthen the foundation for knowledge, government should:

- provide knowledge, information, skills and incentive to local people in a manner to increase their participation in the economy. Special programmes should be created to learn more about indigenous people and earn their trust by giving them voice in policy construction and decision makings. Local knowledge helps communities to enforce, implement and monitor the policies, rules, laws and regulations formulated for National Park capable of solving problems directly related to development process.
- adopt practical approach when implementing PA initiatives by considering the local community's readiness to adopt, the options available and how their impact will be assessed before any implementation occurs. Also, this provides a more holistic long-term sustainable initiatives to the specific governance structures to facilitate communication and create synergies while addressing the multiple threats of overfishing, poaching, illegal logging and illegal trade in wild animals, improper sewage, climate change and watershed due to major flooding, etc.
- Encourage initiatives that involve the local community and provide for the long-term sustainability of practical mechanisms, as in international instruments, often call for a designated focal point. Governance models seem to include political/management/technical levels, where political decisions are translated into an action plan carried out through their engagement with local communities and representation of those who are often strong in number supported by national institutions and scientific/technical boards.

8. Conclusion

Malaysia had been aware of the problems of the loss of natural habitats and environmental degradation resulting from economic development and has addressed these problems as early as 1975 and in the Third Malaysia Plan (1976–1980). Long-term initiatives that promote sustainable economic growth for particularly indigenous communities are vital. The approach to conservation that has been in place for over 2 decades is a 'top-down' or centrally managed, rather than a 'bottom-up', community-led model. However, it is increasingly acknowledged that this approach has limitations, particularly as local communities who are vulnerable have not been involved in management of the parks, in a way that is inclusive. In the spirit of facilitating sustainable development, the role of PERHILITAN in the biodiversity conservation

agenda is crucial, as too is the recognition that they are the custodians of vast biodiversity assets provide opportunity to promote an integrated risk management approach to development planning which ties in with the over-arching emphasis on empowering the local communities as advocated by the Malaysian Government, the UN as well as many NGOs. What has emerged as a critical question is how all the initiatives will benefit those living in local communities. Certainly, local populations to benefit, either directly or indirectly, so that any socio-economic activities enhance both the environmental and socio-economic conditions of an National Park area.

Management effectiveness in protected area is the most prevalent issue and widely discussed globally. Effective management of PA as defined by the World Conservation Union IUCN is the efficiency use of human and material resources including national/agency protected area regulations and legislation, policies, international conventions and designations, and management plans and/or agreements associated to those areas, on a planned basis directed to accomplish management objectives. It is also crucial for protected area authorities to involve the local communities – the villagers including the Orang Asli, in the management of the PA. In many instances, water management, climate change, cultural features and natural environment require local solutions for sustaining the use of resources and protecting the local system of production. Therefore, what PA needs are policies that respect the rights of local communities and indigenous peoples, including their right to self-determination, empowering initiatives, a fair share of the economic benefits, and sustained protection for their ecosystems.

Finally, it needs to be noted that this Chapter reports the findings of an exploratory study in which the case study of Taman Negara Pahang has provided some insight as to where future efforts need to be directed to improve the effectiveness of PA management. It is proposed that the next step will be to collect data from a larger sample of respondents. This will allow for further effort could be made to assess the process for community engagement, – for instance to include a more in-depth analysis of the potential influence of the specific activities undertaken within the overall holistic management of PAs. Additionally, there needs to be an assessment of the relationships between adherence to the community participation process presented in this Chapter and the total achievement of sustainability goals for the testament of an efficient PA management.

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Conflict of interest

The author certifies that he has NO affiliation with or involvement in an organisation or entity with a financial or non-financial interest in the subject matter or materials discussed in this manuscript.

Author details

Ahmad Naqiyuddin Bakar^{1,2,3,4,5*}

*Address all correspondence to: ansbakar@salam.uitm.edu.my

1 Universiti Teknologi MARA (UiTM), Shah Alam, Selangor, Malaysia

2 Faculty of Administrative Science and Policy Studies, Universiti Teknologi MARA (UiTM), Shah Alam, Selangor, Malaysia

3 Malaysia Institute of Transport (MITRANS), Universiti Teknologi MARA (UiTM), Shah Alam, Selangor, Malaysia

4 Centre for Biodiversity and Sustainable Development, Universiti Teknologi MARA (UiTM), Puncak Alam, Selangor, Malaysia

5 Universiti Teknologi MARA (UiTM), Johor Branch, Segamat Campus, Malaysia

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