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A systematic review of Asian community participation in biosphere reserves

Mastura Jaafar
School of Housing, Building and Planning, Universiti Sains Malaysia, George Town, Malaysia

Andrew Ebekozien
School of Housing, Building and Planning, Universiti Sains Malaysia, George Town, Malaysia; Bekos Energy Services Nigeria Limited, Ikorodu, Nigeria and Bowen Partnership, Quantity Surveying Consultancy Firm, Benin City, Nigeria, and

Diana Mohamad and Ahmad Salman
School of Housing, Building and Planning, Universiti Sains Malaysia, George Town, Malaysia

Abstract

Purpose – Managing biosphere reserves (BR) have become more challenging regarding the socio-cultural conflict between communities and BR administrators. For the past two decades, community participation (CP) has become the central narrative for BR management practices in Asia. This paper aims to set out to analyse the current literature because of the paucity of systematic reviews on CP in Asian BR. Also, it proffers possible solutions to enhance biosphere performance.

Design/methodology/approach – In total, 31 related studies were identified from the Scopus, Web of Science databases and materials from organisations in the field of practice of territorial conservation. Three themes emerged from the review – willingness to participate, encumbrances and possible solutions.

Findings – Factors that influence community willingness to participate in a BR, encumbrances facing the community and possible policy solutions to enhance CP in a BR in Asia were the three themes that emerged from the review. The factors that influence community willingness were categorised into the level of participants in education, perceived waste of time, no confidence of the outcome, okay with current management, land owned, household size and gender factors.

Research limitations/implications – This paper's recommendations were based on empirical literature reviewed systematically but do not compromise the robustness concerning BR management practices in Asia. It was established that to enrich the findings of this research, regional studies of CP in BR should be conducted, including primary source data using the mixed methods paradigm.

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Practical implications – As part of the practical implications, recommendations were highlighted to enhance CP in BR. Also, the paper suggested that BR administrators should have two-way communication mechanisms, cross-sectoral participation and collaboration, implement locally-based solutions through full engagement of community members in decision-making.

Originality/value – This is probably the first systematic review paper on BR management practices in Asia. Filling the theoretical gap via systematic review was part of the significant contribution to CP in Asian BR.

Keywords Asian countries, Community engagement, Influencing factors, Willingness to participate, Biosphere management

Paper type General review

1. Introduction

Over the years, despite the abundance of research on community participation in Asian biosphere reserves, efforts to systematically appraisal these studies are lacking. Although a few systematic review articles have been published regarding community participation in other fields, such as medicine (Lee *et al.*, 2019), environmental monitoring and information systems (Wehn and Almomani, 2019) but none from the biosphere reserves in Asia. Thus, this paper attempts to fill the gap in understanding the factors that influence community willingness to participate in biosphere reserves, challenges and proffer possible solutions. This is to enhance community participation in biosphere reserves amongst the Asian biosphere reserves stakeholders. The relationship between the community and biosphere reserves administrators is being threatened possibly because of inadequate community engagement (Catibog-Sinha and Wen, 2008). Stakeholders' participation is one of the prerequisites for sustainable management of nature reserves (Catibog-Sinha and Wen, 2008; Andrade and Rhodes, 2012). The study asserted that co-management is the most appropriate way to engage communities in biosphere administration. Andrade and Rhodes (2012) affirmed that the practice-based form of community participation increases the legitimacy of the biosphere reserve in the local community. UNESCO (1996) asserted that to accomplish moral management of the biosphere reserve, land management should be implementable. In the opinion of Cuong *et al.* (2017a, 2017b), community participation either formal or informal is one of the possible ways to achieve good management of the biosphere reserve. Stakeholder participation enhances dialogue and cooperation in biosphere planning and management (Cuong *et al.*, 2017b).

This paper will fill a significant theoretical gap in the literature with a holistic baseline on the community participation in biosphere reserves in Asian Region. This is germane to the tourism and biosphere reserves relationship. Several studies, for example, Catibog-Sinha and Wen (2008), Haija (2011) and Yung and Chan (2011) have shown that biosphere reserves attract tourists. There has been a paucity of literature regarding Asian community participation in biosphere reserves. This is probably the first systematic review conducted on community participation in Asia's biosphere reserves. Also, missing is the inadequate systematic analyses conducted regarding the databases searched, articles excluded, search terms used, etc. This makes it problematic for forthcoming researchers to replicate the research, validate the explanation or evaluate the completeness of the study in line with Greenhalgh and Peacock (2005). This paper is timing because the trend in global tourism is moving towards the Asian Region. Thus, the calls for urgent possible solutions that will enhance resilience in community engagement in Asian biosphere reserves.

To develop an appropriate systematic review, this paper focussed on the main research question – how can community participation enhances the Asian biosphere reserves and provide sustainable development? This paper attempts to analyse the present literature on Asian community participation in biosphere reserves. This section focusses on the purpose

of carrying out a systematic review and justification for this study. Section 2 presents the material and methods, including the preferred reporting items for scientific reviews and meta-analyses (PRISMA) statement used. Sections 3 and 4, systematically review the empirical literature to identify, choice and evaluate the existing literature regarding community willingness to participate in Asian biosphere reserves. This includes the discussion of findings, the paper's implications and future research areas for researchers.

2. Material and methods

This section presents the material and methods used in the systematic review article. This includes study design, eligibility criteria, information sources and search strategies, the systematic review process and data abstraction and analysis.

2.1 Study design

Meta-analysis of observational studies in epidemiology guidelines as adopted by Stroup *et al.* (2000) was used in this paper. This is in line with the PRISMA standard (Moher *et al.*, 2009). From the main research question as stated in the previous section, three research questions were generated and evaluated in this paper. They are as follows:

RQ1. What are the factors that influence community willingness to participate in biosphere reserves in Asia?

RQ2. What are the encumbrances facing community willingness to participate in biosphere reserves in Asia?

RQ3. What are the possible policy solutions to enhance community participation in biosphere reserves in Asia?

2.2 Eligibility and exclusion criteria

Selected studies that reported community participation in biosphere reserves in their countries within Asia were considered for inclusion. This includes published work from the year 2001 to 2019. A 19 years' timeline is the acceptable duration to see the progress of research and related publications regarding community participation and biosphere reserves in Asia. This is in line with Salleh *et al.* (2020) that used 19 years (between 2001 and 2019) as adequate for a systematic review study in Asia. The emphasis on selection and consideration was based on peer-reviewed journal articles. The article focussed on community participation/planning (CP) and biosphere reserve (BR) in Asia countries. However, case reports, meeting abstracts and expert opinions were excluded from this paper. Also, review articles, book series, textbooks, conference proceedings were excluded. This is because the materials were not peer-reviewed. Finally, in line with the objectives that focus on Asian community participation and biosphere reserve, only articles relevant to the subject matters were selected as presented in Table 1.

2.3 Information sources and search strategies

The search strategy was developed by the authors in consultation with a reference group. The reference group assisted with terminology and appropriate synonyms, as well as the sentinel articles reviewed. In September 2019, the search was concluded from the various relevant database. The selection of search items considered cognate terms such as "Asian countries", "biosphere management", "community engagement", "influencing factors", "willingness to participate", "community participation", "community planning", "biosphere

Criterion	Eligibility	Exclusion
Type of literature	Peer-reviewed journal articles, book chapters in books with editorial committees or doctoral theses with thesis committees	Journals (systematic review), book series, book, conference proceedings
Timeline	Between 2001 and 2019	<2001
Language	English	Non-English
Indexes	Social science citation index, emerging sources citation index, art and humanities index (Web of Science)	Science citation indexed expanded (Web of Science)
Countries and territories	Asian countries	Non-Asian countries

Source: Adapted from Shaffril *et al.* (2018)

Table 1.
The inclusion and exclusion criteria

reserves", "systematic review", "biosphere in Asia", "community willingness", "factors that influence" "environmental sustainability" and "conservation of biosphere". The paper explored literature from biosphere management-related disciplines. The specialist was available for mediation throughout this phase, with emphasis on the established eligibility criteria. Web of Science and Scopus were the major databases explored to search for primary studies and supported with materials from organisations in the field of practice of territorial conservation. One of the reasons is that Web of Science is a strong research database with over 33,000 journals with coverage of over 256 disciplines. In addition, the Scopus database contains over 22,800 journals from over 5,000 publishers globally.

2.4 Systematic review process

Four phases were used in the systematic review process in October 2019. The first stage identified keywords used for the search procedure. Trusting on former studies and thesaurus, keywords similar and related to community participation and biosphere reserve in Asian countries were used as highlighted in the previous sub-section. At this phase, after the cautious screening, four duplicated papers were deleted. As a follow-up in the second phase (screening in progress), out of 316 articles qualified to be reviewed, a total of 230 articles were deleted. At the eligibility stage (third stage), before the full examination of the articles, after careful investigation, a total of 51 articles were excluded. This is because some of the excluded articles did not focus on community participation regarding biosphere reserve or were not empirical articles. In the last phase, 35 articles emerged and were used for the study as presented in Figure 1. The flow is in line with Moher *et al.* (2009). Referring to Figure 1, the first top layer is the identification layer, followed by the screening layer. The third and fourth layers represent the eligibility layer and finally, the included layer.

2.5 Data abstraction and analysis

The used articles were evaluated and analysed. The output of the study focussed on precise studies regarding the articulated research questions. The data were extricated by perusing through the abstracts first, then the full papers to recognise suitable themes and sub-topics. The analysis was performed using the thematic analysis to identify themes related to Asian community participation in biosphere reserves. The themes were organised around the research questions established. The next section focusses on the results and discussion of this paper.

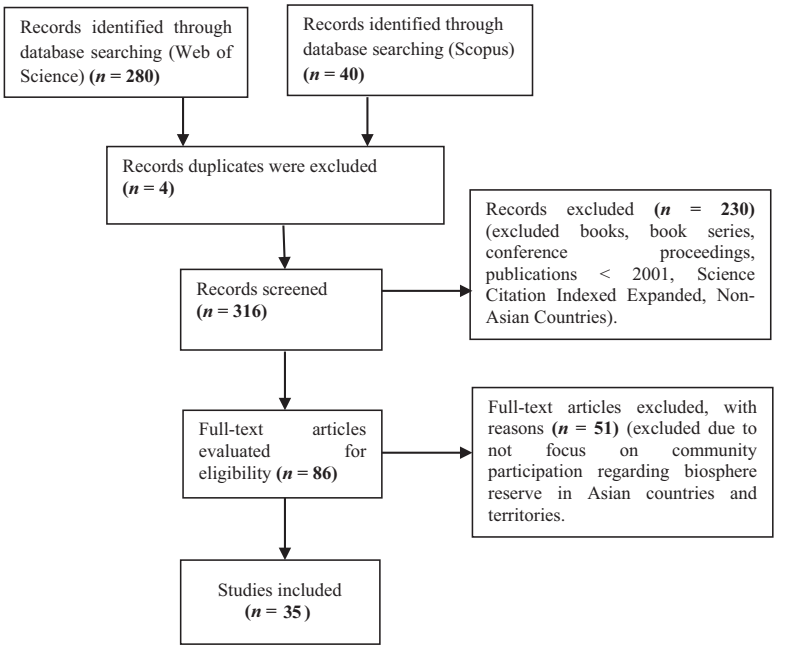

Figure 1.
The flow diagram of the systematic review of Asian community participation in biosphere reserves

Source: Adapted from moher *et al*. (2009)

3. Results and discussion

This section presents the findings and discussion of the systematically reviewed literature in themes. Three themes emerged from the analysed findings of the reviewed literature regarding Asia biosphere reserves with an emphasis on community participation. The themes are factors that influence community willingness to participate, encumbrances facing the community and possible policy solutions to enhance community willingness to participate in Asian biosphere reserves as presented in Table 2. Also, this section focusses on the paper's implications, limitations and future direction for researchers. Findings provided an all-inclusive analysis of the existing community participation in biosphere reserves in Asian communities. Referring to Table 2, the summarised table shows that a total of five studies focussed on Nepal's community participation in biosphere reserves, four studies concentrated on community participation in biosphere reserves in China and four studies focussed on community participation in biosphere reserves in India and Russia. Others are three studies that focussed on Malaysians community participation in biosphere reserves, three studies concentrated on community participation in biosphere reserves in Indonesia, two studies concentrated on Vietnamese community participation in biosphere reserves, two studies focussed on Thai community participation in biosphere reserves and two studies concentrated on community participation in biosphere reserves in Bangladesh. Also, one study focussed on Sri Lankan, Jordan, Myanmar, Japan and Hong Kong community participation in biosphere reserves. Regarding the research design used, 6 studies used a mixed-methods approach, 8 studies applied a quantitative analytic method and 21 studies applied a qualitative approach. Regarding years published, three articles

Authors	Countries	Main design	Factors that influence willingness								Encumbrances facing community willingness to participate								Possible solutions to enhance community participation					
			LE	PT	NO	SM	G	LO	HS	TC	RD	T	IC	SA	LB	NR	TM	WC	TM	SP	IE	DO	PC	LS	CC	AF
Xu *et al.* (2006)	China	MM	✓				✓	✓	✓						✓	✓			✓	✓	✓	✓	✓			
Wang *et al.* (2010)	China	MM		✓	✓					✓					✓		✓		✓		✓	✓		✓	✓	
Li (2006)	China	QL				✓		✓		✓			✓		✓						✓			✓	✓	
Qingcheng *et al.* (2011)	China	QL	✓							✓											✓			✓	✓	
Nikolaeva *et al.* (2015a, 2015b)	Russia	QL	✓		✓								✓			✓		✓			✓			✓	✓	
Silantyeva *et al.* (2015)	Russia	QL	✓		✓															✓						
Nikolaeva *et al.* (2015a, 2015b)	Russia	QL	✓		✓															✓		✓				
Nikolaeva *et al.* (2015a)	Russia	QL	✓		✓															✓		✓				
Cuong *et al.* (2017b)	Vietnam	QL	✓		✓					✓					✓		✓	✓						✓	✓	
Cuong *et al.* (2017a)	Vietnam	QL								✓					✓		✓									
Yung and Chan (2011)	Hong Kong	QL	✓										✓		✓		✓				✓			✓	✓	
Haija (2011)	Jordan	QL	✓												✓				✓					✓	✓	
Lestari *et al.* (2015)	Indonesia	MM	✓												✓						✓			✓		✓
Damastuti and Groot (2017)	Indonesia	QL	✓							✓					✓							✓		✓	✓	
Gurney *et al.* (2016)	Indonesia	QN	✓												✓							✓		✓	✓	
Wattage and Mardle (2005)	Sri Lanka	QN																	✓					✓	✓	
Tseng *et al.* (2019)	Thailand	QN																	✓					✓	✓	
Bennett and Dearden (2014)	Thailand	QL	✓		✓					✓	✓								✓		✓			✓	✓	
Rasoolimanesh *et al.* (2017)	Malaysia	QN																	✓						✓	
Nelson *et al.* (2014)	Malaysia	QN	✓	✓	✓										✓									✓	✓	
Nath *et al.* (2017)	Malaysia	QL	✓							✓										✓				✓	✓	
Soe and Yeo-Chang (2019)	Myanmar	MM	✓					✓													✓			✓	✓	
Lee (2019)	North Korea	QL			✓			✓					✓				✓		✓			✓				✓
Maikhuri and Saxena (2001)	India	QL			✓							✓	✓				✓							✓	✓	
Horwich *et al.* (2010)	India	QL								✓	✓						✓					✓		✓	✓	
Kent *et al.* (2011) – India	India	QL			✓					✓														✓	✓	
Rao *et al.* (2003)	India	QN								✓										✓		✓		✓	✓	
Clusener-Godt (2002)	Japan	QL	✓												✓		✓					✓		✓	✓	
Islam *et al.* (2013)	Bangladesh	MM	✓														✓		✓					✓	✓	
Roy *et al.* (2013)	Bangladesh	QN																				✓				
Parker *et al.* (2015)	Nepal	MM			✓					✓												✓		✓		

(*continued*)

Table 2.
Main findings from Asian community participation in biosphere reserves

Table 2.

Authors	Countries	Main design	Factors that influence willingness								Encumbrances facing community willingness to participate								Possible solutions to enhance community participation							
			LE	PT	NO	SM	G	LO	HS	TC	RD	T	IC	SA	LB	NR	TM	WC	TM	SP	IE	DO	PC	LS	CC	AF
Adhikari *et al.* (2014)	Nepal	QL						√		√			√						√			√		√	√	
Anup *et al.* (2015)	Nepal	QL	√				√	√	√	√					√						√			√	√	
Bachmund (2004)	Nepal	QL									√													√	√	
Khadka and Nepal (2010)	Nepal	QN	√	√					√	√														√	√	

LE = level of participants in education
PT = perceived waste of time
NO = not confident of the outcome
SM = satisfied with current management
G = gender
LO = land owned
HS = household size

Encumbrances facing community participation
TC = temporary and financial challenges
RD = relevancy doubt
T = timing
IC = interest of community
SA = selection of participant approach
LB = limited knowledge about biosphere reserve
NR = not willing to relocate
TM = top-down management
WC = weak collaboration

Possible solutions to enhance community participation
TM = two-way communication mechanism
SP = step-by-step relocation policy
IE = improve awareness of biosphere reserve via education
DO = develop employment opportunities
PC = policies should consider heterogeneous characteristics of goals
LS = implementation of locally-based management solutions
CC = cross-sectoral participation and collaboration
AF = agreement fulfilment

Notes: QN = quantitative; QL = qualitative; MM = mixed methods

were published in 2019, followed by six papers published in 2017, one study published in 2016 and six articles were published in 2015. Others are three articles published in 2014, two articles were published in 2013 and one study was published in 2012. Three studies were published each in 2011 and 2010, two articles were published in 2006 and one article each was published in 2005, 2004, 2003, 2002 and 2001.

3.1 Factors that influence community willingness to participate

This section concentrates on the factors that influence community willingness to participate in biosphere reserves in Asian countries. A total of 23 articles out of 35 studies focussed on community willingness to participate in biosphere reserves. People's participation in biosphere reserves is generally low from the findings of the reviewed literature across Asia. Findings from most reviewed literature perceived that the level of participants' education, lack of confidence in the outcomes, waste of time, etc., were identified as the major factors that influence community willingness to participate. Although the authors recognised that the biosphere reserve is a unique technique to proffer solutions to the conservation and development via participatory planning and collaboration but there is evidence of lax implementation. This calls for concern. In China, the local people in Wolong Biosphere Reserve admitted the same as above but were not hopeful regarding the biodiversity conservation of the future locals (Xu *et al.*, 2006). The authors found that education, land ownership, size of household, gender and residence location are amongst the factors that affect the perceptions of the locals. The authors' findings were collaborated by Wang *et al.* (2010) and Qingcheng *et al.* (2011). The previous authors reported that this is one of the reasons for the low level of community participation in Kanas Nature Reserve of Xinjiang. One of the possible reasons is the land ownership system. In China and other major countries in Asia, land ownership belongs to the state. This hinders individual or community participation because the right to dispose of is restricted. This is different from the western world. In the western world, most land is held as private ownership by an individual or corporate organisation. The latter authors suggested further study regarding government strategies to address this issue so that community participation may improve. While in the Jiuzhaigou Biosphere Reserve, also in China, findings have shown that despite the weak participation of locals in decision-making processes, the community benefits many things from the tourism activities (Li, 2006). This finding deviates from the existing academic understanding of the consequences of weak community participation in decision-making processes. One of the reasons is that the management policy in Jiuzhaigou Biosphere Reserve is tailored towards "people-driven". Secondly, the decision makers of the reserves are well-educated in biosphere reserves management.

In Russia, Nikolaeva *et al.* (2015a, 2015b) found that the current level of engagement in South-Kamchatka Sanctuary (and Kuril Lake in particular) is low. Although they are aware of government conservation activities, such as ecological campaigns, public land/water clean-ups and collecting litter left by other visitors. The authors discovered that local communities get almost no profits from South-Kamchatka Sanctuary. This may have influenced their attitudes towards the protected area and participation. This is unlike the special protection area in the "Kislukhinsky" Reserve (Silantyeva *et al.*, 2015). In Indonesia, several studies, for example, Datta *et al.* (2012) and Damastuti and Groot (2017) have been conducted to evaluate the significance of community-based mangrove management. They identified inappropriate socialisation of community regulation, poor leadership, lack of financial assistance, etc., as the major factors that influence community willingness to participate in biosphere reserves. This issue needs to be addressed drastically. In Bangladesh, many techniques have been launched to engage the community in forest

resources management (Islam *et al.*, 2013). Although there are some challenges, the authors found that community participation has improved irrespective of the low participation witnessed by the local people. Some of the outcomes are reduced long-time conflict between major stakeholders, participant's capacity building through training, the increased livelihood of participants, etc. Malaysia is not exempted from the low participation of the local people in biosphere reserve activities. Nelson *et al.* (2014) found a negative correlation between the characteristics. For instance, knowledge about the role of the forest to the local people in Kawang Forest Reserve, Sabah, Malaysia. This slightly differs from Nath *et al.* (2017). The authors found that the participants from Peatland Swamp Forest in Malaysia want to contribute to reserves conservation. This contribution is done through participation in the community-based rehabilitation project, joining in awareness creation programme, tree planting, etc. In Vietnam, a low level of community awareness was identified as one of the factors that influence community willingness to participate in biosphere reserves (Cuong *et al.*, 2017b). Table 3 presents the summary of the main factors that influence community willingness to participate in biosphere reserves.

3.2 Encumbrances facing community willingness to participate

This section focusses on the hindrances facing community willingness to participate in biosphere reserves in Asian countries. A total of 23 studies reported that there are hindrances facing community willingness to participate in biosphere reserves across Asian countries.

Objective one: factors that influence community willingness to participate	Objective two: encumbrances facing community willingness to participate	Objective three: possible policy solutions to enhance community participation
Level of participants' education	Temporary and financial challenges	Two-way communication mechanisms
Lack of confidence in the outcomes	Interest of community	Cross-sectoral participation and collaboration
Waste of time	Limited knowledge about biosphere reserve	Implementation of locally-based management solutions
Land ownership	Top-down management	Development of employment opportunities
Size of household	Poor communication with the local people	Techniques to improve the biosphere reserves awareness via education
Gender	Weak collaboration	Appropriate policy and organisational steps to enhance the community
Residence location	Relevancy doubt	Proper training and motivation in the form of employment creation
No economic value	Selection of participant approach	Policies should consider heterogeneous characteristics of goals
Inappropriate socialisation of community regulation	Timing	Agreement fulfilment
Poor leadership	Not willing to relocate	Step-by-step relocation policy
Lack of financial assistance		
Low level of community awareness		

Table 3. Summarised main findings

There are four major challenges from the eight identified. This includes temporary and financial challenges, the interest of the community, limited knowledge about biosphere reserve and top-down management. One of the possible root causes of the interest of the community and limited knowledge regarding the biosphere reserve is poor communication with the local people. In China, several studies such as Xu *et al.* (2006), Li (2006) and Wang *et al.* (2010) found poor communication as the main factor that hinders the willingness of locals to participate in biosphere reserves activities. The previous authors opined that land ownership, education level, size of a household and gender have a link with community participation. Even with these challenges, local people in Wolong Biosphere Reserve hold a positive attitude towards the biosphere reserve (Xu *et al.*, 2006). In Vietnam, Cuong *et al.* (2017a, 2017b) found that biosphere reserves in the country are hindered regarding the operation and management because of the top-down management approach, inadequate funding from the central government and weak awareness. Also, the weak legal status of biosphere reserves has hindered the community's willingness to participate. However, the good news is the support from the national framework, autonomous provincial and city authorities via direct management. The latter authors acknowledged that the biosphere reserves conform to the conceptual model of the National man and the biosphere Committee but not yet fully implemented due to limitations as earlier highlighted. Hence, a community awareness campaign is pertinent.

In Russia, Nikolaeva *et al.* (2015a, 2015b) identified excessive blueback salmon catch, poor management, poaching, littering, etc., as the possible threats to South-Kamchatka Sanctuary. In Sri Lanka, findings show that many scholars have attempted to join biodiversity conservation and socio-economic development via many techniques (Wattage and Mardle, 2005). This has not yielded quantifiable evidence over the years. The authors found that environmental activities are more significant in a conservation area with water, mangrove and fish than providing for development programmes. They may want to guard these resources, as their source of income depends on them. This slightly different from Thailand. Tseng *et al.* (2019) found that community participation is one of the major attributes influencing ecotourism potential. This is strengthened by local community participation and support for conservation programmes. Also, there is inadequate, deleterious situation and sentiments of local communities towards the biosphere reserves. Even at that, the local people remain an important policy mechanism for biosphere reserves management and conservation in Thailand (Bennett and Dearden, 2014). In India, there is a lack of legal example for community co-management but the presence of the Golden Langur Conservation Project with 10 community-based organisations agreements to protect forests with the Bodoland Territorial Council and Assam Forest Department is a welcome source to explore a legal community co-management approach (Horwich *et al.*, 2010).

In Indonesia, Lestari *et al.* (2015) found that irrespective of the levels of participation, the public organised programmes. An example of such programme is information sharing; this is very effective. The authors acknowledged that inadequate information has hindered the willingness to participate in the early stage of the programme. Also, it shows that a highly educated community participant appears to appreciate the relevance of community programmes from social and environmental protection points of view. Damastuti and Groot (2017) found that incentives have improved community participation, yet the system faces institutional sustainability challenges. Findings show that some of them fail to function after the withdrawal of external assistance while some experience the loss of the community's support because of conflict within the system. The authors identified the issues of power-grabbing, credit taking, social exclusion, etc., as the root cause of the conflicts. This is a threat to sustainability. In the same manner, there are issues of functioning problems where the government-funded projects are implemented. What then is the way forward? Some of the possible solutions to enhance sustainable community participation in biosphere reserves will be

addressed in the next section of this paper. Table 3 presents the summary of the main encumbrances facing community willingness to participate in biosphere reserves.

3.3 Possible policy solutions to enhance community participation

This section proffers possible solutions to enhance community willingness to participate in biosphere reserves in Asian countries. A total of 30 out of 35 studies focussed on possible solutions to enhance community participation in biosphere reserves. Several studies including Khadka and Nepal (2010), Nelson *et al.* (2014), Lestari *et al.* (2015), Nath *et al.* (2017), Cuong *et al.* (2017a, 2017b), etc., acknowledged the role of locals in the biosphere reserves management regarding social development and biodiversity conservation. Amongst the major recommendations across the Asian authors is two-way communication mechanisms, development of employment opportunities, cross-sectoral participation and collaboration, implementation of locally-based management solutions and techniques to improve the biosphere reserves awareness via education. In Malaysia, Nelson *et al.* (2014) recommended appropriate policy and organisational steps to enhance the community in the participation of community-based resources management. Also, proper training and motivation in the form of employment creation should be provided for the community. The outcome will be a win-win situation for the community and the biosphere reserves. While Nath *et al.* (2017) suggested a community-based approach for sustainable biosphere reserve management for the Peatland Swamp Forests in Malaysia.

In China, Xu *et al.* (2006) recommended a two-way communication (top-bottom and bottom-top approaches) technique to enlighten the locals regarding the management of reserves. Also, the need to create employment opportunities for the community. This will motivate them to be part of biosphere reserves activities or programme. There is a need for rural communities in China to seek and enhance economic, educational and social opportunities via "pro-people biosphere reserves policy" (Wang *et al.*, 2010). Qingcheng *et al.* (2011) suggested that policymakers and management officials should give attention to public education regarding the coexistence between community and biosphere reserve. While in Vietnam, Cuong *et al.* (2017b) suggested the implementation of locally-based management solutions to achieve future sustainability and effectiveness of the biosphere reserves. This requires all-inclusiveness, cross-sectoral participation and collaboration of the provincial leaders, relevant main stakeholders and communities for this task to be achieved. Viewpoint from Cuong *et al.* (2017a) recommended good awareness and communication to the community. This will enhance successful biosphere reserves via increasing community participation. Viewpoints from Nikolaeva *et al.* (2015a, 2015b) suggested a fair and equitable distribution of benefits to the locals. This will enhance the effective management of biosphere reserves and gain support from stakeholders. Nikolaeva *et al.* (2015a) affirmed that the approval of the strategy of tourism development in the Russian Federation led to the further development of ecotourism and this is an important and promising branch of the tourist industry in Russia. One of the strategies was engagement and increasing community participation in reserve preservations across Russia.

In the context of the Kanchenjunga Conservation Area, Nepal, Parker *et al.* (2015) recommended that policy to improve community participation in biosphere reserves should be all-inclusive. This will eliminate marginalisation and decentralisation that is one of the challenges to community participation in Kanchenjunga Conservation Area. The success of Kanchenjunga Conservation Area is not only to Nepal but to the international community. This is because Kanchenjunga Conservation houses the Kanchenjunga mountain complex, and is one of the components that links Nepal, India and China (Oli *et al.*, 2013). In Indonesia, Lestari *et al.* (2015) suggested further improvement of publicly organised programmes regarding information sharing. This will increase the chances of the success of biosphere reserves and

enhance community participation. While Damastuti and Groot (2017) recommended the combined approach with scientific and technological help, different sources of income (incentives) and continuous monitoring to improve the management of the community-based reserves. The outcome will lead to improved livelihood of community participants in terms of economic well-being because of efficient resource utilisation. Regarding the Marine Protected Area in Thailand, Bennett and Dearden (2014) recommended that local development should be taken considered, and effectively managed and governed via governance and local development to ensure effectiveness. The outcome will enhance the conserved marine protected area and increase natural resources. Tseng *et al.* (2019) suggested biosphere reserves cleanliness management, facility management with conservation regarding the biosphere reserves, engagement of local people to manage the biosphere reserves amongst others in the development of biosphere reserves in Thailand.

To summarise, as community participation increase in the surrounding environment, biosphere reserves will be enhanced. This indicates that community participation and teamwork are critical for better biosphere reserves governance. More research is needed to explore host community perceptions and harmonious development regarding the benefits of biosphere reserves to the host community. This can be achieved via a pragmatic and all-inclusive policy that will carry everyone along in decision-making. The outcome of this will be a "win-win" for the biosphere reserves stakeholders. Also, the management of Asia's biosphere reserves should embrace the implementation of appropriate locally-based management solutions in addressing issues arising from relevant actors and communities in the biosphere reserves. Table 3 presents the summary of the possible policy solutions to enhance community participation in biosphere reserves.

3.4 Paper's implications

As part of the theoretical implications and generic relevance, this paper seeks to contribute to the literature on community participation in biosphere reserves in Asia in three ways. Firstly, this paper conducted an extensive systematic review of community participation in biosphere reserves across Asia with major countries captured in line with Shaffril *et al.* (2018). Despite the abundance of studies on community participation in biosphere reserves, efforts to systematically review these studies were still lacking. Thus, this paper attempts to fill the gap in understanding the willingness for community participation, hindrances and possible solutions to enhance community participation in biosphere reserves amongst Asian biosphere reserves stakeholders. This marks a unique theoretical contribution to the body of knowledge. Secondly, the findings that emerged are instructive in providing a fresh insight to the policymakers and other stakeholders regarding the significance of community participation in biosphere reserves across Asia. This finding points to the stirring-up of some useful policy improvements and management processes. This will ensure that future biosphere reserves operation in Asia meets the needs of stakeholder participation. Thirdly, this paper systematically explored the challenges facing community participation in biosphere reserves across Asia and proffer possible policy solutions. Also, as part of the practical implications, this paper will be useful to the environmental conservationists and other stakeholders in the biosphere reserves in Asia and other parts of the world; to guide them regarding community participation in biosphere reserves. Also, this review provides more information about biosphere reserves in Asia.

3.5 Benefits and limitations of the community involved in biosphere reserves activities

The benefit of the community involved in biosphere reserves activities cannot be over-emphasised. Amongst the benefits are the policymaking and implementation that encourage

the engagement of stakeholders. Many scholars, for example, Simpson (2008) and Cuong *et al.* (2017a, 2017b) see community participation in biosphere reserves as a saviour of the disadvantaged, providing opportunities and economic benefits, promoting social exchange and enhancing livelihoods. Also, there is a strong indication that the biosphere reserves could be used for conservation and sustainable socio-economic development and enhances the local community values. Therefore, it is a network of conservation and sustainability one of the limitations is that biosphere reserves are yet to develop appropriate communication strategies to build community awareness. Also, the lack of an integrated management plan for the whole biosphere reserves and inadequate comprehensive framework to evaluate the context are some of the main limitations. Others are lack of conceptual and strategic advancement to foster the socially balanced management of the biosphere reserves.

3.6 Limitations and future direction

This paper's analysis is limited because of the methodology adopted. This approach was used to fill the existing gap of reviewed papers that captured community participation in biosphere reserves across Asian countries. This does not compromise the robustness of this paper. Much is needed to be known regarding community participation in biosphere reserves across Asian countries. Therefore, more areas of research need to be given consideration. Firstly, most of the existing articles in this review are fully either quantitative (8) or qualitative (17). While six studies relied on a mixed-methods approach. Future research should consider using more a mixed-methods approach with an emphasis on exploratory sequential mixed methods. Ebekozien *et al.* (2018, 2019, 2020) averred that the exploratory sequential mixed methods approach aids the researcher to confirm and clarify the qualitative findings. This will increase the generalisability of the future study's findings. Creswell and Plano-Clark (2018) asserted that a more clear and thorough presenting of analysis techniques for a mixed-methods approach can produce improved findings and enhanced skill to censoriously assess the rigour of review techniques. Therefore, this paper suggests that future research should be tailored towards regional studies of community participation in the biosphere reserve. Also, the collection of data should be from a primary source using the mixed methods paradigm. The outcome will be to validate the findings from this study. These are parts of the new front burners that emerged from this paper. These new areas could be explored by future researchers.

4. Conclusion

Community participation has become the central narrative in the current biosphere reserves management practices across the globe. Findings show that community participation and collaboration are critical for better biosphere reserves governance. In addition, community willingness to participate in biosphere reserves is low across Asia. The paper identified top-down management, temporary and financial challenge approach, weak collaboration, limited knowledge about biosphere reserves, etc., as the hindrances facing community willingness to participate in biosphere reserves in Asia. Findings show that with the improved engagement of the community in biosphere reserves across Asia, there will be an increase in environmental conservation, economic development and protection initiatives. Hence, the justification for this paper with some feasible possible solutions to mitigate the hindrances and enhance the community participation in biosphere reserves. Amongst the possible solutions that merged from this study include government should use their apparatus to educate the host communities regarding the benefits associated with biosphere reserves to the community. Also, recommended to the biosphere managers/custodians is the two-way communication mechanisms. The two-way mechanisms involve top-bottom and bottom-top approaches. This

will eliminate the unforeseen gap in the engagement of the community. The need for strengthening regional, including international cooperation to enhance conservation and development across Asia, cannot be over-emphasised. Therefore, it is germane that researchers and policymakers develop policies and management actions that will represent the economic and future interests of the local people with an emphasis on environmental sustainability via locally-based management solutions and create employment opportunities for the communities around the biosphere reserves. This is one of the well-known principles of natural area management. This paper concludes that effective community participation would enhance the acceptance of biosphere reserves by the locals and improve management efficiency. Therefore, mitigating the issues that may be a threat to community willingness to participate in biosphere reserves cannot be over-emphasised. The outcome will be a win-win situation for the communities and the biosphere reserves in Asia.

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About the authors

Professor Mastura Jaafar is a Professor in the Quantity Surveying Section, School of Housing, Building and Planning, Universiti Sains Malaysia (USM), Pulau Pinang, Malaysia. She holds a PhD and MSc from the Universiti Sains Malaysia. Her research, publication and supervision interests include strategic management in the construction, housing and tourism industries, entrepreneurship, project management and procurement management. She has produced several books, chapters in books, international refereed journal papers and conference papers.

Andrew Ebekozien PhD is a Research Assistant in the Quantity Surveying Section, School of Housing, Building and Planning, Universiti Sains Malaysia, Pulau Pinang, Malaysia. He holds a PhD in Cost Management and a Master of Technology in Quantity Surveying from Universiti Sains Malaysia, Malaysia and the Federal University of Technology, Akure, Nigeria, respectively. A former Head, Quantity Surveying Department (2012–2016), Auchi Polytechnic, Nigeria. His research interests, supervision and teaching include housing, construction economics, construction management, tourism and construction measurement. He is the author/co-author of 41nos published/accepted national/international peer-reviewed journal articles. Amidst, 25nos journal articles are indexed in one of the following databases: SCOPUS/Social Science Citation Index (SSCI: Web of Sciences)/Emerging Sources Citation Index (ESCI)/EBSCO. Andrew Ebekozien is the corresponding author and can be contacted at: ebekoandy45@yahoo.com

Dr Diana Mohamad is a staff in the School of Housing, Building and Planning, USM, Pulau Pinang, Malaysia. She holds a PhD in Telecommuting and Travel Behaviour and MSc. In Academics Travel Pattern from the University of South Australia and the Universiti Sains Malaysia, respectively. She is a member of the Malaysian Institute of Planners. She has produced several chapters in books, international refereed journal papers and conference papers.

Ahmad Salman is a PhD student in the School of Housing, Building and Planning, Universiti Sains Malaysia, Pulau Pinang, Malaysia.