



# Local Community Involvement in Mangrove Forest Conservation and Edutourism in Kampung Sijangkang 11

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## Abstract

Mangrove forests are biodiversity hotspots, and Malaysia has at least 70 mangrove species from 28 families, mainly from the Rhizophoraceae family. However, river pollution has posed a threat to the mangrove forest ecosystem and therefore should be conserved because it benefits various stakeholders. Edutourism is a good conservation model for mangrove forests given the strategic locations. The study interviewed the local community representatives to analyse the establishment of edutourism site called ‘Taman Rekreasi Paya Bakau Kampung Sijangkang’. There are six sections in the interview: historical background, strategic partners, projects and activities, achievements, issues and challenges and way forward. We observed the progress of the activities carried out by the community in Kg. Sijangkang towards the development and its promotion as edutourism park. The programme is supported by the involvement of local authorities and other collaboration partners. In general, the socio-economic status of the community in Kg. Sijangkang has improved as a result of the economic contribution of educational and recreational activities in the Kuala Langat district. Our findings highlighted mangrove forest as an edutourism park in Kg. Sijangkang, which was developed by the local community. Our results showed the importance of self-driven community and teamwork to

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progress and succeed in the conservation programme that could boost future socio-economic status. We also identified collaborative efforts as critical to the development of environmental conservation programmes.

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**Keywords**

Mangrove forest conservation · Local community · Edutourism · Sustainable development goals · Socio-economic status

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## 11.1 Introduction

Rural community development is one of the key agendas in the Sustainable Development Goals (SDG). The main strategies are to reduce poverty and hunger, promote gender empowerment and increase economic growth. Most rural communities are blessed with natural resources around them, which could be beneficial to their well-being and alleviate their socio-economic status. However, utilization of natural resources must be done responsibly.

Mangrove forests provide an important resource to society. They provide habitat for plants and fauna, protect the coast from erosion and provide a variety of items or materials for livelihood to the local community. Mangroves are forest formations with limited spatial distributions in the inter-tropical zone, between 30°N and 30°S latitudes, and roughly follow the 20 °C isotherms of seawater temperature (Giri et al., 2011; Spalding et al., 2010). Because of their high primary productivity and biomass, mangrove habitats have a high conservation priority (Komiyama et al., 2008; Ong et al., 2004) due to the unique presence of flora and fauna they shelter (Nagelkerken et al., 2008; Polidoro et al., 2010). Mangrove ecosystems have projected global biomass of 8.7 gigatons dry weight (i.e. 4.0 gigatons carbon) (Twilley et al., 1992), and these ecosystems perform vital natural functions such as fisheries production, coastal protection and habitat conservation (Duarte et al., 2013; Huxham et al., 2004).

To address the problem of mangrove forest degradation, significant parties, such as the village community, local government and other relevant stakeholders, must work together to restore, protect and manage mangrove forests. The local communities who are surrounded by the mangrove forests depend on the resources and its spin-offs economic activities. Therefore, the mangrove conservation programme has to be inclusive and involves a holistic approach to ensure that everyone benefits from the initiative.

Aside from the necessary involvement of the local community, existing tourist attractions must be given a sense of ownership so that the tourists' visit establishes positive feelings, especially if it contributes to their income. Community involvement in the development and maintenance of attractions will have a favourable impact on the long-term viability and the preservation of the tourist spot (Darius & Irena, 2018).

To achieve sustainable development goals, community development in edutourism is crucial. Tourism is a strategic instrument to realize Sustainable Development Goals (Ardika, 2018). It is to empower the local community through education and tourism to raise their income as well as their knowledge in environmental conservation activities. There is tremendous opportunity to be explored by the community when the area is surrounded by natural attractions, such as mangrove forests. The opportunity should be developed and sustained for the benefit of the society surrounding the area.

The effort to establish edutourism attraction needs sensible planning and consideration of numerous issues. Inhabitant readiness (Nabila & Yuniningsih, 2016), infrastructure readiness and management (Dewi, 2010) and edutourism tourist satisfaction (Darsiharjo & Saputra, 2016) are some of the major factors to be considered while designing edutourism in each place. The active role assumed by various stakeholders is critical to sustaining the edutourism attraction. The three important stakeholders are local authorities, learning institutions and the community (Arrasyid et al., 2021).

One of the approaches to utilise environmental services from coastal areas in a sustainable manner is mangrove forest ecotourism. Ecotourism development in mangrove habitats must be regulated to avoid hazards and negative environmental impacts, such as considering issues of suitability and environmental carrying capacity (Muhammad et al., 2010; Putro & Wasiq, 2015).

Fafurida et al. (2020) highlighted the strengths, weaknesses, opportunities and threats for the development of edutourism. The strengths include (1) conservation support, (2) local ecology support, (3) availability of flora and fauna vegetation, (4) abundant natural resources, (5) multiplier effect on the local community's economy, (6) natural laboratory for education and (7) aggressive promotion. The weaknesses are (1) lack of human capital in tourism management, (2) tourism education disturbing the environmental quality and (3) visitors' poor cleanliness practices. As for the opportunity, they are (1) alternative to nature tourism, (2) government's policy support, (3) opening investment opportunity, (4) promoting a back-to-nature lifestyle and (5) gaining society's support. The threats identified are (1) trade-offs between environmental damage and mass tourism promotion, (2) visitors who are not pro-environment, (3) imbalance development of tourism area and (4) illegal activities surrounding the attraction area.

The purpose of this chapter is to assess the development of edutourism attraction by the local community of Kg. Sijangkang and analyse their conservation model of mangrove forests. The assessments were carried out through interviews and surveys. The interview covered historical background, strategic partners, projects and activities, achievements, issues and challenges and way forward. The survey is to identify the perceptions towards the benefits of establishing the Taman Rekreasi Paya Bakau Kampung Sijangkang. This chapter also highlights the establishment, development process and their achievements.

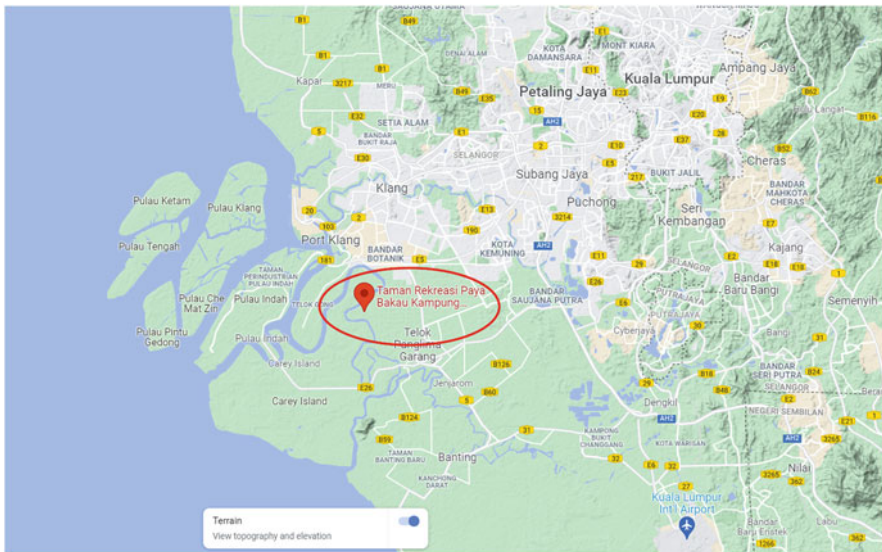
## 11.2 Methodology

### 11.2.1 Study Area

Kampung Sijangkang is one of the villages located approximately 12 km from Klang to Banting in Kuala Langat district, Selangor, Malaysia. Sijangkang is the nearest town (Fig. 11.1). The name Sijangkang derives from a tree that resembles a rubber tree, specifically the Jangkang tree. It is a forest tree in which the seeds are propagated by expulsion and can be also found in some places in Indonesia. Historically, the Jangkang trees perish in a tributary river that was later named the Jangkang river, which constitutes along with other tributaries of the Langat River. The name is also culturally associated with Chinese since death is known as ‘si’, which eventually became known as ‘SIJANGKANG’.

It is estimated that the village was first opened around 1907. Part of the villagers is originally from Indonesia, i.e. Java, while others came from other villages that have been open for a long time such as Kampung Beting Tengah and Kampung Pendamar. They landed from Sungai Jangkang from a small base found by the riverbank. In the 1930s, basic facilities, such as roads, began to be built connecting one place to another. The main crops in Kampung Sijangkang at that time were rubber and coffee.

Because the mangrove forest in Kg. Sijangkang offers a natural landscape that can attract the attention of the tourists in Selangor and Kuala Lumpur in particular, it has the potential as an ecotourism attraction. It is situated 55 km from the capital city of Kuala Lumpur. The local community has committed to management efforts,



**Fig. 11.1** Map of Taman Rekreasi Paya Bakau Kampung Sijangkang generated from Google Map

resulting in the establishment of mangrove forest ecotourism in Kg. Sijangkang. It should be promoted as a leading tourist attraction for environmental conservation in the Klang Valley region.

### **11.2.2 Data Collection**

We interviewed the head of the NGO managing the Taman Rekreasi Paya Bakau Kampung Sijangkang in Kuala Selangor. Three main subjects were discussed during the interview: the motivation to start the edutourism, the process of developing the edutourism and the achievements to date. The interview was done through a conference call due to the travel restrictions during the COVID-19 pandemic.

Eighty-five villagers were surveyed for their response on their observations of the benefits of conserving the mangrove forest. Five questions in the questionnaire collected respondents' perceptions towards the benefits of the edutourism program of Taman Rekreasi Paya Bakau Kampung Sijangkang. The respondents were the members of the association managing the Taman Rekreasi Paya Bakau Kampung Sijangkang.

We analysed the activities that have been carried out at the edutourism spot, Taman Rekreasi Paya Bakau Kampung Sijangkang from 2016 to 2021. The activities were categorised based on the main activities, sub-activities, total number of activities and partnerships.

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## **11.3 Results and Discussion**

This chapter is to assess the development of edutourism attraction by the local community of Kg. Sijangkang and analyse their edutourism programme of mangrove forests, how they started and their development process and success, and to assess the perceived impacts to local communities. Specifically, the focus was to highlight mangrove management models that have a high prospect of acceptance and adoption by local communities. This will ensure mutual future protection and community prosperity in various aspects.

We interviewed the head of the NGO managing the Taman Rekreasi Paya Bakau Kampung Sijangkang, Kuala Selangor, and surveyed 85 villagers to obtain their responses on the benefits of conserving the mangrove forest. We observed a successful and sustainable mangrove edutourism model in Kg. Sijangkang, based on the three domains: motivations, development process and achievements.

### **11.3.1 Motivations**

Based on the interviews, the main motivation is to clean the riverside area that has become a trash dumping site. A low level of awareness among the villagers resulted in resistance among them at the beginning of the programme. It started in 2015, with

communal activities among the villagers to clean the riverside occasionally until it becomes a routine. Then came the idea of developing and establishing the area into edutourism. The conservation and management of natural resources depend on a variety of local communities' socio-economic situations (Bourn & Brown, 2011; Crona & Hubacek, 2010; Weeks et al., 2010). Conservation is a way to get the community involved in mangrove recovery and management activities as a preservation effort (Wardhani et al., 2020). This effort can be supported by ecotourism activities which could improve the community welfare.

Mangrove degradation negatively affects the livelihoods of communities that depend heavily on mangrove ecosystems. The disruption consequently led to the emergence of a local champion to initiate mangrove rehabilitation efforts which initially received little attention from most communities. After some initial successes, the efforts of the local champion were subsequently replicated by other members of communities, triggering a bigger scale of the mangrove conservation area (Kusmana & Sukristijono, 2016).

Successful management in mangrove forest conservation and restoration requires commitment from local communities, governments and stakeholders. This is because the farther humans are from nature, the less concerned they are about it (Wardhani et al., 2020). The community adopts an environmentally friendly development approach that had economic value and was able to improve the community welfare (Singgalen, 2020).

A pro-environmental attitude affects restoration activities (Byrka et al., 2010). Perception, attitude and behaviour of the surrounding community largely determine the condition of a forest area today and in the future (Renjaan et al., 2020).

Replanting activities is one of the factors that play a role in increasing mangrove land cover (Wardhani et al., 2020). Replanting involves managing the nursery, especially at the seedling stage, and maintaining planted trees until they reach a mature age. These processes could involve other stakeholders, learning institutions, private companies, NGOs and local authorities. The replanting programme is a way forward to continue the engagement between local communities and the stakeholders and sustain the mangrove land cover.

Mangrove rehabilitation in the community generally involves a bottom-up process led by the local indigenous group (Sadono et al., 2020). The efficiency of the bottom-up scheme compared to top-down is documented in several studies, particularly for natural resource management, where local indigenous communities reportedly demonstrate a strong commitment to sustaining the mangrove forests.

Several studies have reported the efficacy of bottom-up schemes over top-down schemes, particularly in natural resource management, where local indigenous communities demonstrate a strong commitment to conserving mangrove forests.

Sustaining the economic aspect is a great motivation for societies to initiate conservation activities. For instance, Aheto et al. (2016) highlighted the community's strong motivation to recover the mangroves that have been lost to degradation, which threatened their source of livelihood due to the sharp decline in fisheries productivity.

### 11.3.2 Development Process

The edco-tourism (education in ecotourism) concept is based on potential tourism resources. It is a concept that combines educational and environmental as the basis of local tourism management (Rakhmanissazly et al., 2018). Meanwhile, ecotourism directs tourism towards exotic, natural environments and supports conservation efforts. According to The International Ecotourism Society (TIES:2000), 'Ecotourism is not only a tourist but also a responsible natural tourism trip by conserving the environment and improving the welfare of local communities'.

Mangrove ecotourism has been identified as an ideal approach to provide mangrove education through ecotourism for people to understand mangroves' role in coastal protection. Mangrove conservation is an effort to restore the functions of mangroves as protectors and mitigate climate change. A study also showed the substantial contribution of mangrove ecotourism to raising public awareness, especially on the importance of mangroves in coastal areas, and the ecological system of the mangroves has been highlighted as a potential economic resource to the coastal community and the local government (Thompson & Friess, 2019). The implementation of ecotourism has a multiplier effect on educating and preserving mangrove vegetation.

The recommended strategies in ecotourism development include (1) complementing the infrastructure supporting ecotourism activities such as roads and bridges, (2) intensive promotion and (3) synergizing ecotourism with Kei traditional culture (Renjaan et al., 2020). Rehabilitation and management of mangrove forests need to be done to prevent the destruction of mangrove forests by involving various parties, including the village community, local government and other stakeholders.

Co-management is an approach to engaging the community in mangrove management that can mediate the management conflict between the local community and the government (Fatimatu Zahroh et al., 2020). The characteristics of community-based ecotourism based on Walter (2011) include (1) the principle of local community participation, monitoring and regulating or initiating ecotourism activities, (2) focusing on environmental conservation and the interests of local communities, (3) promoting customary law and local culture (local wisdom) to a certain extent and (4) promoting local human rights and indigenous peoples over traditional territories and resources (Reimer & Walter, 2013).

Numerous programs and activities have been carried out at the Taman Rekreasi Paya Bakau Kg. Sijangkang between 2016 and 2021. The details of the activities are shown in Table 11.1.

Mangrove recovery remains based on an environmentally friendly management approach through a series of innovative development (Gualard et al., 2018). Integrated efforts are needed in managing, conserving and protecting mangrove forests. Therefore, a mangrove management plan requires a greater effort to connect the stakeholders (Canty et al., 2018).

Singalen (2020) emphasised the community's ability to maintain and utilize the mangrove forest using a community-based ecotourism approach to long-term

**Table 11.1** Main activities carried out by the local community from 2016 to 2021

Main activity (2016–2021)	Sub-activities	No. of activities (as of July 2021)	Partnerships
Community engagement and replanting programme	Motivational school camps, company retreat programme, university's community engagement programme and international agencies' visits	150	Schools, private companies, public-listed companies, NGOs, universities and colleges and international agencies
Communal work	Festivities gatherings, cleaning and upgrading work surrounding the conservation area	21	Local authorities
TV/radio promotion	Programmes launching, marketing of the tourism spot and sharing sessions	8	Local TV and radio station

livelihood sustainability. The efforts to preserve the environment are supported by local government policies, institutions and the community's culture. Results indicate that the conservation of mangrove forests through community-based ecotourism enhances the sustainability of livelihood for the community. Therefore, the optimization of mangrove forest resources through a community-based ecotourism approach is relevant and practical.

Corporate Social Responsibility (CSR) programmes from the industrial sector cannot offset environmental losses. Environmental damages from the industrial sector have become a stimulus for the community to adopt environmentally friendly rural development approaches. The commitment of the company-community relationship is mutual and should be encouraged in creating positive outcomes and solutions for both parties. Value creating through CSR programmes may help nature preservation, but it is more helpful in mitigating negative perceptions from the community. It is about making the company has a humanism point of view by taking social responsibility seriously into the business model (Rakhmanissazly et al., 2018).

As with other reforestation efforts, mangrove reforestation is almost impossible to implement without the participation of communities since they have an essential role as the main actor to conduct reforestation activities, starting from planning, implementing to long-term monitoring (Budiharta et al., 2016). The researchers emphasized the importance of communities' participation as one of the factors that determine the success of reforestation activities in the mangroves (Eddiwan, 2018; Le et al., 2012; Wylie et al., 2016).

The awareness of communities regarding the benefits of mangrove forests can accelerate the execution of programmes. Moreover, they will also help in maintaining the sustainability of the mangroves after reforestation. It can be conducted in two stages: literature review and deep interview (Bengtsson, 2016).





**Fig. 11.2** Champion in *Selangor Sungai Angkat* state-level programme

### 11.3.3 Achievements

A series of achievements have been made by the Kg. Sijangkang community throughout the year of 2019. The achievements proved that the community has successfully implemented their various conservation activities with the stakeholders. It also demonstrates their fruitful effort to ensure they are protecting their valuable gems. The awards and recognitions further encourage and excite them to preserve the mangrove forest as the edutourism spot.

In 2019, they were awarded as a champion in the Selangor state-level program of ‘Sungai Angkat’ (Fig. 11.2). The Sungai Angkat program is about river conservation, keeping it clean from any pollution. The purposes of the programme include nurturing and promoting public awareness and river conservation among the community; monitoring the quantity and quality of rivers from physical, chemical and biological pollutions; and encouraging community involvement in the districts (by NGOs, schools and others) by developing environmentally friendly infrastructure, go-green activities to improve water quality and ecotourism.<sup>1</sup>

They also have been listed in the Top 5 of a National Scroll of Honour for Human Settlements award during the National World Habitat Day and National Recycling Day in 2019 (Fig. 11.3). The National Scroll of Honour Award for Human Settlements was initiated to recognise the contribution made by society (public and private) to the sustainable development of human settlements in Malaysia. This award is fashioned on the UN-Habitat Scroll<sup>2</sup> of Honour Award, which acknowledges outstanding contributions to sustainable development, including improving the quality of urban life for all. It also celebrates Malaysia’s success

<sup>1</sup> <https://www.luas.gov.my/v3/my/luas/pengurusan/jawatankuasa/jawatankuasa-pelaksana-pemuliharaan-sungai-sungai-di-selangor>

<sup>2</sup> <https://www.un.org/en/observances/habitat-day>



**Fig. 11.3** National Scroll of Honour for Human Settlements 2019

stories of outstanding contributions in various domestic initiatives in numerous fields, such as shelter provisioning, innovation in solid waste management and sustainable urban planning, highlighting the plight of the homeless, improving the quality of urban life and providing innovative solutions on housing development. To be listed in the Top 5 for this honourable award is a significant achievement to the Taman Rekreasi Paya Bakau Kampung Sijangkang community. They expressed their gratitude as follows:

“Thank you to MDKL for trusting us by nominating Sijangkang Mangrove Recreation Park. Hopefully, this award will raise the spirit of the volunteers to continue to serve the environment, especially the Mangrove Forest. Thank you to all the contributors and visitors because you helped us in keeping the Sijangkang Mangrove Recreation Park alive.”—Sijangkang Mangrove Recreation Park Chairman

The Green Incentives Award was awarded by the Federal Department of Town and Country Planning (PLANMalaysia) to Kg. Sijangkang community during the World Town Planning Day Selangor state level in 2019 (Fig. 11.4). The award is part of their initiative to green the city and intensify the effort in supporting sustainable development agenda. Their principle is to strengthen the bottom-up approach to



**Fig. 11.4** Green Incentives Award received during World Town Planning Day Selangor state level in 2019



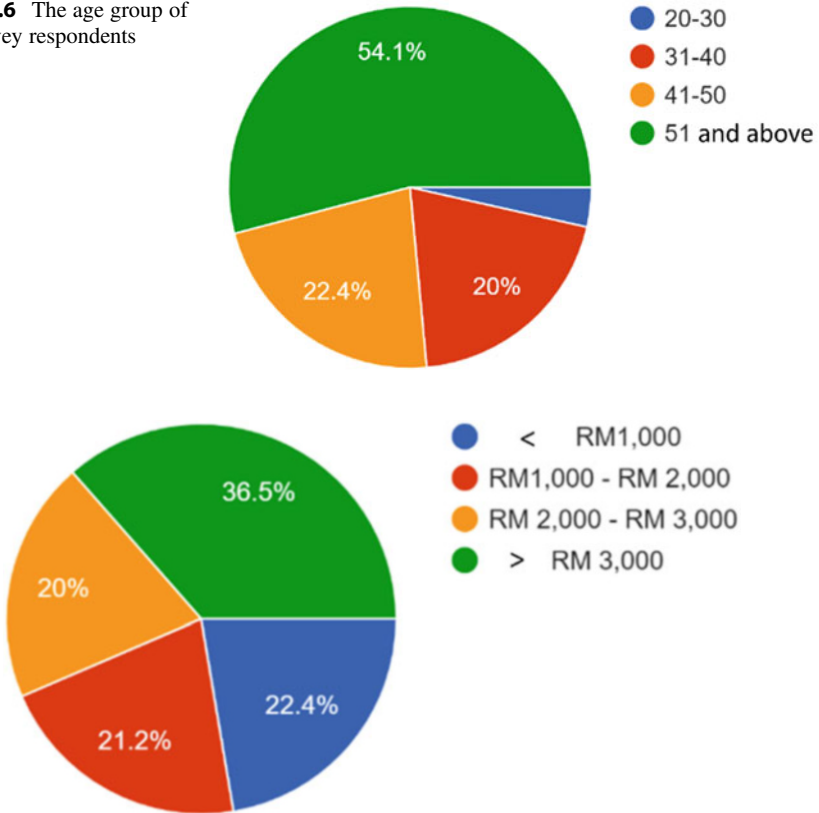
**Fig. 11.5** Platinum Winner Award (category Outdoor Public Park—waterfront ‘blue park’)

implement various activities under their plan towards a prosperous and sustainable future. Their plan is to include the involvement of federal and state agencies, private sectors and the community.

Kuala Langkat District Council and Kg. Sijangkang community received Platinum Winner Award (for Outdoor Public Park-Waterfront blue park) for the My Place Award in 2019 (Fig. 11.5). The award was given by the Malaysian Institute of Planner (MIP), and the participation is from all over Malaysia. My Place Award celebrates community-led built environment projects that have transformed their locality. The Awards honour projects that have excelled in terms of design and community involvement/impact.<sup>3</sup>

<sup>3</sup><https://myplacescotland.org.uk/my-place-awards-entry/>

**Fig. 11.6** The age group of the survey respondents



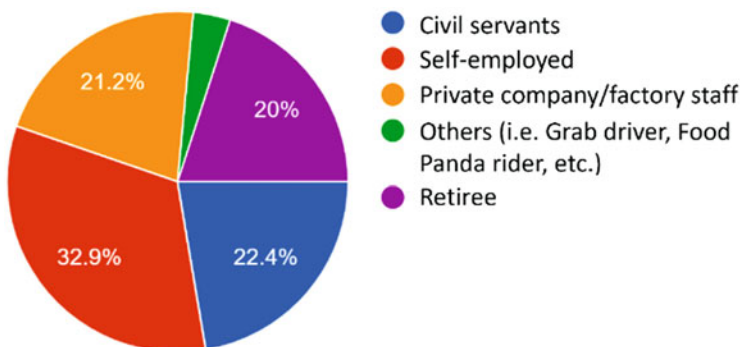
**Fig. 11.7** The household income range of the survey respondents

### 11.3.4 Perceptions on Benefits of Mangrove Forests Conservation

The study involved virtual engagement with the community of Kg. Sijangkang to respond to the survey to identify their perception towards the benefits they gained from the Taman Rekreasi Paya Bakau Kampung Sijangkang. Figures 11.6, 11.7 and 11.8 show their demographic profile.

Figure 11.6 illustrates the age distribution, with 54% of the respondents aged 51 years old and above, 22% aged between 41 and 50 years old, 20% aged 31–40 years old and 4% aged 20–30 years old. This indicates that the senior group forms the active community members involved in the development and maintenance of Taman Rekreasi Paya Bakau Kampung Sijangkang. The senior-aged group have more flexible time to get involved in the community programs, aside from their other obligations. They are mostly pensioners and entrepreneurs.

Figure 11.7 shows that 37% of the respondents earned more than RM3000 a month, 22% earned below RM1000 a month, 21% earned between RM1000 and RM2000 and 20% earned RM2000–RM3000 a month. This implies that most



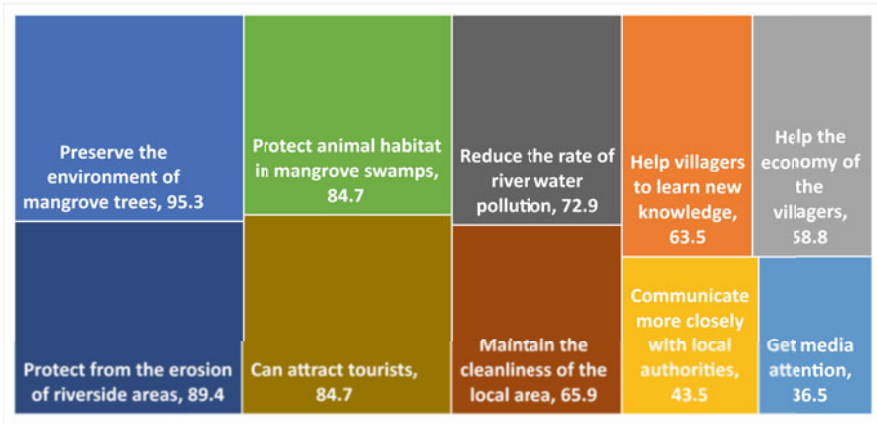
**Fig. 11.8** The employment sectors of the survey respondents

respondents belong to the lower-income group of the bottom 40% (B40), where the average household income is below RM4850.00.<sup>4</sup> It shows the importance of sustaining the mangrove community program as it helps in generating and increasing their income to a comfortable level. The income generation and increment may not be direct, but the spill-off activities contributed to the overall economy of the community.

Referring to Fig. 11.8, 32% of the respondents are self-employed, 22% are civil servants, 21% are employed by a private company, 20% are retirees and 5% are gig workers. This indicates that the majority of the respondents are flexible to involve themselves and contribute to Taman Rekreasi Paya Bakau Kampung Sijangkang; they are among the self-employed and retiree groups. The results indicate that the spillover effects from the programme are important for the community well-being. Many of them are involved in food services activities that are highly dependent on the visitors to the park and event management in the area.

Figure 11.9 depicts the perceived benefits of the Taman Rekreasi Paya Bakau Kampung Sijangkang by the respondents. About 95% of the respondents perceived the park is preserving the environment of the mangrove trees, 89% on the protection from the riverside erosion, 84% on animal habitat protection in mangrove swamps and tourists attraction, 73% on reduction of the rate of river water pollution, 66% on cleanliness maintenance of the local area, 63% on helping the villagers to acquire new knowledge, 59% to help the economy of the villagers, 43% to help them communicate with local authorities and 37% to get media attention. These perceptions prove that the community who are actively involved in Taman Rekreasi Paya Bakau Kampung Sijangkang is well aware of the environment conservation effort and are willing to improve their socio-economic status and livelihoods.

<sup>4</sup> [https://www.dosm.gov.my/v1/index.php?r=column/cthemByCat&cat=430&bul\\_id=aVIJRDAvbjhWWEhQa1YvSWhsSjF3QT09&menu\\_id=L0pheU43NWJwRWVVSzklWdzQ4TlhUUT09](https://www.dosm.gov.my/v1/index.php?r=column/cthemByCat&cat=430&bul_id=aVIJRDAvbjhWWEhQa1YvSWhsSjF3QT09&menu_id=L0pheU43NWJwRWVVSzklWdzQ4TlhUUT09)



**Fig. 11.9** Community perceptions on benefits of Taman Rekreasi Paya Bakau Kampung Sijangkang

As for attracting tourists, Fatimatu Zahroh et al. (2020) recognised social media as an unintended tool for promoting mangrove ecotourism, with visitors uploading media of mangrove tracks. In the case of the Kg. Sijangkang community, their Facebook page has become the primary platform for promoting and attracting visitors and tourists.

## 11.4 Conclusion

This chapter assessed the development of edutourism attraction by the local community of Kg. Sijangkang and analysed their edutourism programme of mangrove forests, how they started and their development process and success, and assessed the perceived benefits to the local communities. The interviews and survey showed the initial motivation of its establishment and the teamwork of all relevant stakeholders play a huge role and give impactful results.

Taman Rekreasi Paya Bakau Kampung Sijangkang establishment was mainly to clean the riverside area that has become a trash dumping site. Although faced with some resistance at the beginning of the establishment journey, the collaborations with local authorities and other agencies were soon developed, and the community started to accept and join the effort to develop and maintain the park and treat it as a communal project and activities.

The development process reflected by various activities and programmes were undertaken by the local community with various agencies, which included community engagement and replanting programmes, communal works and promotion on TV and radio. It shows the local community's commitment to working with agencies and societies from other areas to ensure the success and sustainability of the programme. The rewarding efforts lead to numerous achievements, including

awards and recognition at the national and international levels, which served as honourable moments for the local community and further reinforce their motivations to continue conserving the mangrove forest as an edutourism park.

The local community highly perceived the benefits of developing the mangrove forest as the edutourism attraction helps preserve the environment and animals' habitat, offers protection from erosion and attracts tourists. These three benefits are the main drivers that keep the local community together in managing and sustaining the mangrove forest in Kg. Sijangkang.

The findings identified the importance of self-driven community and teamwork to progress and succeed in a conservation programme that could boost socio-economic status. The results also demonstrate the significance of collaborative efforts in the environmental conservation development programme.

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