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Assessment of Social Demand for Conservation and Development Areas in Delta Tumpat, Kelantan

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Abstract: Development is often a guideline for the standard of living in local population while conservation aspect cannot be underestimated because it plays a role for maintain and sustain the economy and environment. Delta Tumpat, Kelantan plays an important role in terms of social, economic and environment. The study on society demand's on development and conservation in Delta Tumpat very scarce. This study aimed to determine awareness and social demand for conservation and development for Delta Tumpat. Questionnaires survey was distributed to the local communities at four different villages located at Kok Majid, Bandar Tumpat, Pantai Sri Tujoh, and Teluk Renjuna. From 120 respondents, 72 percent is aware of the existence of mangrove in Tumpat. Thus, 37 percent agreed to conserve the delta area and only 9 percent of respondents were strongly agreed to develop and urbanized the Delta Tumpat area. Others have both opinion between conserving and developing the area.

1. INTRODUCTION

Mangrove forests provide vital ecosystem services for coastal environment. Physically it serves an important role in erosion management and coast line protection. Besides that, mangrove forest also contributes in terms of social and economic especially to the surrounding communities (Chan, 1996). Therefore, the conservation and preservation of this area is very important for a sustainable environment and protection purposes.

By days, fauna and flora in mangrove forest are continuously threatened by the urbanization, industrialization and excessive exploitation for the benefit of economy (Daniel et al., 2002). These activities have disrupted the ecosystem of the mangrove forest and service provided. Conservation of mangrove forests is difficult to be taken without the cooperation by many agencies because it has no market price compared to economical aspect.

Mangrove forests in Kelantan are mainly located at Delta Tumpat. This area establishes a unique habitat for mangrove flora and fauna that consist of flowing rivers and few islands. Due to the uniqueness of habitat, the area has the potential to be developed as an international tourist destination. The loss of mangroves definitely causes by land conversion for development and urbanization. Aquaculture activity such as conversion of mangroves for fish or shrimp cultivation and residential usage are the largest threats to mangrove forests. Impacts from the development activities, the shoreline has degraded and the area become more polluted (Li et.al, 2015). Hence, it was observed that mangrove in Delta Tumpat had decreased at about 14.5 ha within six years (Behara et al., 2011).

The loss of mangroves is a persistent problem. Putting a balance in developing and conserving mangrove area is also a hot issue to be debated (Rafael et al., 2010). For this, public awareness on environmental sustainability is required to encourage and motivate the community on the importance of mangrove forest. Between development and conservation, both have its own reason and public preferable. Consequently, this study was carried out to evaluate the local community on their awareness of the existence of mangrove forest in Delta Tumpat and to determine the social demand for conservation and development in Delta Tumpat, Kelantan.

2. MATERIALS AND METHODS

2.1 Study area

Tumpat is one of Kelantan's main districts lies on the northeast coast of Malaysia in the Kelantan River. The total area of Tumpat is 180km^2 with 1.8 percent of it covered with mangroves vegetation (Behara et al., 2011). The population of Tumpat is 179,943 with the percentage of Malay population is 92%, Chinese 3.7%, Indian 0.3%, and others 4% (Majlis Daerah Tumpat, 2020). This study focused at mangrove forest located in Delta Tumpat, Kelantan (Figure 1).

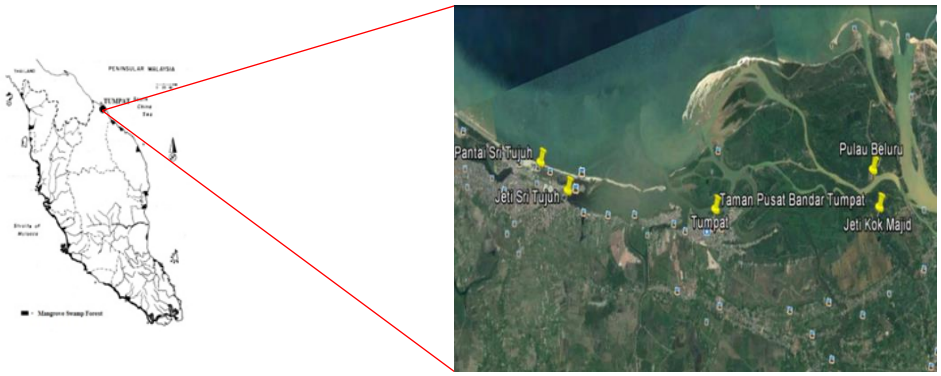

Figure 1: Location of the study area

2.2 Research Instruments

Qualitative study by focused group interview and set of questionnaires was used in this study. The questionnaires survey consists of three parts including socio-demographic profile, awareness on the existence mangrove forest and social demand of Delta Tumpat were asked to determine the local's demand for conservation and development in the study area. Awareness and social demand applied the five points Likert-scale questions (1 to 5) ranges from strongly disagree to strongly agree. This survey was conducted among the local people at four villages namely Kg. Seri Tujoh, Kg. Kok Majid located near Sungai Pinang, Bandar Tumpat and Kg. Telok Renjuna. Prior to the real data collection, a pilot test was run to validate the questionnaires with resulted in Cronbach's alpha of 0.845.

3. RESULTS

A total of 120 respondents (66% male, 34% female) answered the questionnaires. From the survey, 98% (118 respondents) was Malay and the remaining was Indian (1%) and Chinese (1%). The mean age group range from 31 to 40 years old. Meanwhile, majority of the respondents are working either in the governmental sector (32%) or self-employed (56%), while the remaining are housewives and students.

The level of awareness was evaluated by publics sentient on the existence and importance of mangrove forest to the community and society. Mangrove is important in term of income for the local people such as for fishery, recreational activity and timber production. Besides, it also important to protected coastal area from erosion and flood. Figure 2 shows that 71.7% (58.4% male, 13.3% female) of the respondents are aware of the importance of mangroves for the society, economy and

environment whereas the remainder are not. The percentage of the female respondents who does not know about mangrove in Tumpat is higher compared to male respondents due to different education level and exposure the public information.

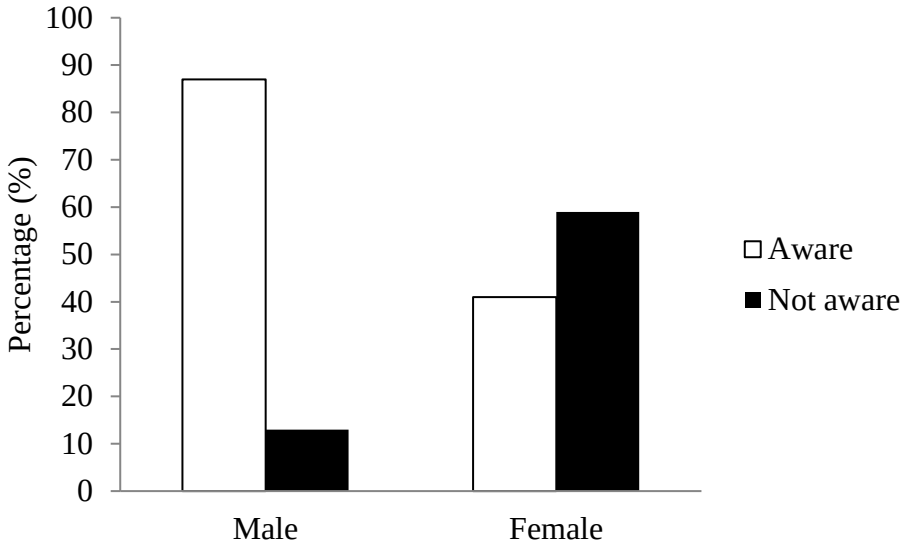

Figure 2: Respondent's awareness on the importance of mangroves by gender

Social Demand for Conservation and Development Areas

Despite of the significance function of mangrove forest, it has been destroyed faster than any other kind of forests. Mangrove forest degraded due to many reasons, but the dynamics of urbanisation and human population expansion are the main factors. Table 1 shows that 37% of respondents totally agree to conserve mangrove area in Delta Tumpat and 9% of respondents seconds to develop the area. 52% of the respondents agreed that conservation and development should works equally for the benefits of community. This is due to the needs to conserve the uniqueness of mangrove area and at the same development is also demanded to increase their standards of living. From this, the concept of environmental stability is important for future generation benefit. Hence, they are also concern that excessive development would disrupt their daily life and finally will give a negative impact to the local community and also to environment. The respondents agree that if mangrove area in Delta Tumpat is conserved it can prevent erosion and flood, and protect breeding area for marine life. This is because part of the respondent's living is depended on mangroves forest resources such as selling *Nypa frutican* leaves, catch and sell mollusca species and fishing.

Table 1: Social demand for conservation and development in Delta Tumpat

Preference	Percentage (%)
Conservation and development	52
Conservation only	37
Development only	9
Neither to conservation/development	2

Development is often a guideline for advancement and standards living of the local population, yet environmental is always become a victim. Residents of Delta Tumpat were required more development to convenience the daily life but they more preferred and want to maintain Delta Tumpat and mangrove areas for environmental stability. The development would be carried out to protect and sustainable toward environment.

Demand for development in the study area mostly aim to improve facilities and improving lifestyles. Table 2 shows the type of development activities that require by the locals in percentage. From 61% of respondents that agree to develop the area, the highest request is to upgrade the internet connection at the area (94%) followed by road enlargement (91%) and the least is the demand for boats renovation (33%). The demand to improve the internet broadband was especially came from the villagers at Telok Renjuna. Telok Renjuna have two islands namely Pulau Beluru and Pulau Suri that are more develop compared to other island. Sekolah Kebangsaan Pulau Beluru and clinic were there for the convenience of residents.

Table 2: Types of development demand

Development activities	Percentages agree (%)
Broadband system (internet)	94
Road enlarge	91
Increase boats for tourists	87
Increase homestay	84
Port construction	83
Drainage system and water flow	80
Housing structured	38
Fishing boats renovate	33

Boats are the main transportation to school for teachers and students who live at Tumpat mainland. Increasing the number of boat was required for daily activities convenience. Besides that, Pulau Suri recently went viral with the floating market that has become one of the tourist's attractions.

Other development demanded by local residents is to improve drainage system and water flow in their area. Hence, increasing the number of homestays in Delta Tumpat is also a focus to attract tourist and increase income for boat owners and restaurant operators. However, some of development demanded was not applicable due to geographical condition of the area such as the construction of port are limited to coastal area that are too shallow and fisherman also difficulties if the tides in marine area is too strong.

4. CONCLUSION

61% of local residents in Delta Tumpat agree to develop the land with various advocated development activities, while the remaining opted to fully keep the area untouched because the area plays an important role for environment and economy for the local community. If the environmental sustainability is taken care of, there should never be a contradiction between economic expansion and environmental preservation. It is feasible to progress toward a beneficial equilibrium between the two, with the creation of a sustainable ecosystem as our ultimate aim. Development will increase the local resident's economy, but extreme changes will cause loss to the environment. This has a significant impact on choices that must be made in the context of environmental conservation, particularly when choosing between the supply of ecosystem services and economic growth.

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