THE ROLE OF MANGROVE ON SUSTAINING LIVELIHOOD OF LOCAL COMMUNITY IN KG. SUNGAI TINGGI, PERAK

MUHAMAD ARIFUDDIN BIN AHMAD RAZALI

FH 2019 13

THE ROLE OF MANGROVE ON SUSTAINING LIVELIHOOD OF LOCAL COMMUNITY IN KG. SUNGAI TINGGI, PERAK.

By

MUHAMAD ARIFUDDIN BIN AHMAD RAZALI

A Project Report Submitted in Partial Fulfillment of the Requirements for the Degree of Bachelor of Forestry Science in the Faculty of Forestry Universiti Putra Malaysia

2019

DEDICATION

My Dear Family:

Ahmad Razali bin Amri

Meriam Binti Jusoh

Rosmizan Ahmad Razali

Nur Hidayu Ahmad Razali

Nur Amalina Ahmad Razali

To all my friends,

Muhammad Azim Syahmi Abd.Latiff

Nur Amirah bt Mohamad Nazim

Siti Norzatul Amylia Mohd Noor

Nur Aqilah bt Kamal

Nurul Hazni bt Shahrin

Thank you for your encouragements and supports

And the sacrifices that you have given.

Thank you for everything. May Allah Bless All of us.

ABSTRACT

Mangrove forests are increasingly recognised as an important ecosystem in maintaining the livelihood of the locals, who live around it; but the role of mangrove forests in Kampung Sungai Tinggi has yet to be ascertained. This study provides a critical assessment of the employment opportunities locally acquired through the mangrove forest in Kampung Sungai Tinggi in the state of Perak, Malaysia. Structured questionnaires were used to collect information from households. The data obtained were analyzed using descriptive statistic while the relation between local occupation and income source was tested using Chi square. Households from the study area had benefited from the many job opportunities created from the mangroves. The economic activities involved are the fisheries sector, agriculture sector, livestock sector, trade or business, charcoal sector and other economic activities. The most common activity of the people involved are in fisheries sector which is 43%. Awareness should be based on an approach towards practicing sustainable mangrove forest management to ensure continuous mangrove life in the study area.

ABSTRAK

Hutan bakau semakin diiktiraf sebagai ekosistem yang penting dalam mengekalkan kehidupan penduduk setempat, yang tinggal di sekelilingnya; namun peranan hutan bakau di Kampung Sungai Tinggi masih belum dapat dipastikan. Kajian ini menyediakan penilaian kritikal mengenai peluang pekerjaan penduduk setempat yang diperoleh melalui hutan bakau di Kampung Sungai Tinggi di negeri Perak, Malaysia. Soal selidik berstruktur digunakan untuk mengumpulkan maklumat dari isi rumah. Data yang diperoleh dianalisis menggunakan statistik deskriptif manakala perkaitan antara pekerjaan penduduk tempatan dengan sumber pendapatan telah diuji menggunakan Chi square. Isi rumah dari kawasan kajian mendapat manfaat daripada banyak peluang pekerjaan yang tercipta dari hasil hutan bakau. Aktiviti ekonomi yang terlibat adalah sektor perikanan, sektor pertanian, sektor ternakan, perdagangan atau perniagaan, sektor arang dan lain-lain aktiviti ekonomi. Kegiatan yang paling umum dilakukan oleh penduduk terlibat dalam sektor perikanan iaitu 43%. Kesedaran harus dibuat berdasarkan pendekatan ke arah mengamalkan pengurusan hutan bakau mampan untuk memastikan kehidupan bakau berterusan di kawasan kajian.

ACKNOWLEDGEMENT

Thanks to Allah S.W.T for giving me the strength to carry on my study. I would not be able to finish my final year project which entitle “The Role of Mangrove on Sustaining Livelihood of Local Community In Kg.Sungai Tinggi, Perak”.

I would like to acknowledge my supervisor, Assoc. Prof. Dr. Pakhriazad Hassan Zaki from Faculty of Forestry, Universiti Putra Malaysia for his valuable advice, guidance, criticism and the time spent in teaching me throughout the preparation of this research. I also want to dedicate my appreciation to all my friends for the valuable advice and assistance given throughout my research on this topic. Also, thank you to all member that involve directly or indirectly in the time spent in completing my research.

Last but not least, I want to thank my family for their endless support, understanding, and constant encouragement throughout the study.

APPROVAL SHEET

I certify that this research project report entitle “The Role of Mangrove on Sustaining Livelihood of Local Community in Kg.Sungai Tinggi, Perak” by Muhamad Arifuddin Ahmad Razali has been examined and approved as a partial fulfillment of the requirement for the degree of Bachelor of Forestry Science in the Faculty of Forestry, Universiti Putra Malaysia.

_____

Associate Professor Dr. Pakhriazad bin Hassan Zaki
Faculty of Forestry
Universiti Putra Malaysia
(Supervisor)

_____

Professor Dr. Mohamed Zakaria Hussin
Dean
Faculty of Forestry
Universiti Putra Malaysia

Date: January 2019

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

1.1 General Background

Mangrove forest are a salt-tolerant forest ecosystem found in the intertidal region of sheltered coastlines (Hamilton &Snedaker,1984). Mangrove forests thrive in silt-rich, saline habitats worldwide, generally along large river deltas, estuaries, and coastal areas. It is characterized by low tree diversity and with a low broken canopy. Mangroves are evergreen trees and shrubs that are well adapted to their salty and swampy habitat. Thus, mangroves are not the only coastal vegetation but more appropriately they are the ecosystem which is vital for the environment as well as for nearby inhabitants.

In Malaysia, mangrove forest can be found in area located along sheltered coastlines protected from strong waves and cover an area of approximately 641, 172 ha (Erin et al., 2010). Mangrove have a lot of important role such as protecting and maintaining the coastal water quality , reducing the impact of the wave and flood damage and also acting as nursery and feeding area for commercial and artisanal fishery species (Kuenzer&Gebhardt, 2011).Coastal resources are an integral part of natural resources. Similarly, coastal zones form part of the coastal environment. A vast segment of the coastal communities heavily depend on the coastal and marine resources and ecosystems for their livelihoods. Coastal ecosystems (e.g., coral reefs,

mangroves, and wetlands) are also one of the world's richest storehouses of biological diversity and primary productivity.

Studies by Narendran et al., (2001) and Delang (2006) highlighted that the consumptive contribution of mangroves to the livelihoods of coastal communities is often ignored and receives little recognition from the policy makers and practitioners. One of the reasons is that little information is available on the types of goods and the quantity extracted, processed or sold. Vo et al (2012) said that both goods and services provided by mangrove ecosystems contribute to human well-being, both directly and indirectly.

While, knowing the economic value of an ecosystem and its services is an important asset, because a major demand is the support of human well-being, sustainability, and distributional fairness. Available data are also needed for decision making processes comfirm by Costanza and Farber (2002). Numerous numbers of studies has been done for assess the economic values for mangrove ecosystem services. No particular valuation method can be considered suitable for the whole ecosystem services, however collection of methods have been used according to service type, available data and timeframe of the study (Mahmoud Sarhan, 2014).

While, assessing the economic value of the ecosystem goods and services is ever more became essential condition for environmental decision-making (Vo et al., 2012). According to Tomlinson (1986), the valve of a mangrove forest depends on how a person value it, whether as a harvested product or usage product or to be converted into something more profitable. In reflection to the

issues as mentioned above this study has been conducted to access the information of local community who live in the vicinity of mangrove area. The purpose of this study was to identify goods and services taken from the mangrove forest and to determine its value based on income derived by the local community in Kampung Sungai Tinggi, Larut Matang, Perak.

1.2 Problem Statement

Mangroves provide many direct and indirect benefits to humans of which also identified as ecosystem services of the forest. Villagers living within, and around the mangrove area use goods and services from the forest as their source of livelihood. The purpose of this study was to identify goods and services taken from the mangrove forest and to determine its value based on income derived by the local community. However, the reliance of the village community on mangrove forest resources is still unknown.

Methods for valuing ecosystem services vary depending on the nature of the service. For ecosystem functions that produce marketable goods and services, prices are used in several alternative methods. In this study, we focus on the changing of monetary value and livelihood local community of Kampung Sungai Tinggi either decrease or increase in 5 years back.

1.3 Objectives

The objectives of this research were :

I. To identify the socioeconomic activities of local community in Kg.Sungai Tinggi.

II. To examine the monetary value from the activities conducted to sustain their livelihood.

REFERENCES

Abd. Shukor, A.H. (2004). The use of mangroves in Malaysia. In: Promotion of mangrove-friendly shrimp aquaculture in Southeast Asia (pp. 136-144). Tigbauan, Iloilo : Aquaculture Department, Southeast Asian Fisheries Development Center.

Adger W.N., Kelly P.M., Tri N.H. (2001) Costs and Benefits of Mangrove Conversion and Restoration. In: Turner R.K., Bateman I.J., Adger W.N. (eds) Economics of Coastal and Water Resources: Valuing Environmental Functions. Studies in Ecological Economics, vol 3. Springer, Dordrecht.

Alongi, D.M. (2002): Present state and future of the world's mangrove forests. *Environmental Conservation*, 29(3), 331–349.

AMARASINGHE, U., AMARASINGHE, M., & NISSANKA, C. (2002). Investigation of the Negombo estuary (Sri Lanka) brush park fishery, with an emphasis on community-based management. *Fisheries Management And Ecology*, *9*(1), 41-56.

Barbier, E. (2006). Natural barriers to natural disasters: replanting mangroves after the tsunami. *Frontiers In Ecology And The Environment*, *4*(3), 124-131.

Barbier, E. (1993). Sustainable Use of Wetlands Valuing Tropical Wetland Benefits: Economic Methodologies and Applications. *The Geographical Journal*, *159*(1), 22.

Delang, C. (2006). Not just minor forest products: The economic rationale for the consumption of wild food plants by subsistence farmers. *Ecological Economics*, *59*(1), 64-73.

Field, C.D. (1996). Restoration of mangrove ecosystems, ISME/ITTO, Okinawa, 250.

Hamilton, L. S., & Snedaker, S. C. (1984). Handbook for Mangrove Are Management. IUCN/ UNESCO/UNEP, Honolulu: East-West Center.

Islam, M., & Haque, M. (2004). The mangrove-based coastal and nearshore fisheries of Bangladesh: ecology, exploitation and management. *Reviews In Fish Biology And Fisheries*, *14*(2), 153-180.

Islam, M., & Wahab, M. (2005). A review on the present status and management of mangrove wetland habitat resources in Bangladesh with emphasis on mangrove fisheries and aquaculture. *Hydrobiologia*, 542(1), 165-190.

Kuenzer, C., Bluemel, A., Gebhardt, S., Quoc, T. V., & Dech, S. (2011). Remote sensing of mangrove ecosystems: A review. *Remote Sensing*, *3*(5), 878-928.

Mahmoud Sarhan. (2014). The Economic Valuation of Mangrove Forest Ecosystem Services: A Review. Environment Department , Environmental Valuation. University of York.

Mankiw, N. G., Weinzierl, M., & Yagan, D. (2009). Optimal taxation in theory and practice. *Journal of Economic Perspectives*, *23*(4), 147-74.

Narendran, K., Murthy, I., Suresh, H., Dattaraja, H., Ravindranath, N., & Sukumar, R. (2001). Nontimber forest product extraction, utilization and valuation: A case study from the Nilgiri Biosphere reserve, southern India. *Economic Botany*, *55*(4), 528-538.

Odum, E.P. (1971): Fundamentals of Ecology. Philadelphia: W.B Saunders Company and Toppan Company, 574-575.

Parks, S., & Square, K. Contribution Of Mangrove Forest And Socio-Economic Development Of Local Communities In Kudat District, Sabah Malaysia.

PDO-ICZMP (2004): Areas with special status in the coastal zone. Programme development office for integrated coastal zone management plan project, Water resources planning organization, Ministry of water resources, Bangladesh.

Ruitenbeek, H.J. (1994). Modelling economy - ecology linkages in mangroves: economic evidence for promoting conservation in Bintuni Bay, Indonesia. *Ecological Economics*, 10(3), 233-247.

Rönnbäck, P. (1999). The ecological basis for economic value of seafood production supported by mangrove ecosystems. *Ecological Economics*, *29*(2), 235-252.

Rönnbäck, P., & Primavera, J. (2000). Illuminating the need for ecological knowledge in economic valuation of mangroves under different management regimes — a critique. *Ecological Economics*, *35*(2), 135-141.

Sathirathai, S. (1997). Economic valuation of mangroves and the roles of local communities in the conservation of natural resources: case study of Surat Thani, south of Thailand. International Development Research Centre, Ottawa, Ontario, Canada. http://203.116.43.77/publications/research1/ACF9E.html

Spalding, M (1997). The global distribution and status of mangrove ecosystems. International News Letter of Coastal Management - Intercoast Network, Special edition 1, 20-21.

Tomlinson, P.B. (1986). *The botany of mangroves.* Cambridge, United Kingdom, Cambridge University Press.

Vo, Q., Kuenzer, C., Vo, Q., Moder, F., & Oppelt, N. (2012). Review of valuation methods for mangrove ecosystem services. *Ecological Indicators*, *23*, 431-446.

Vannucci, M. (2004). *Mangrove Management and Conservation: Present and Future* (p. 324). Tokyo: United Nations University Press.

Walsh, G., S. Snedaker and H. Teas (Eds.) (1975). Proceedings of the International Symposium on Biology and Management of Mangroves, vols. 1 and 2. Institute of Food and Agricultural Sciences, University of Florida, Florida, 846 p.

Walters, B. (1997). Human ecological questions for tropical restoration: experiences from planting native upland trees and mangroves in the Philippines. *Forest Ecology And Management*, *99*(1-2), 275-290.

Walters, B., Rönnbäck, P., Kovacs, J., Crona, B., Hussain, S., & Badola, R. et al. (2008). Ethnobiology, socio-economics and management of mangrove forests: A review. *Aquatic Botany*, *89*(2), 220-236.

Walton, M., Samonte-Tan, G., Primavera, J., Edwards-Jones, G., & Le Vay, L. (2006). Are mangroves worth replanting? The direct economic benefits of a

community-based reforestation project. *Environmental Conservation*, 33(04), 335–343.