



Faculty of Social Sciences and Humanities

**Community-Based Natural Resource Management: The Case Study of
Tagang System in Ulu Engkari and Tringus, Sarawak**

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Community-Based Natural Resource Management: The Case Study of
Tagang System in Ulu Engkari and Tringgus, Sarawak

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DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Malaysia Sarawak. Except where due acknowledgements have been made, the work is that of the author alone. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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ABSTRACT

In recent years, there has been increasing interest in collaborative or community-based resource management in place of top-down approach to management of natural resources. Community-based natural resource management has been implemented in many places globally, with varying results although it shows an effectiveness overall. This study aims to investigate the potential sustainability of existing co-management conservation practices in Sarawak by looking into the *tagang* system implemented in two different rivers in Sarawak, Sungai Engkari in Lubok Antu and Sungai Pedie, Tringgus, Bau. This study looks into the aspect of social capital in these two communities and demonstrates its importance when it comes to the sustainability of a community-based natural resource management project. This study also looks into the drivers and motivational factors of the communities' involvement in community-based resource management practices. The indigenous communities in Ulu Engkari and Tringgus still rely on the availability of natural resources in their daily life. As the communities are closely related to their natural environment, changes in the environment will affect their livelihood strategies, thus their indigenous knowledge revolves around the utilisation and management of the natural resources that surround them. Long-term sustainable resource management is made possible with a collaborative effort between local communities and government agencies, with clearly defined roles in order to achieve a balanced relationship among those involved. Government agencies play a key role in assisting the communities by providing material assistance and training. The horizontal relationship among members of the community is also important as it instils a sense of responsibility towards each member of the community as well as a shared ownership of the resources. This study has shown that the various types of social capital available plays an important role in community-based natural resource management endeavours in Ulu Engkari

and Tringgus as it encourages cooperation and collective action. The role of social capital should be given consideration in policy-making and strategies regarding natural resource management practices in Sarawak.

Keywords: Ulu Engkari, Tringgus, *tagang* system, social capital, Iban, Bidayuh

Pengurusan Sumber Asli Berdasarkan Komuniti: Kajian Kes Sistem Tagang di Ulu Engkari dan Tringgus, Sarawak

ABSTRAK

Dalam tahun-tahun kebelakangan ini, terdapat peningkatan minat dalam pengurusan sumber atau komuniti berasaskan komuniti di samping pendekatan atas ke bawah untuk pengurusan sumber semula jadi. Pengurusan sumber asli berasaskan komuniti telah dilaksanakan di banyak tempat di seluruh dunia, dengan pelbagai keputusan walaupun ia menunjukkan keberkesanan secara keseluruhan. Kajian ini bertujuan untuk mengkaji potensi kelestarian amalan pemuliharaan bersama yang sedia ada di Sarawak dengan melihat sistem tagang yang dilaksanakan di dua sungai di Sarawak, Sungai Engkari di Lubok Antu dan Sungai Pedie, Tringgus, Bau. Kajian ini melihat aspek modal sosial dalam kedua-dua komuniti dan menunjukkan kepentingannya apabila ia berkaitan dengan kemapanan projek pengurusan sumber asli berasaskan komuniti. Kajian ini juga mengkaji faktor pemacu dan motivasi penglibatan masyarakat dalam amalan pengurusan sumber berasaskan komuniti. Masyarakat pribumi di Ulu Engkari dan Tringgus masih bergantung pada ketersediaan sumber semula jadi dalam kehidupan seharian mereka. Oleh kerana komuniti berkait rapat dengan persekitaran semula jadi, perubahan dalam alam sekitar akan mempengaruhi strategi mata pencarian mereka, sehingga pengetahuan tempatan mereka dipengaruhi oleh cara penggunaan dan pengurusan sumber alam yang berada di sekeliling komuniti tersebut. Pengurusan sumber mapan jangka panjang dimungkinkan dengan usaha bersama antara komuniti tempatan dan agensi kerajaan, dengan peranan yang jelas untuk mencapai hubungan yang seimbang di antara mereka yang terlibat. Agensi-agensi kerajaan memainkan peranan utama dalam membantu komuniti dengan menyediakan bantuan dan latihan material. Hubungan mendatar di kalangan anggota

masyarakat juga penting kerana ia menimbulkan rasa tanggungjawab terhadap setiap anggota masyarakat serta pemilikan bersama sumber. Kajian ini menunjukkan bahawa pelbagai jenis modal sosial yang ada memainkan peranan penting dalam usaha pengurusan sumber alam berasaskan komuniti di Ulu Engkari dan Tringgus kerana ia menggalakkan kerjasama dan tindakan kolektif. Peranan modal sosial harus dipertimbangkan dalam pembuatan dasar dan strategi mengenai amalan pengurusan sumber semula jadi di Sarawak.

Kata kunci: *Ulu Engkari, Tringgus, sistem tagang, modal sosial, Iban, Bidayuh*

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LIST OF ABBREVIATIONS

BANP	Batang Ai National Park
CBNRM	Community-based Natural Resource Management
EPU	Economic Planning Unit
DANCED	Danish Cooperation for Environment and Development
DOA	Department of Agriculture
DFID	Department for International Development
ITTO	International Timber Trade Organisation
JKKK	<i>Jawatankuasa Kemajuan dan Keselamatan Kampung</i>
LEWS	Lanjak-Entimau Wildlife Sanctuary
OECD	Organisation for Economic Cooperation and Development
NCL	Native Customary Land
NRM	Natural resource management
SFC	Sarawak Forestry Corporation
SFD	Sarawak Forestry Department
SPU	State Planning Unit
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environment Programme

CHAPTER 1

INTRODUCTION

1.1 Introduction

The environment shapes the society that lives and depends on it, and in turn is also shaped by that society. Human-environment interaction is one of the five fundamental themes of geography that was developed as an educational guideline in 1984 by the Association of American Geographers (Boehm & Petersen, 1994). This theme describes how people interact with the environment and how the environment responds, using three key concepts: dependency, adaptation and modification. In other words, it is how people depend on, adapt to and modify their environment. People who rely heavily on natural resources for food and energy will be naturally driven by basic survival instinct and derive their diet from their surroundings to sustain individual, household and community livelihoods (Hartter & Boston, 2007). Nearly 70% of the world's poor are subsistence-based and live in rural areas in developing countries, thus the pressure on natural environments is more acute (World Bank, 2004).

Local communities have a long tradition of managing their local resources to secure their livelihoods, with local institutions playing a central role in resource management practices. The indigenous communities who traditionally rely on natural resources for their livelihood, culminating a close connection with their natural environment, have developed diverse systems of knowledge and practices for the sustainable use and management of these resources.

Over time however, particularly during the colonial era, the local communities have been systematically excluded from taking part in the management systems due to top-down, command and control, experts-driven management regimes. In national policies, particularly for developing nations, economic development has been overly emphasized leading to natural resource management (NRM) systems that maximises economic benefits from natural resources. The shift in NRM policy towards centralised, systematic science-based approaches is to promote technology-dependent industrialisation for economic development (Khan, 2011). This centralised approach is also known as the top-down approach, which gives less emphasis on social capital thus gives an indication that it is less successful due to a lack of participation by the local community. Traditional top-down approaches to conservation often face serious problems when it comes to implementation (Cramb et al., 1999). Often, these problems can be attributed to the lack of ownership over the process amongst those who have the power to implement decisions such as state actors or affected citizens and land owners, leading to low rates of acceptance. This may then lead to these groups delaying or preventing the implementation of decisions, in order to preserve their interests.

For example, in Brazil, there are 702 federal and state protected areas legislated to conserve an area totalling 97,608,850 hectares and protected areas represent 11% of the country's continental area and 0.4% of the oceanic area (de Figueiredo, 2007). The Brazilian system contains several modalities of protected areas with varied specific purposes, rules of access and use of resources, and land ownership. Purposes include preservation of genetic stocks, management of local fauna and flora, and development of environmental education for visitors and surrounding communities (Bruck, Freire & Lima, 1992 as cited in de Figueiredo, 2007). Depending on specific purposes, access to and use of resources may or

may not be allowed. For example, in biological reserves the access and use of resources is not allowed, whereas extractive reserves are created for the purpose of sustainable use of resources. Land ownership can vary from public (local, state, or federal) and private, to common properties (a type of private ownership by a group of people). A detailed discussion on land tenure in Sarawak will be in Chapter 2 of this thesis.

Studies show that governmental approval of the creation of a protected area does not necessarily result in the existence of the area as such (de Figueiredo, 2007). Not infrequently, such areas are created by legislators, but not in practice. They become what the literature describes as “paper parks,” or tracts of land that are protected according to written and approved legislation, but for which little or no implementation funding is allocated (Terborgh & Van Schaik, 2002). Not unique to Brazil, but quite prominent in that country, the survival of many protected areas is fragile (e.g., Dudley, Hockings & Stolton, 1999). Several of them are failing to secure even the most basic infrastructure and consequently, the maintenance of significant and valuable resource pools and human lives are at risk. In 1998, a study focused on 91 protected areas in Brazil classified as federally managed, with restricted use of resources, and that had existed for more than six years. An assessment of the levels of implementation and vulnerability of these areas demonstrated that 73% of them had less than half of the required staff and almost 45% operated with less than half of the financial resources needed (Lemos & Ferreira, 2000 as cited in de Figueiredo, 2007). This same study indicated that 55% were in a precarious implementation situation and 37% were minimally implemented. Only nine (8.4%) of the areas were reasonably implemented. In sum, of the 1.85% of national territory supposed to be preserved under these areas, only 0.4% was effectively protected (Lemos & Ferreira, 2000, as cited in de Figueiredo, 2007).

Several problems emerged as a result of the lack of material and human resources needed to properly manage an area. Common and grave examples include expropriation of land and relocation of communities that never get legalized or properly addressed (Röper, 2000; Terborgh & Van Schaik, 2002); disruption of local livelihoods and conflict with local communities (Röper, 2000); overuse and resource depletion due to minimal or non-existent mechanisms restricting access and use of resources (Ascher, 1995; Gibson et al, 2000; Ostrom, 1990); management plans that are never written and implemented; less than a handful of people to monitor and manage vast amounts of area; and threats to the lives of managers and rangers (Gibson et al, 2000). In all of these areas, there is an immense potential for conservation of resources and enhancement of people's quality of life, which simply is being lost, perhaps at the same rate as the loss of biological and cultural richness.

Much like Brazil, Malaysia is recognised as one of the world's biodiversity 'hot spots', with its exceptional species diversity and richness (Aiken & Leigh, 1992). Sarawak, one of Malaysia's most biodiversity-rich states, is located on the island of Borneo, bordering Kalimantan. It covers an area of 124,449.5 square kilometres, with forest areas occupying almost 70% of the total land area (Forest Department of Sarawak, 2013). Sarawak is home to over 36 different ethnic indigenous groups (State Planning Unit, 2014). The major ethnic groups in Sarawak include the Iban, Bidayuh, Orang Ulu, Melanau, Malay, Chinese, and several minor ethnic groups, such as Indian, Javanese, Kedayan, Bugis, Murut and many more. The term Dayak is used as an umbrella term to refer to the indigenous people of Sarawak such as the Iban, Bidayuh and Orang Ulu. However, it is not an official term to the address their native ethnicity like in Indonesia. The term 'dayak' in Bidayuh simply means people.

The Ibans make up the largest percentage of Sarawak's population at almost 30%. In the olden days, the Ibans were a feared race of head-hunters of Borneo, however today they are known to be a friendly, hospitable, generous and hardworking people (Anom, 2014). The Bidayuhs on the other hand make up about 8% of Sarawak's population. The Bidayuh population is concentrated mainly on the western end of Sarawak, in the inland hilly areas of Padawan, Siburan, Penrissen, Bau, Serian and Lundu. The Bidayuh are also known as "Land Dayaks" as they were historically settled further inland in comparison to the early Malay and Iban who settled along the coasts and rivers. The word Bidayuh in itself literally means "land people" in Biatah dialect. In Bau-Jagoi/Singai dialect, the pronunciation is "Bidoyoh" which also carry the same meaning.

The various Orang Ulu groups together make up roughly 5% of Sarawak's population. The phrase Orang Ulu means upriver people and is a term used to collectively describe the numerous tribes that live upriver in Sarawak's vast interior. Such groups include the major Kayan and Kenyah tribes, and the smaller neighbouring groups of the Kajang, Kejaman, Punan, Ukit, and Penan. Nowadays, the definition also includes the down-river tribes of the Lun Bawang, Lun Dayeh, "mean upriver" or "far upstream", Berawan, Saban as well as the plateau-dwelling Kelabits. Orang Ulu is a term coined officially by the government to identify several ethnics and sub-ethnics who live mostly at the upriver and uphill areas of Sarawak. Most of them live in the district of Baram, Miri, Belaga, Limbang and Lawas. This study in particular will be focused on the Iban and Bidayuh communities, specifically the Iban residing in Ulu Engkari and the Bidayuh dwelling in Tringgus, Bau.

The traditional livelihood of the indigenous communities in Sarawak relies very much on the availability of natural resources that surround them. The communities are closely associated with their natural environment. Any changes in the environment will

affect the peoples' livelihood strategies, and changes in their livelihood strategies will in turn affect the environment. Therefore, their indigenous knowledge revolves around the utilisation and management of those resources (Joe & Insham, 2004).

The rapid exploitation of forest areas for development and agricultural activities have resulted in the diminishing of flora and fauna. The State's role and policies in the name of development exacerbates the situation. In response to this, the government came up with various efforts to conserve the biodiversity of the natural environment, mainly by establishing protected areas such as Heritage Sites, State Parks, Protection Forest Reserves, Nature reserves and sanctuaries. This national park ideology stems from the western concept of conservation of "pristine nature" untouched by anthropogenic influence, a remnant of our post-colonial history. The myth of pristine nature has had a powerful influence in the conservation discourse, whereby it proposes "a dichotomy between humans and nature, leading to the assumption that human exclusion from protected areas will maintain the pristine state of nature" (Fairhead & Leach, 1996; Leach and Fairhead, 2000).

These protected areas are managed by the state and the idea is to protect these areas from humans, including the indigenous communities who have relied on these resources for their livelihood for generations. This becomes the basis of new types of "ecological imperialism" in which concerns for wildlife overrides concerns for people, overlooks human contributions to present biodiversity and ecological function, as well as putting the blame on local communities for environmental degradation (Adams & McShane, 1992). To overcome these misconceptions, several studies have employed historical ecology as a concept and methodology to studies of landscape change (Fairhead & Leach, 1996; Hitchner, 2009). The conservation narrative as adapted by the local government paints the indigenous communities in an unflattering light, blaming their livelihood activities such as farming,

fishing and hunting for the deterioration of the natural environment. As a result, communities are often displaced from these protected areas, resulting in the loss of land and livelihood (Dove, 2003; Dowie, 2009).

In recent years however, policy makers recognised the role of indigenous communities in the conservation of natural resources. There has been an emergence of collaborative management or community-based conservation implemented in situations where competition over natural resources is intense and local people are directly dependent on the resource base in order for conservation to be effective and self-sustaining in the long-term (Quazi et al., 2008). Local resource users should be empowered to take on a greater share of management responsibilities from government authorities while at the same time benefiting from improved resource management (Berkes et al., 1991; Borrini-Feyerabend et al., 2000).

In Sarawak itself, several community-based conservation efforts have been established, including the implementation of the *tagang* system in several riverine communities in the state. The term '*tagang*' in Iban means restricted. The *tagang* system is a form of community-based fisheries management system based on the *tagal* system in Sabah, where it is referred to as a Smart-Partnership between the local community and the Sabah State Government (Sanggin et al., 2016). The term '*tagal*' is originated as a traditional system of forest stewardship in Sabah, which was then adapted for the protection, restoration, conservation and management of the freshwater fishery resources in the country, and most specifically in Sabah (Wong et al., 2009).

Tagal system literally means "fishing in rivers is prohibited by the concerned communities for a certain pre-agreed period of time" and aims to restore the depleting fisheries resources, keep rivers pollution free and generate income for the communities

involved (Wong et al., 2009). In Sabah, the *tagal* system was developed by the Sabah State government and the Department of Fisheries (DOF) of Sabah upon recognising the need to address the problems of depleting freshwater fishery resources, indicated by the State's decreasing production from freshwater fisheries. Previously, the State did not have adequate fisheries laws to regulate inland fisheries, until the successful implementation of the community-based fishery resources management concept, locally known as the *tagal* system (Wong et al., 2009). There are now more than 240 *tagal* systems in Sabah, each required to have a *tagal* committee, registered with the DOF of Sabah. Sabah's relatively successful implementation of the *tagal* system serves as a learning experience on how such a system can be implemented properly and effectively in other parts of Malaysia (Wong et al., 2009).

Taking example from Sabah, in Sarawak, the *tagang* system has been implemented in several areas with varying degrees of success. A common problem faced is the participation of the communities involved in the *tagang* system. Without the communities' willingness to participate, the programme is destined to fail. Thus, the degree of participation of the communities involved play an important role in the successful implementation of community-based conservation. Previous studies as mentioned above indicate that the top down approach gives less emphasis on social capital, thus gives an indication that it is less successful due to the lack of community participation in the management of their resources. This study is about how social capital relates to natural resource management by looking into the roles of the community in the *tagang* system in Ulu Engkari, Lubok Antu, as well as in Tringgus, Bau, to determine the effects on the success of the community-based conservation programme as well as the drivers that motivate the communities' involvement with the co-management of the fishery resources.

1.2 Background of the Study Areas

For the purpose of this study, the study areas chosen were areas with an existing community based natural resource management system, namely the *tagang* system in Ulu Engkari as well as in Sungai Pedie, Bau. The Iban and Bidayuh communities residing in these areas may still be dependent on natural resources for food, medicine, and raw materials. Due to its rural nature, both communities still have access to plenty of natural resources in the forest.

1.2.1 Iban Community in Ulu Engkari

Jensen (2010) describes the Iban of Borneo as one of the most extraordinary indigenous tribes, possessing ancient traditions and a unique way of life. They comprise the largest indigenous ethnic group in Sarawak, estimated at more than a quarter of the total population (Christensen, 2002). Traditionally the Iban are a riverine people, building longhouse communities along main rivers and small streams of interior forests. Their traditional livelihood as subsistence shifting cultivators with hill paddy as their main crop has been described in detail in studies of the Iban shifting cultivation system by various researchers including Christensen & Mertz (1997), Cramb (1993), Freeman (1955), and Nielsen et al. (2006).

Originally, the Iban are thought to have originated from the Kapuas River system in West Kalimantan, and some ethnic groups living there today such as the Kantu, Mualang and Kanyau, are closely related to the Iban (Christensen, 2002). The Iban were believed to have migrated into Sarawak some 300 years ago, settling along the rivers of Batang Ai,