

Climate Change And Indigenous Community: Review On Livelihoods Challenges And Dependency On Non-Timber Forest Products (NTFP)

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Abstract: The Malaysian indigenous communities has lived in a remote section of the state for generations. This communities have traditionally managed and relied on forests for hunting, fishing and natural resources. In this study, we attempts to discuss the impact of climate change on indigenous communities livelihoods and their dependency on forest resources, specifically non-timber forest products (NTFPs). This paper adopts a review approach using the indigenous peoples and non-timber forest products as a case study. This review shows that climate change is affecting indigenous people livelihoods negatively since the NTFPs become more limited and vulnerable. We recommend that climate change adaptation initiatives for remote communities of Malaysia should focus in improving the socio-economic status and sustainable development of the indigenous community. Furthermore, effective strategies for planning and implementing are crucial to identify the constraints faced by indigenous people.

Keyword: Climate change, Indigenous community, Livelihoods challenges, Non-timber forest products (NTFPs)

Introduction

Recent changes in climate have an observable impact on human and nature across the world. Climate change increased the frequency and intensity of extreme weather such as floods, cyclones, wildfires and heat-waves. The direct and indirect effect of climate change have severe consequences for world communities and economies (Dube & Phiri, 2013; Kinay et al. 2018; Smithers & Blicharska, 2016). Generally, extreme changes in climate harm people with negative implications to ecosystems, work, health, livelihoods, food security and other areas that are considered to be fundamental for well-being. For example, the World Meteorological Organisation estimated that climate-related disasters caused global direct economic losses (DELs) almost US\$ 2.4 trillion and climate-related deaths exceeded 1.94 million between 1970 to 2012 (WMO, 2014).

Indigenous people are among the first that experience the negative impact of climate change (ILO, 2017). Indigenous people have been recognised as social and economically marginalised ethnic groups and the original settlers of a given region. In Malaysia, indigenous people can be categorised into three main ethnic groups; the Senoi, Melayu-Proto and Negrito. According to the JAKOA Strategic Plan (2016-2020), Senoi consists of 55% of the total population, followed by Melayu-Proto with 42% and Negrito with 3%. Most of the community members live in ecosystems particularly prone to impacts of climate change and are heavily dependent on natural resources (Ramos-Castillo et al., 2017). Forests naturally provide multiple livelihood benefits especially for the remote areas. The indigenous people often combine their agricultural production with forest-based products and make use of basic needs products such as foods, fuel or medicine. On the other hand, forest products contribute indirectly to them as food security as they are used to make farm implements, food preservation or as traded goods to meet their basic need (Ogle, 1996).

One of the major resources is non-timber forest products (NTFPs). A vast body of literature emphasised the importance of NTFPs in fulfilling several livelihood requirements starting from subsistence, increase the income and ultimately alleviate poverty (Ofoegbu et al., 2017; Saifullah, Kari & Othman, 2018; Soe & Yeo-Chang, 2019). NTFPs is argued to reinforce human well-being through five mechanisms. NTFPs is contributing directly to household consumption (Saha & Sundriyal, 2012), provide household with a means of income generation (Areki & Cunningham, 2010), safety-net or

insurance (McSweeney, 2005), strengthen the cultures and spirituality (Cocks et al. 2011) and providing cash saving for households as a free resources (Shackleton et al., 2007).

Given the significance of NTFPs in the livelihoods and well-being of indigenous people, there is an increase interest to discuss the effect of climate change on the indigenous group that depended on NTFPs. The understanding of the importance of NTFPs in enhancing indigenous socioeconomic status has been subject of concern over the years (Howell et al., 2010; Saifullah et al., 2018). However, in recent years, there has been growing concern on climate changes that is likely to affect the productivity of forest growth and directly impacted the indigenous livelihoods activities. For instance, warming temperatures increase the length of the growing season and shifts the geographic ranges of some tree. Naturally, all the disturbances can interact with one another and the changes in temperature increase the risks of the forest. In this review, we will discuss the challenges impact of climate change on indigenous people and how this effect dependency on NTFPs.

Indigenous Community Challenges to Climate Change Exposure

In this section, we will highlight that the risks that climate change affected among the indigenous groups differ than other groups in society. First, indigenous peoples are among the poorest of the poor and most vulnerable to climate change. Hallegatte et al. (2016) predicted that nearly 100 million people are exposed back to poverty by 2030 due to the climate change effect. Impact such as natural disasters have the potential to increase the gap of inequality and contributes to the destabilisation of economic growth and poverty reduction. Meanwhile, indigenous people approximately represent 5 per cent of the world population (UNDP, 2011), and it is estimated that 70-80 per cent of 370 million among the group spread across Asia and Pacific region are particularly vulnerable to the climate change (ILO, 2017). Hence, the consequences of climate-related shocks for indigenous poverty are considered as an urgent problem. It is argued that indigenous people will continue to suffer a wider poverty gap compared to non-indigenous peoples. The climate change brings extreme threats for the survival in social and economic well-being.

Second, forest-based resources are at risk to the climate irregularity and indigenous people become more vulnerable for economic activities and livelihoods. Forest, through NTFPs are considered as a “hidden harvest” to support rural and remote economies either as supplementary income or primary (Areki & Cunningham, 2010; Babulo et al., 2009). However, the erosion of natural resources such as deforestation contributed to around 10-12 per cent of global carbon emissions (Smith et al., 2014). In some cases, indigenous people have been restricted to access forest resources that they have traditionally occupied due to the lack of acknowledgement from international union (Dhir, 2015). This is because issues such as natural resource extraction, environmental degradation or even policies related to environmental conservation does not consider the needs of indigenous peoples (UN, 2009). Moreover, traditional occupations do not necessary meet their daily requirements since income-generating activities by indigenous peoples were hindered by discrimination in formal economy, lack of educations and skills, limited access to credit and weak market linkages. Given the circumstances, climate change provided another form of threat that significantly implicates to indigenous group.

Third, the high level of exposure to climate change resulted in migration among indigenous women and men away from their traditional areas. For instance, relocations of indigenous community in Alaska because of the loss of coastal ice, increasing weather intensity and the rising of sea level (Larsen et al., 2014). Gemenne and Blocher (2016) stated that migration is one of the adaption strategies, however, it has to point out that new places do not provide security for their livelihoods. Confronted with their new areas, indigenous peoples become more vulnerable to discrimination, the crisis of identity, exploitation and other social, economic and environmental risks. For example, a study by Rani et al. (2013) found that indigenous peoples were exposed to discrimination in minimum wage compliance compared to other workers, with women within these groups facing compounded disadvantage.

The climate-related challenges, especially in urban areas, become uncontrollable due to higher rates of unemployment, compared to other groups. Dhir (2015) revealed that unemployment among indigenous men and women in India is 2.9 per cent and 3.4 per cent in 2004-2005, and increases to 4.4 per cent and 4.3 per cent between 2009 to 2010. Also, they often live in slum areas and lack access related to basic infrastructures and services which made them significantly more vulnerable to the impacts of climate change especially natural disasters (Nairobi, 2010; 2005). The jobless indigenous peoples are then forced to be involved in the informal sector with a wide range of economic activities

such as seasonal wage work through farms, plantations, construction sites, domestic workers or as street vendors. Generally, the circumstances caused the groups to be isolated with limited social protection, weak contractual arrangements and higher risks for health and safety.

Climate change, migration and relocations resulted in the higher gap in gender inequality which has become a key determinant in the deprivation suffered by most of the indigenous women. Usually, indigenous women involved in traditional or non-traditional livelihoods, ensuring food security or unpaid care work. The climate change has jeopardised their livelihoods security and many of them are seeking employment in urban areas through the informal sector, agricultural wage work or domestic work (Vinding & Kampbel, 2012). Furthermore, indigenous women often experienced discrimination from within or outside their society despite remarkable contributions to the social, economic and cultural aspect. Consequently, they faced several disadvantages in terms of social, economic exclusion, marginalisation, exploitation and gender-based violence (UNICEF, 2013).

Implications of Dependency on Non-Timber Forest Products (NTFPs)

Forests are increasingly recognised for their valuable biological resources which arguably are important to sustain the livelihoods of hundreds of millions of people in forest-dependent communities. The non-timber forest products (NTFPs) are categorised as any biological resources other than timber materials, extracted completely from the forest and are crucial for the livelihoods requirements (Cocks & Wiersum, 2003). Also, it can be defined as goods of biological origin besides wood obtained from the forest, other wooded lands and trees outside the forest (FAO, 2001). These resources may be acquired from forest plantations, agro-forestry schemes or trees outside the forest (FAO, 1995). NTFPs play a significant role as sources of food, medical treatment or it can be used interchangeably as domestic consumption and traded commercially (Koziell, 2001).

However, climate change is expected to increase the frequency and intensity of extreme climate events such as heat, droughts and flooding with negative consequences for the NTFPs (Parmesan & Yohe, 2003; Kirilenko & Sedjo, 2007). In Malaysia, the temperatures are predicted to rise in the range of 1.5 Celsius to 2 Celsius by 2050, with higher intensity of rainfall recorded in 2000 to 2007 which exceeded the previous records in 1971 to 1980 (MMD, 2009). Generally, several implications to forestry can be predicted such as disturbances on tropical forests and species, the low fishery production due to the mangrove or estuarine habitats that are likely to be diminished and problems related to the preservation of rare diversity and forest in a national park. The extreme changes in temperature and rainfall threatened the biodiversity and may affect the main sources of livelihoods of the indigenous households, hence increasing the dependency on NTFPs for domestic use and cash income.

A study by Msalilwa et al. (2013) in Tanzania revealed that there is an increase of reliance or demand on NTFPs possibly by the increasing number of populations in the areas. The data shows 86 per cent of participants agreed on the shortage in the amounts of NTFPs from the forest. Furthermore, local peoples are forced to consume NTFPs as safety nets, health care medicine or food despite limited numbers of forest resources. An empirical study Balama et al. (2016) documented that changes in rainfall and temperature caused the lower supply of NTFPs such as mushrooms. Accordingly, the unpredictability of rainfall pattern from 1980 to 2010 and prolonged drought destroyed natural habitat for the mushrooms species to survive. Chidumayo (2011) stated that most of the negative consequences of climate change particularly by drought can be seen through the availability of forest products. As the NTFPs become more limited, climate change definitely interfere or disrupts the livelihoods of forest-dependent communities. Meanwhile, Chitale et al. (2018) through their study in Nepal suggested that several species will adversely be impacted due to the climate-related shocks. The estimation predicted that distribution of the various species is likely to shift with the range of expansion and reduction depending on the species.

Conclusion

It is important to highlight that the impacts of climate change on indigenous people are different than other society. This is because indigenous peoples are among the first to face the direct consequences of climate change due to the dependence upon and close relationships with forest and its resources. The potential threat of climate change combines with several challenges, makes climate change an issue of

inequality to indigenous peoples. Meanwhile, increases of consumption of forest products and climate change are the main reasons for increased of scarcity of NTFPs. Hence, the less availability of the resources have put the indigenous people's livelihoods at the risk.

Conflict of interests

The authors declare that they have no competing interests.

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