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The impact of limestone mining on the tourism potential of Songkhla Province, Thailand

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Abstract

The study in this article was a qualitative investigation to examine the impact of limestone mining on the communities of Songkhla Province and its consequent slowdown of community-based tourism in the region. The paper considers data gathered from academic and legal documents, as well as field observation and interviews with residents of four communities in Southern Thailand. Results show that low sustainability of mining practices in the mountains at Khuha Tai Sud-District, Songkhla Province is a significant obstacle to tourism and economic development in the area. The mining company in charge of the quarry has come into conflict with local residents over reported economic, environmental and health damages incurred by people living nearby and there has been a negative impact on tourism in the region. Newly developed legislation will encompass limestone quarries, and it is hoped by local community members that this will have a positive impact on environmental stability and the potential for tourism, especially geotourism in the vicinity.

Keywords: Environmental sustainability, limestone quarry, mining legislation, tourism.

Introduction

There has been a growing global popularity in geotourism over the past decade. International and domestic tourists alike are drawn to sites across the planet that demonstrate some or other unique and interesting geological heritage (Dowling, 2013). Realising the potential for Thailand, the Department of Mineral Resources (DMR), Co-ordinating Committee for Geoscience Programmes in East and South East Asia (CCOP) and The National Geopark of Thailand organised the 2018 Regional Geoheritage Conference in Khon Kaen Province. The stated objectives of the conference were to "diversify the role of geologists and improve the most active role of geologists in utilization of geoheritage in the form of geotourism and public education within geoparks as a driver for economic and society well-being" (DMR, CCOP and The National Geopark of Thailand, 2018). As a direct consequence of this conference, studies emerged to examine the geotourism potential of sites across Thailand (Hengpatana et al., 2019; Pornprasit et al., 2019; Singtuen et al., 2019; Singtuen and Won-In, 2019). Songkhla was identified as having significant potential for geotourism development (Nazaruddin, 2019).

Khao Khuha is a mountain system located in Khuha Tai Subdistrict, Rattaphum District, Songkhla Province. There are a number of communities situated around the mountains. The local people collect bat manure from the Khao Khuha caves to make and sell fertilizer. In the southern part of the mountain system, there is an underwater stream, which develops into two

canals containing many aquatic animals. The site is an untapped potential tourist attraction but the effects of limestone quarrying have prevented any significant tourism initiatives.

The Ministry of Industry has classified Khao Khuha as an area of industrial rock. According to Announcement No. 8, Khao Khuha is one of twenty sites that have permission to be mined for industrial stone. Consequently, Peerapol Mining Company Ltd. requested a concession certificate from 1999-2009 and Calcium Thai Company Ltd. requested a concession certificate from 2006-2008. These two companies were granted permission to mine stone and perform rock-blasting operations around Khao Khuha. The period saw the most violent rock-blasting because Peerapol Mining Co., Ltd. secured a foreign export contract from India and increased their output to meet the demands of their new market. Mining in and around Khao Khuha affected the physical health, property, occupations and mental condition of people living in nearby communities. This prompted local residents to begin campaigning against the work of the mining companies due to degradation of the natural environment which is why stakeholder collaboration and buy-in is so critical in any business venture such as any tourism initiative if there is to be a remote chance of sustainability (Nicolaides, 2015; 2020). To try and deter the activists, Peerapol Mining Company Ltd. filed civil defamation charges against the Khao Khuha Community Rights Network (KKCRN) in June 2011, demanding 64,000,000฿ in compensation. The company later dropped these charges in August 2012. In August 2013, Songkhla Provincial Court ruled that Peerapol Mining Co. Ltd. must pay nine members of the KKCRN 60,000฿ (US$1,700) each in compensation for unwarranted civil defamation charges (Amnesty International Thailand, 2016).

Given the obvious impact that mining has had on the community and the development of its tourism industry, and the lack of direct investigation into the field, the researchers were interested in examining the legislation in place to protect local rights and facilitate the development of tourism around Khao Khuha, Khuha Tai Subdistrict, Rattaphum District, Songkhla Province, Thailand.

Research Objectives

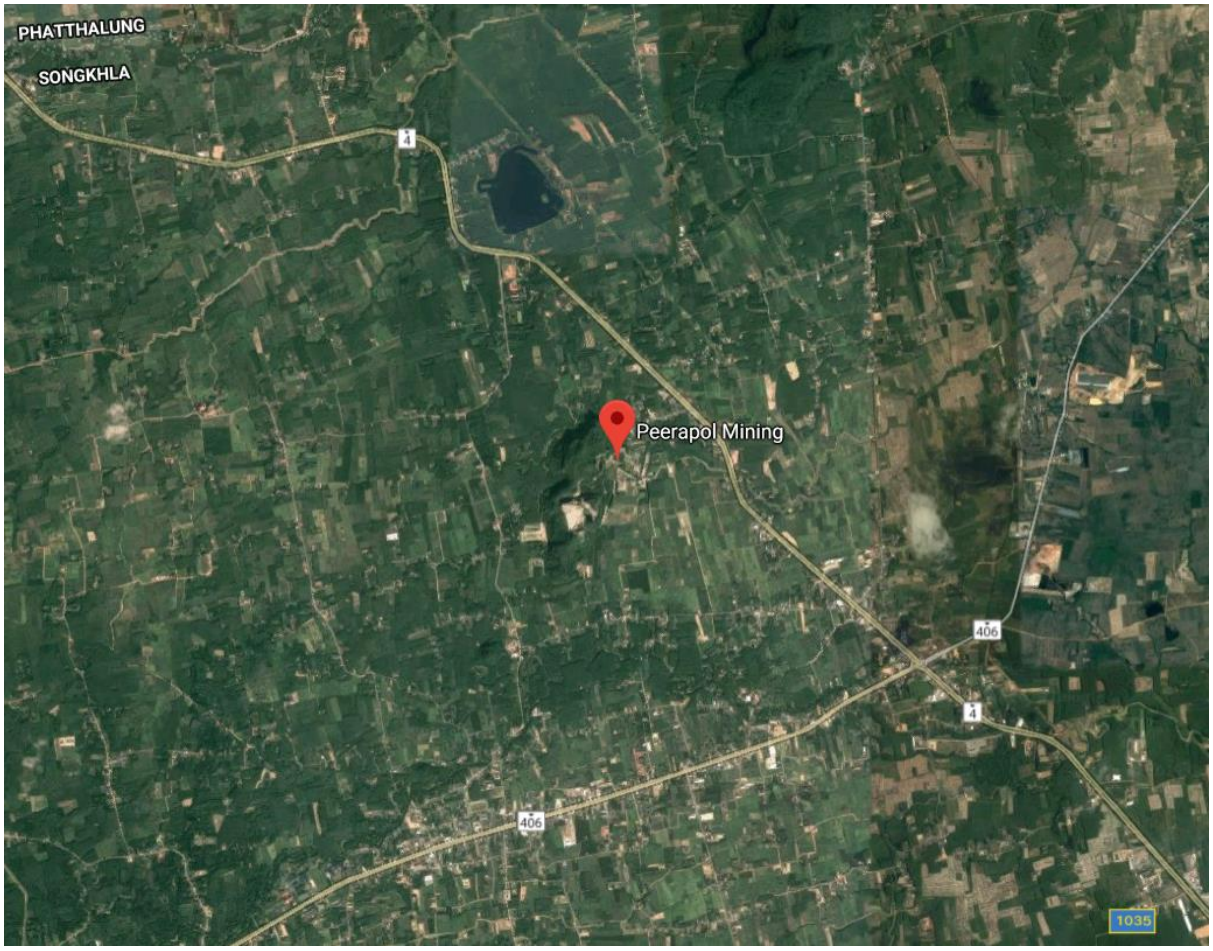
There were three main aims to this investigation: 1) to study the history of mining regulations in Thailand and their enforcement; 2) to understand the impact of mining on tourism in Khuha Tai, near the Khao Khuha mountain system in Songkhla Province; 3) to consider the future of mining in the region and its potential impact upon tourism.

Research Methodology

This was a qualitative investigation conducted in four communities surrounding Khuha Tai Mountain: Khuha Tai Moo Ban 5, Khuha Tai Moo Ban 7, Khuha Tai Moo Ban 9 and Khuha Tai Moo Ban 12. Data were gathered from documentary analysis of related academic literature, online newspapers and legal transcripts, as well as a study in the field. The sub-district of Khuha Tai was purposively selected as a suitable research area for this investigation given its proximity to the limestone mine. The four communities within the research sample were identified using a random sampling technique to select them from a list of communities surrounding Khuha Tai Mountain. From these communities, the research team purposively selected key, casual and general informants to contribute to the data collection process.

The key informant group was composed of village leaders and heads of local government organisations. The casual informant group was composed of village residents and government workers. The general informant group was composed of passers-by and tourists. Data from the field was gathered by non-participant observation at the research sites, informal interviews with casual and general informants and formal structured interviews with key informants. All collected data was validated using methodological triangulation to ensure information gleaned from different research methods had similar outcomes. Also, geographical triangulation was used to compare data collected in different villages. The data was then categorised into groups

according to the research aims and analysed by an inductive analysis method. All results are presented below as a descriptive analysis.



(Source: Google Maps. Imagery ©2019 Maxar Technologies, Imagery ©2019 CNES / Airbus, Maxar Technologies, Map data ©2019)

Figure 1. A map of the area surrounding the quarry at Khuha Tai Sub-District, Songkhla Province

Results

The history of mining regulations in Thailand and their enforcement

Thailand has learned lessons from mining activities that have impacted community lifestyle and tourism potential. One of the most famous examples was the case of Klity Creek at Thong Pha Phum District, Kanchanaburi Province. Klity Creek, a water source flowing through a nature reserve in Western Thailand, was found to have a “lead concentration of 90 to 300 times the international environmental standard because of untreated waste running into the river from the Kemco lead mine” (The Japan Environmental Council, 2002). Further examples are the case of cadmium contamination in Mae Tua Creek, Tak Province, the construction of a gold mine at Wang Saphung, Loei Province and potash mining activities in Udon Thani Province (Rattanasiwong, 2014).

When society still needs mineral resources for national development, the government has a policy to promote mineral exploration and development that will benefit the country's economy. The Ministry of Industry announced a mineral exploration and development policy with the approval of the Council of Ministers on 4 July 1987, granting monopoly rights on mineral exploration and concessions to large-scale mining operators. A special license was first introduced in 1989 to companies offering special benefits to the government. However, this

impacted the local community lifestyle, the environment and the tourism-based economy. The abundance of natural resources and the environment in some locations has now been lost due to mining activities, removing their potential as geotourism destinations. In Phichit and Phetchabun Provinces, the Akara-operated Chatree Mine "was ordered to suspend production in late 2016 on grounds that its activities were harmful to the environment and local residents' health" (Bangkok Post, 2019). Meanwhile, Phuthapfa gold mine in Loei Province has received attention from global human rights groups for the impact of its activities on the local environment and resident health (Protection International, 2019). Mining operations cause dust and noise that disturbs residents during the day and night. Moreover, mountains, forests and natural water sources are destroyed and contaminated with many heavy metals. Food and water is unsafe, requiring people to buy drinking water and causing many to become ill with allergies, rashes and itchy pustules on the skin. There are efforts to force villagers to sell land to the company at a cheap price and relocate.

There are many negative health effects caused by mining activities, rendering promotion of these sites as attractive tourist destinations impossible. Dust from blasting causes decreased lung function, breathing difficulties, coughing, chest pain, wheezing, fatigue, tiredness and an emphysema as well as an incurable lung disease called Silicosis. The loud noises affect the hearing organs causing distress and possibly vibration sickness, which results in decreased work efficiency and muscle spasms. The outflow of acidic water from metal mines, acid mine drainage, is a natural process that occurs when waste rock containing sulfide makes contact with air and water. This causes the formation of sulfuric acid containing heavy metals such as arsenic, copper, cadmium, lead, silver, zinc. Arsenic causes respiratory problems and irritation of the skin and eyes. It is also a type A1 carcinogen according to the American Conference of Governmental Industrial Hygienists and International Agency for Research on Cancer. Sulfamic acid leaked from the mines also causes respiratory problems and skin irritation. However, the system to support mechanisms or tools in managing mineral resources is not yet consistent with current social conditions. Although the constitution prescribes community rights and stipulates quality control and project inspections, there are still gaps in enforcement.

Problems with tourism potential caused by mining in Khuha Tai Sub-District

Surveys found that mining licenses and concession certificates affect the environment, public rights and community rights. Moreover, the government sector does not receive benefits that are worth the loss of natural resources and the environment. The problem is that many explorations and mining policies were established before the 2007 constitution came into force. Therefore there are original endeavours that are inconsistent with the constitution, such as expanding the scope of community rights in providing and receiving information, participation in natural resource and environmental management and assessing the health impact of people in the community. There are many laws related to mining that have not yet been adjusted to comply with the process of granting exploration rights and mining supervision. Additionally there are regulatory gaps concerning land rehabilitation after the closure of the mine and conflict resolution.

There are complaints from the communities of Khuha Tai that mining has deprived the people of the right to use public areas and develop community-based tourism. People are affected by the environmental degradation, including dust, noise and vibration from rock blasting. There has been an impact on natural resources and the environment, including a loss of minerals, which are valuable resources that cannot be replaced. Moreover, there may be an impact on ecological systems, such as changes in groundwater flow direction and ground conditions, including the spread of chemicals (cyanide) into water bodies without standardized protection. Furthermore, benefits received by the local community are not representative of the disruption to their lives. Currently, 20% of mineral royalties are given to sub-district administration organizations or local municipalities in the area of the concession certificate for mining, while affected communities outside the concession area, will receive an average share of 10%. These are significant ways in which tourism has suffered due to local mining.

The future of mining and tourism in Khuha Tai Subdistrict

The described situation resulted in the formation of the Department of Primary Industries and Mines, which is responsible for promoting and permitting exploration and mining permits instead of the Department of Mineral Resources. These two government departments are jointly responsible for finding mechanisms and tools for mineral resource management and proposing laws on mineral royalty rates to the legislative branch of the government, the National Legislative Assembly (NLA). On March 2, 2016, in accordance with the provisions of the constitution of the Kingdom of Thailand and with the intention to improve the law on minerals and the law on mineral royalty rates (Mineral Royalty Act 1966 and the Mineral Act 1967), a proposal was made to bring the principles of both acts into the same law. This would aid the formulation of policies for mineral management, balance economic, social and environmental development and set clearer criteria for licensing and supervision.

The law stipulated that mining operations should be suitable for the type and size of the mine and that local administrative organizations and communities must participate in mineral management. The law also set new rules for the allocation of benefits from mineral resources to local government organizations, the local community and other areas affected by mining. The law further required that compensation be paid to the person with an ownership or possessory right of the land where the mine is located. After the national legislature was approved by the Legislative Assembly, it was enacted as The Minerals Act 2017, with a total of 188 sections. This act shall come into force after one hundred and eighty days from the date of publication (2 March 2017) (Nanakorn, 2017). The Minerals Act 2017 is much clearer than the Minerals Act 1967 due to the new, concise definitions in Section 4. By considering gravel, soil, or sand businesses, as well as traditional metal mining, the new law encompasses a wider group of mining operations. These businesses were not included in the Mineral Act 1967, allowing them to act outside the law. Once the new legislation is in force, residents are hopeful that there will be a positive impact on their lives and their community will develop as a result. Interviews with key informants revealed that additional income from mining royalties will be reinvested into local infrastructure, developing neglected areas of the community, including transport networks and communications systems. This stronger infrastructure will make the community more appealing to tourists and those residents campaigning against the mining companies will be able to direct their energies into the development of local tourist attractions. It is hoped that the geotourism potential of the region may then be tapped.

Figure 2. Khao Khuha near the Peerapol quarry. (Source: ©2019 Google)

Conclusion and Discussion

In a comprehensive analysis of the geotourism potential of Songkhla Province, Nazaruddin (2019) concluded that "geosites of Songkhla Province are natural resources which are potential to be utilized for the geotourism attractions to stimulate the tourism sector of the province, thus their sustainable management is very important." Therefore, a key obstacle to tourism development in the region is sustainability. Studies of the environmental impact of mining on tourism in Thailand and associated sustainable practices have painted an extremely negative picture. An analysis of soil surrounding mines in Western Thailand identified heavy metals and arsenic within nearby soil, "posing a pervasive environmental problem for local land users" (Intamo et al., 2016). For limestone quarries like the Peerapol mine at Khao Khuha, degradation of natural resources and climate change "are the two greatest environmental impacts of the limestone rock production" (Kittipongvises, 2017). "Visual effect, air and water pollution, noise, ground vibrations from blasting, and air blast, transport, reclamation, waste utilization and subsidence" are all problems associated with mining (Down and Stocks, 1977). Surveys found that mining licenses and concession certificates in Khuha Tai affected the environment, public rights and community rights.

Moreover, the government sector did not receive benefits that are worth the loss of natural resources and the environment. This is consistent with research reports on worker and community health impacts related to international mining operations (Stephens and Ahern, 2001). If properly managed and regulated, mining towns should receive an economic boom from the increased revenue brought to the region (Pham et al., 2013). However, the flaws in the original legislation and the lack of care shown by the mining companies to the locals of Khuha Tai resulted in neglect of community interests.

The natural resources of Khuha Tai were thus exploited with minimal tangible benefit to local people. With the introduction of the new, clearer and more wide-ranging mining law, this situation should change for the better in the near future. One other recommendation would be the declaration of the Khuha mountain range as a protected area home to a wide biodiversity. Ecotourism could then be promoted in this area of outstanding beauty and extraordinary ecological interest. Thus, "the government should devise ways of returning the benefits [of mining] to the local communities while supporting the protection" of a newly protected site at Khuha Tai that will facilitate further development of the region as a community-based geological tourist attraction (Muswaka, 2019).

Not only has there been an environmental impact of mining in the region, but residents' strength has been directed at combating perceived injustices rather than developing the community. However, findings indicate that "as long as the community's expectation in convincing the government to pass regulation on preventing the Khao Khuha from being a mining site is not achieved", the conflict will continue (Khunthongphet, 2016). There is an incentive for the mining companies to cooperate with locals: "If mining industries put their efforts to achieve mutual social benefit and a clean environment, the number of protestors against the mining and minerals industry will be reduced" (Nakbanpote et al., 2018). Once locals feel in a position to direct their energies towards community development rather than fighting to defend their basic rights, there will undoubtedly be an upsurge in community fortunes.

The new mining legislation deals explicitly with land rehabilitation after the closure of mines. This is potentially crucial for the future of Khuha Tai Sub-District based on the experiences of people in similar situations. Mining towns across the world have been converted into successful tourist attractions (Conlin and Jolliffe, 2010). Indeed, redundant quarries can be transformed into industrial heritage attractions, which is a process compatible with sustainable development objectives set out by the Thai government in its latest environmental policies (Cole, 2014; Edwards and i Coit, 1996; Lee, So and Yok-Shiu, 2017). Once the limestone

reserves on Khao Khuha are abandoned by large mining companies, the community will benefit from the unused mine as a tourism resource.

Recommendations

Following this investigation the researchers wish to recommend a number of potential areas for future investigation. Given the impending implementation of new mining legislation that could have a positive impact on community relationships with mining companies across Thailand, the researchers recommend that a further study is carried out into the actual impact of the new law. The research team also wish to recommend studies in similarly affected communities across the country. The next step for the development of Khuha Tai as a community-based tourism hub is further investigation into the geotourism potential of the region. There are a number of natural attractions and the community has a strong agricultural heritage. These areas should be explored in further research projects as potential community-based tourism attractions.

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