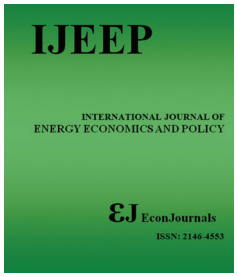

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Stakeholder Perception and Awareness on the Causal Relationship between Mining Exploitation and Environmental Degradation in Minahasa Region Indonesia

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ABSTRACT

Bangka Island in North Sulawesi is home to several endemics and endangered terrestrial and marine wildlife and at the same time a well-known tourist destination is facing a serious threat to irreversible environmental destruction due to mining activities. Although finally ordered closure by Indonesian Supreme Court, the initial mining activities have greatly impacted the highly critical environment of Bangka Island. This study aims to examine the documents (including government-issued permits as well as related laws and regulations) and interviewed key respondents as to their knowledge of the supposed mining activity and their perceived impacts. Results revealed that there were lapses in the Indonesian government's side in issuing permits. The respondents (N = 34) were fully aware of the natural resources (including mineral resources being mined) and identified mining as the major threat to the sustainability of the livelihood (tourism and fishery) that highly depend on the fragile island ecosystem of Bangka Island. We showed using a multivariate non-metric multidimensional scaling based on the respondents' attitude or perception towards the mining activities in Bangka Island. Regardless of their educational status, age, and occupation, it appears that the respondents have negative perceptions towards mining and openly suggest that mining be stopped. We identified major failures on the side of the government and the mining operators, including lack of proper consultation among stakeholders as well as failure to recognize the fragile condition (i.e. as a small island ecosystem) of Bangka Island as indicated in Indonesian laws and regulations related to zoning and utilization.

Keywords: Bangka Island, Environment, Mining, North Sulawesi, Permits, Tourism, Zoning
JEL Classifications: L72, Q30

1. INTRODUCTION

Bangka Island (Pulau Bangka) in Minahasa Regency, North Sulawesi, Indonesia is well-known because of its marine and terrestrial biodiversity (Hakim et al., 2012). Despite a small area with only 7,778 hectares, it is home to several endemic mammals such as the Javanese deer (*Rusa timorensis*), tarsier (*Carlito syrichta*), common cuscus (*Phalanger orientalis*), Asian water monitor lizard (*Varanus salvator*) and wild boar (*Sus scrofa*). Extensive coral reefs also host a wide array of tropical fish species, such as Napoleon Wrasse (*Cheilinus undulatus*), frogfish (*Antennarius* spp.), pygmy seahorses and nudibranchs, as well as Dugong (*Dugong dugon*): A marine mammal considered under vulnerable status by the International Union for the Conservation of Nature (IUCN, 2018). Bangka Island is located close to Bunaken Marine National Park, a popular marine-based international tourism destination. However, Bangka does not have protected marine park status. One of the threats to the coral reefs of Bangka Island is the potential negative effects from mining activities (see Ponti et al. 2016).

In 2008, the Regent of North Minahasa, Sompie Singal, issued a permit to PT Mikgro Metal Perdana (PT MMP), a subsidiary of the Hong Kong-based Aempire Resource Group, to explore for iron ore on Bangka, with subsequent extensions (twice) on 20 July 2010, and 20 July 2012. The concession area covers 2000 hectares and the 2012 extension was broadened to cover "iron ore and other minerals." Many residents of Bangka and the local tourism operators opposed the mining plan, out of fear that a full-scale mining operation and pollution would devastate Bangka's fragile ecosystem and subsequently destroy traditional livelihoods and eco-tourism. Residents and the tourism operators sued the Regent and PT MMP hoping to prevent the mining from full operation. Part of the bases of the said lawsuit is the fact that Bangka is a small island as stipulated by Law No.27/2007 on the Management of Coastal Areas and Small Islands. According to this law, mining is considered illegal on islands smaller than 2000 km^2. Bangka has a surface area of just about 48 km^2, a stark contrast to what is allowed by the law.

Despite opposition from stakeholders, PT MMP and local government officials pressed ahead with the mining plan, insisting it will bring economic benefits. Clearly, the mining activities on the island polarized the residents of Bangka Island. In fact, both sides resorted to accusations. For example, the Director of PT MMP, Yang Yongjian, accused a non-government organization of masterminding anti-mining protests in an effort to extort money from his company, without naming the NGO. The main purpose of this paper was to understand in a more comprehensive manner the mining controversy. We investigate further into Bangka Island's history and asked why and how mining operators obtained permit(s) to mine the island? How the local residents perceived the mining operation and the operators?.

2. METHODOLOGY

2.1. Research Location

The study was conducted in Bangka Island, North Sulawesi, Indonesia (Figure 1). It has a total land area of 4778 hectares. It belongs administratively to the district of East Likupang in the North Minahasa regency, North Sulawesi province. The island has three main coastal villages: Lihunu, Kahuku and Libas. As of the census in 2010, the island's total population was only 2,397 inhabitants (Lihunu 1,029, Kahuku 938 and Libas 430). Bangka is located southwest of Biaro Island, being separated only by the Bangka Passage. West of Bangka are the following islands: Kinabohutan, Talisei, Tindila and Gangga. Geographical features of the Bangka are forests, hills, coconut plantations, rocky outcrops, mangroves and pristine beaches.

2.2. Data Collection

With the aid of trained interviewers, direct and indirect interviews with key persons (former and current officials), reliable residents were conducted between April 10 and 28, 2018. During interviews, field assistants assure the respondents that names of interviewed persons will not be mentioned in any report as part of the confidentiality agreement and also not to intimidate the subject due to the sensitivity of the topic. The respondents profile is presented in Figure 2. In general, we followed the approach used by other investigators (e.g., Kalalo 2017; Chassels and Bucol, 2011). We also reviewed published literature (journals, reports, etc.) and examined relevant laws and related documents accessible as public documents like permits given to the mining company, etc.

2.3. Data Presentation and Analysis

Basic descriptive statistics were obtained from the interviews. To test for independence of livelihood type from education level, a

Figure 1: Map showing the location of Bangka Island (right panel), North Sulawesi, Indonesia

Source: Openstreetmap.org

Chi-square test was performed using the statistical package in R (R Core Team, 2017). Plots were generated using the *easyGplot2* package in R. Using the binary responses (Yes, No) during the interviews, we re-coded Yes responses as 1s and Nos as 0s. We selected key questions to determine the overall perception of the respondents towards the mining operations in Bangka Island, as follows: (1) If they are in favor of the mining operations; (2) if they know the potential negative results of mining; (3) if they were consulted prior to the implementation of the mining operations (at any level, whether exploratory or full operation); and (4) whether or not they want activities related to mining to continue. Each of the 34 respondents was categorized according to educational attainment (elementary level, high school, and college). We hypothesize that distinct groupings can be shown in non-metric multidimensional scaling plot if educational attainment has influence on the four responses and no groups can be distinguished if educational status has no effect on these responses. Plotting was done using the free statistical software PAST3 (Hammer, 2013).

3. RESULTS

3.1. Respondents Profile

The age (Figure 2a) of the 34 respondents ranged from 16 to 72 years old (modally 19). The age distribution of these respondents does not appear to follow a normal distribution based on the Anderson-Darling Test (A = 0.82054, P = 0.0305 < 0.05). This might be attributed to the fact that majority of those who agreed to be interviewed were younger than 30 years old and below 15 years old were excluded in the interviews. There is good reason behind this exclusion, given that younger people may not be able to provide a clear recollection of what happened in Bangka Island in the past 3-5 years. More than half 20 (57%) finished high school and 13 (37%) obtained elementary education and only 1 (2.9%) finished a tertiary or college education (Figure 2b). In terms of their livelihood, majority 19 (54.29%) of which are fishermen (with at least 5-10 years in fishing). The rest of the occupation included civil servants (14.3%), while housewife, traders and students each with 8.6% and only one retired due to old age (Figure 2c). Pearson's Chi-squared test (χ^2 = 11.78, df = 8, P = 0.1613 > 0.05) revealed that the livelihood of the respondents was independent to their level of education.

3.2. Awareness on Environment, Degradation and Mining

It is of interest to note that majority of the respondents are fully aware of the ecosystems present on the island as well as the benefits derived from such ecosystems (Figure 3). Each natural resource was identified by the responses: Coral reef (64.7%), mangrove (55.9%), seagrass (50%), wood (26.5%), fish (11.8%), and algal bed (5.9%). They were also able to suggest potential impacts of human activities (Figure 4) such as mining (47.1%), plastic wastes (44.1%), dynamite poison fishing (29.4%), fishing (20.6%), sewage (household), (14.7%), and one with no response (2.9%). It is noteworthy that aside from rating mining as the primary threat to the natural resources of Bangka Island, the respondents were also aware as to the name of the mining company involved with the present controversy.

They were also able to identify the mineral resources that can be mined. Responses (Figure 5) were as follows: Iron (25%), gold (2%), sand (2%) (probably also referring to iron ore), uranium (1%), and those who said they don't have any clue (6%). All

Figure 2: Basic information on the respondent profile (a - age profile; b - educational attainment; and c - occupation)

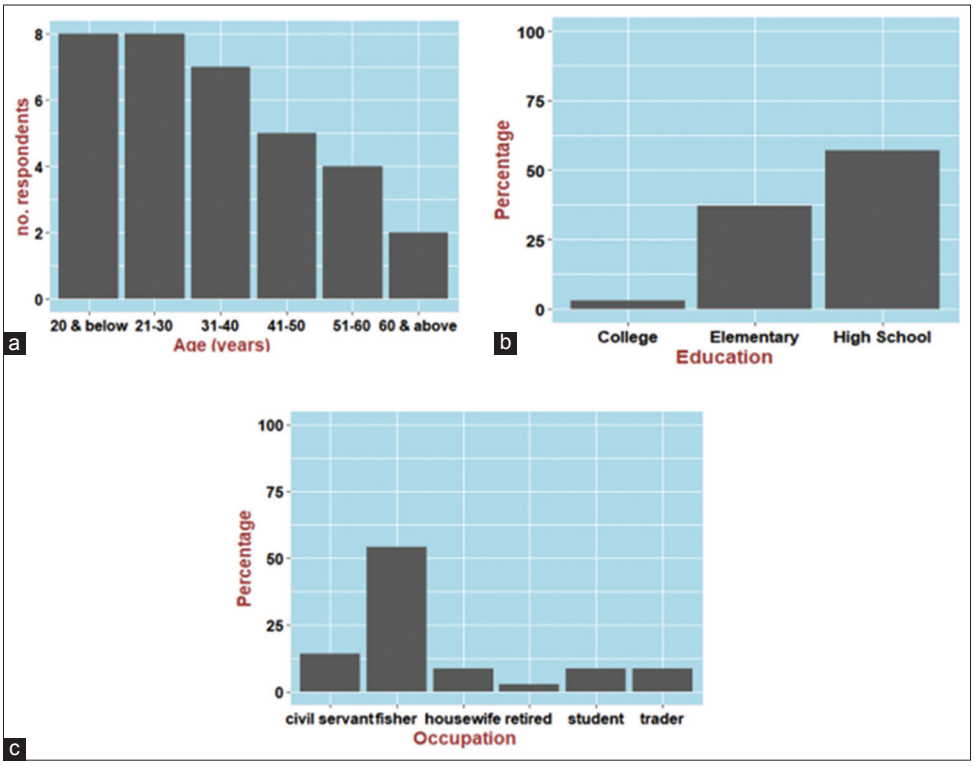


Figure 3: Major natural sources in Bangka Island as identified by the respondents

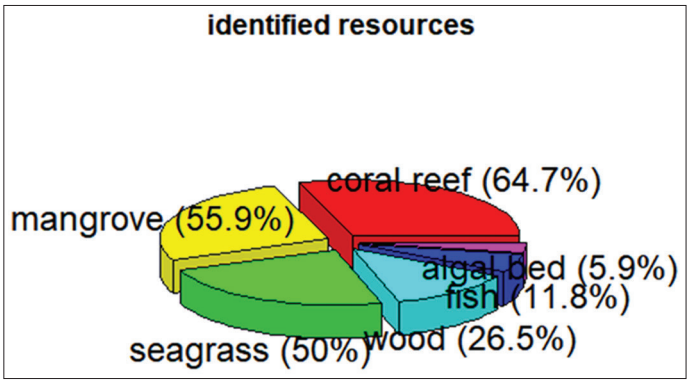


Figure 4: Major threats to the natural resources of Bangka Island as perceived by the respondents

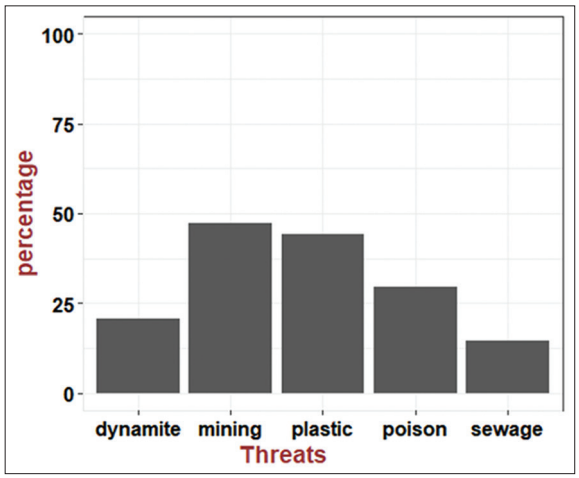
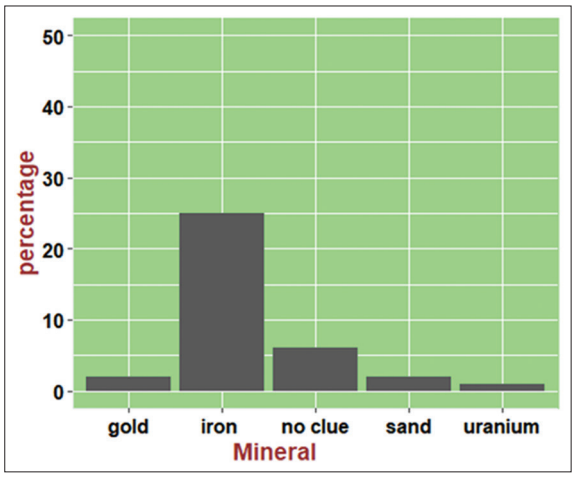


Figure 5: Mineral resources of Bangka Island as perceived by the respondents



who identified iron ore being mined identified this material has been shipped to China. Majority of the respondents identified the owner of the mining company as MMP (Micgro Metal Pedrana, a subsidiary of the Hong Kong based Aempire Resource Group under Shenzen Energy from Guandong/China) that started operating in 2012. However, 15 (42.86%) said the company never consulted the local inhabitants prior to the mining activities while 20 (57.14%) said otherwise, insisting that the locals were consulted about the project.

Almost all of the respondents also claimed that there were violations as to environmental laws committed both by the Indonesian government (e.g., issuing permits) and the mining company. For example, the island, which has a total land area of <2000 km^2, should be included as tourism zone based on the Government Regulation No.26/2008. The responses of the local inhabitants of Bangka Island towards the establishment of mining in their island can be best described in a causal-response diagram as shown in Figure 6. Generally, the locals do not have the trust on the mining company due to restricted access to the area and intimidation such as the presence of armed security personnel. Such intimidation may have also forced some of the locals to sell their land. Mistrusts between the local inhabitants and the mining company further developed as a result of legal battles fought since 2012. A brief account on the development of court cases is provided below: (a) Manado Administrative Court (in Decision No.04/g.tun/2012/ptun.mdo) on 30 August 2012, rejected a lawsuit by Bangka residents and tourism operators to cancel the exploration permit; (b) the mining operators successfully appealed at the High Administrative Court of Makassar, South Sulawesi, which on 1 March 2013 (in Decision No.165/b.tun/2012/pt.tun.mks) overturned the Manado Court's ruling, wherein the judges accepted all points of the plaintiffs' case, the verdict revoked the exploration permits and their extensions; (c) the regent and PT MMP rejected this verdict and appealed to the Supreme Court in Jakarta, which later on (23 September 2013); (d) their appeal was dismissed by the Supreme Court. Despite having lost several times at different judiciary levels, the mining company still control the mine site. More recently, for example, a ship that was boarded by a number of journalists and NGO Network Advokasi Tambang (Jatam) who joined with the entourage to the island of Bangka on Thursday (April 26, 2018) at the mine site at PT MMP was stoned by pro-mine citizens.

As shown in Figure 7, despite the low number of college level respondents, it can still be deduced that even between high school and elementary levels, there is a general consensus among the responses that (1) they are not in favor of the mining activities (even exploratory by technical definition); (2) the respondents perceived mining may ultimately result into negative effects; (3) the local residents were never consulted prior to mining activities; and (4) they want the mining activities to stop. At first sight of the raw data, one may suspect that negative perception of the residents towards a mining operation/company may be attributed to either lack of education or due to basic science education, wherein negative effects of mining can be discussed. However, regardless of a considerable number of High School level, even those at the elementary level revealed negative perception towards mining. This probably suggests that such negative perception is based on their own personal observations as to the whereabouts of the mining controversy. Age and type of occupation do not seem to influence the key responses towards mining. Großmann (2018) pointed out the role of social-media in the so-called

Figure 6: Causal-response diagram showing response of the local stakeholders against the mining company

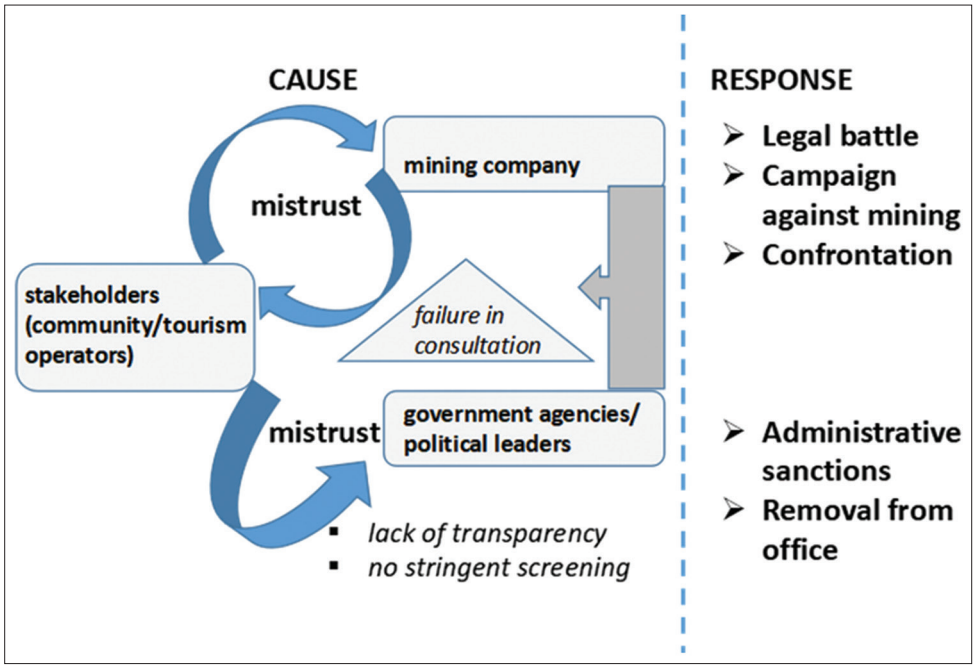
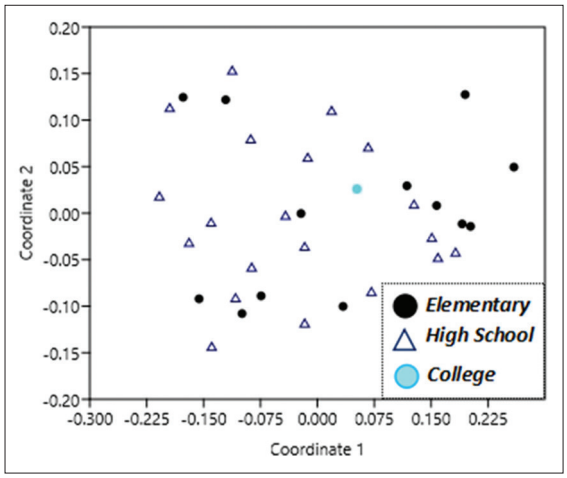


Figure 7: Non-metric multidimensional scaling plot showing no relationship of educational attainment on the perception of the respondents twowards mining activities in Bangka Island



"success" in anti-mining campaign in Bangka, Indonesia. Since majority of the younger respondents are into the social-media as compared to the older, fisherfolks, for example, our data doesnt seem to support the claim by Großmann (2018), probably due to low number of respondents and our questions were not geared towards the influence of social-media on the perception of the respondents. We do not, however, dismiss the role of campaigners as to why the company halted their full-scale mining operation.

One of the points raised by the respondents is the lack of consultation with the local residents prior to the mining operation. We found no direct evidence that there was never an information drive that happened since we have not yet interviewed the side of the mining operators. However, a previous study done in a coastal community in the central Philippines by Chassels and Bucol (2011) revealed the potential problem related to information drive or during the consultation process of any environment-related project. For example, it is inherent trait among South East Asian fisherfolks, if not in general, that "being informed" may be interpreted as "being consulted." In other words, fiesherfolks may not be able to differentiate a "consultation" meeting from "information" dissemination campaign. Given the similarity of Filipino and Indonesian cultures, it is highly possible that a similar scenario described by Chassels and Bucol (2011) may have occurred as well in Bangka Island.

It can be recalled that in Government Regulation No.26/2008 or the National Spatial Planning and Government Regulation No.50/2011 on National Tourism Development Planning, Bunaken National Park and its "surrounding areas" should be regarded as a strategic area for marine tourism, conservation and fishing. In addition, almost the entire concession area of 2,000 hectares granted to PT MMP belongs to the Limited Production Forest Zone. In such a case, a special permit must be properly obtained from the Forestry Ministry, through the North Sulawesi Governor, prior to exploration activities. Apparently, this was not followed, thus in effect, making PT MMP's exploration permit a violation of Law No.41/1999 on Forestry.

3.3. Governance and the Mining Application Process

As described by Rosyida et al. (2017), issuing licenses for mineral extraction in Indonesia is authorized by state regulations and policies pertaining to sea mining activities, including Decree No. 4 of 2009 (Minerals and Coal), Decree No. 27 of 2007 (Management of Small Islands and Coastal Resources), and Decree No. 32 of 2009 (Protection and Management of the Environment) (see also, Djafar, 2014). Based on these regulations, all mining companies are required to conduct environmental feasibility studies and environmental impact assessments (EIAs), on top of paying royalties. Because of a shift from a centralized to a decentralized

government encouraged district-level governments to draft their own rules governing natural resources, giving district heads the authority to issue permits for mining operations. Nevertheless, full legal compliance with state environmental regulations has thus become an increasingly insufficient means of satisfying society's expectations with regard to mining issues. Furthermore, a report published by Guardian in 2015 stated that the EIA was approved by 26 out of 27 government officials and specialists, despite the global significance of Bangka's coastal ecosystems and its close proximity to the Bunaken National Park, home to some of the highest levels of marine biodiversity on earth. In fact, only one specialist (Veronica Kumurur, Head of Urban and Regional Planning at Sam Ratulangi University in Manado did not vote in favour of the EIA). Kumurur explained that since the company didn't submit a detailed engineering plan, then they cannot assess the environmental impact. She also quoted the company's intention to build a dam and a smelter on the island, which is possible without damaging Bangka's unique ecosystems.

Langenheim (2015) published a short article about this legal morass, which according to him common in Indonesia, with local officials issuing controversial permits to extract natural resources, sometimes in violation of national laws. Corruption within the judicial system can make it all the more difficult to challenge controversial resource extraction contracts. In addition, as of March 2015 alone, local administrators in North Sulawesi had issued a total of 145 mining licenses (IUP) based on the information provided by the General Mining Sector of the Department of Energy and Mineral Resources in North Sulawesi. Although in a subsequent interview, this was denied by no less than the governor of North Sulawesi during that period.

4. CONCLUDING REMARKS

The animosity between anti-mining groups and pro-mining groups, including some residents, developed over time. In fact, an anti-mining group who tried to dock at the mine site on April 27, 2018 was greeted with stones. This happened a few days since the announcement of the Department of Energy and Mineral Resources on the mining company's permit. There is also reason to believe that some of the stakeholders (e.g., those associated with the diving industry, NGO workers, etc.) are using the situation to further their group's own interest and never thought of the holistic progress that might be brought about by mining. In fact, conflicts between NGOs, companies and government has been there since the late 1990s including the wide use of internet (Bray, 1998). On the other hand, mining has been documented to have negative impacts on the marine environment, especially in coral reefs of Indonesia (Brown and Dunne, 1988). In other words, it is the responsibility of the government to impose certain laws in a non-partisan way so that conflicts between a mining company and other stakeholders, including dive operators could been avoided or minimized. Laws mentioned above such as mining and zoning regulations are already in place, it is only a matter of impartial implementation, including strict screening of mining applications, on the part of the government.

Apparently, enhancing governance especially in implementing measures on the part of the Indonesian government and continued vigilance, monitoring, a role which can be done by concerned citizens and stakeholders (fishers and diving operators) should be considered an ultimate goal. Future researchers are also encouraged to tackle this issue carefully so that the experience in Bangka Island will not be repeated in other biodiversity-rich areas in Indonesia (and even in other developing countries). As to who should have legal liabilities, whether or not there was indeed corruption at various levels of the government's offices, is up to the Corruption Eradication Commission (KPK). It has always been said that "prevention is better than cure" that we recommend strict and stringent application process for mining operations but this can only be done if corruption has been completely abolished, otherwise, the same problem(s) are to be expected. If indeed violations were made by the mining company, we recommend that a thorough scientific assessment be made as to whether or not the company needs to pay for the environmental damages inflicted by the mining operation.

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