

# Indigenous People's Engagement in Sand Mining and Its Impact on their Economy, Health and Environment: The Case of Batak in Palawan, Philippines

## ABSTRACT

**Aims:** To identify the impact of sand quarrying activities on the health, economy and environment of the Batak community whose people are dwindling in population. Further, the study aims to determine how the people demonstrate resilience in this face of economic adversity.

**Study design:** Using a qualitative research design and an interview as data collection method.

**Place and Duration of Study:** Batak community in Sitio Mangapin in Barangay Langogan, Northern Puerto Princesa, January to June of 2019.

**Methodology:** We invited 20 adult Batak who were engaged in small scale quarrying at the time of the study. The purpose of the study was explained to them and they were invited to participate in interviews. Only nine males and eight females signed the informed consent. Seventeen members of the community became the respondents in the study. The informants' age ranges from 25 to 52 years old, all are married and have children and all were participants in small scale quarrying being done in the community. Casual interviews, focus group discussions and observations were used to collect data from the informants. Interviews were done individually and were recorded with permission of the informants.

**Results:** Data showed that families participated in the quarrying because of poverty but the engagement in hard labor impacts the health especially of the male workers in which 25 percent (of those interviewed) have acquired tuberculosis and persistent cough. About 50 percent of the women have acquired persistent back pain and loss weight. Observations yielded data on violations of the environment since the sand were taken not directly from the river but from the riverbank. Activities were found to be done on a large scale with trucks hauling from the river. While the Batak who were engaged in small scale mining, they were away the riverbanks in the process, creating large holes on the side which could potentially result in flash floods during rainy days.

**Conclusion:** the Batak are aware that the small economic benefits they acquire from participation in the quarrying do not outweigh the potential environment and health risks the community is exposed to in their engagement to this kind of work. Despite the awareness of the hazards posed by sand mining on their health and environment, the need to survive hunger and illness during the lean months and lack of government support had prompted the people to engage in small scale quarrying which could potentially worsen the damage being created by large scale sand mining already taking place in the river. Participation in small scale mining has become an adaptation strategy employed by the Batak workers to cope with economic difficulties.

*Keywords: sand quarrying; environment abuse; indigenous people's resilience; economic, environmental and health impact;*

## • INTRODUCTION

To say that sand is an important natural resource is an understatement. As a matter of fact, sand is considered to be the second most consumed natural resource on earth. United Nations Environment Programme (UNEP) established that, "Sand and gravel represent the highest volume of raw material used on earth after water" but also emphasized that "their use greatly exceeds their natural renewal rates". This is not surprising considering that the sand is an indispensable material in building mortars, main component in construction industry, and an important ingredient in water filtration chemicals and metals processing and in plastic industry.

Several studies have been undertaken on a limited extent, on the impact of uncontrolled sand mining on the environment and health of the people. Rentier and Cameraat (2022), for instance, acknowledge that even under controlled circumstances, the practice of extracting the sand from river beds and banks impact the environment. The same established that many countries lack sand mining regulation policies and with higher demand for sand everywhere, indiscriminate and illegal mining have become rampant activities. Brisbois et al. (2021) review research on resources extraction and health in Canada and found patterns of problematic gaps in situating attention to health knowledge in the midst of workplace exposures or environmental chemical or physical exposures and illnesses or injuries. Determinants of health considered in direct exposure studies are often limited to alternate explanations of relationships between extraction related exposures and illnesses such as smoking or other lifestyle factors (e.g. Lewis et al. 2000 in Brisbois, 2021). These wholistic research however, failed to capture specific challenges experienced by indigenous peoples in developing countries pertaining to engagement in small scale sand mining.

Graviletea (2017) maintained that sand exploitation occur in underdeveloped and developing countries and problems related to them have to be solved. Among the countries mentioned which are confronted with illegal sand mining is the Philippines along with India, Malaysia, Bangladesh and Sri Lanka among others. In a study conducted by Tambajong et al. (2018) to determine the role indigenous peoples institutions in an effort to reduce the actions of sand mining in question. Data showed that the Marine Indigenous Peoples Institution has played a strong role to advocate and provide assistance to the community and intervene through the Sasi tradition which is expected to influence changes in attitudes of the community to be more aware of excessive sand mining. Anokye et al. (2022), examined the interaction between sand mining and land-based security in Awutu Senya and Awutu East municipality in Ghana. The research involved traditional leaders, 431 household heads, ten core staff of the Assemblies and two truck drivers and ten farmer groups. Data revealed that although the truck drivers acknowledged the positive effects of sand mining on their livelihood, the majority of household respondents and other key informants reported that sand mining had negative effects on their livelihood. The only research on small scale mining done in the Philippines was conducted by Lu and Lu (2022) but such study is limited to occupational safety, best practices and legislative review on scale mining of minerals and does not include sand mining where miners sell sacks of sand to interested buyers.

Puerto Princesa City in Palawan, Philippines, where the proponents of this research reside, used to be blessed with beautiful and clean rivers and lush green mountains. The province itself, Palawan, has been dubbed the country's "last frontier". Some environmental problems however, started occurring in the last decade when metal mining companies were given permits to operate in Southern part of Palawan. NGOs and people's organizations were vocal about their position against mining in Palawan. Little attention, however, is given on the problems brought by extraction of sand and gravel in rivers in many parts of the province and in the city.

What is unfortunate is that several rivers where sand mining is taking place run through the valleys inhabited by the Batak, one of the eight indigenous peoples living in the province of Palawan, specifically, the northern part of the City of Puerto Princesa. One of the communities ravaged by rampant sand quarrying is the river that flows in the Batak community in Sitio Riyandakan in Barangay Maoyon in Northern Puerto Princesa City. The venue of the present study is Sitio Mangapin in Barangay Langogan,

also in Northern Puerto Princesa. Unlike the quarrying in Sitio Riyandakan which started in 2012, the sand mining in Sitio Mangapin started in January 2019.

The Batak was listed in world's Ethnologue (Lewis, 2011), as one of world's endangered languages, while Eder (1993), an American Anthropologist who conducted a more than two decades of study of the Batak culture, declared that the Batak is a disappearing tribe. Similarly, Headland (2003), an American linguist, established Batak among the thirty critically endangered language groups in the Philippines. As of 2000, the Batak population, according to the City Planning Office (City of Puerto Princesa) was 293, with 149 males and 144 females while the 2010 census identified 416 Batak spread out in different valleys in Northern part of Puerto Princesa City but this figure includes the children of mixed marriages between a Batak and another ethnic group. Tajolosa (2015) in a study of the Batak ethnolinguistic vitality, found that adult Batak can speak four languages with almost equal proficiency and Batak still remains the language at home and actively spoken by children in the community. Currently, about 47 households reside in Mangapin Valley, in Barangay Langogan. The Batak in the community have lived a relatively simple and peaceful life despite strong language contacts and threats of intermarriage and migration. Just recently however, quarrying activities near the Batak habitation have existed which engage the Batak as workers. Drawing from the "resilience framework", the Batak people's ability 'to bounce back' from an economic disturbance and the resulting behavior which may impact environment and their own safety, have been examined. Further, the Batak people's perceptions of the impact of engagement in quarrying to their health, economy, and environment.

Despite a strong ethnolinguistic vitality, the fact remains that the Batak is a dwindling population. Among the aborigines of Palawan, the Batak has always been considered the most economically underprivileged group. With little opportunities for education and poverty being experienced by the people, the present study is significant in determining how a particular Batak community copes with the challenges posed by lean season and threats of sand mining on the river that is the life of the community. Historical account of the Batak existence show that the Batak used to live in coastal areas but when the migrants occupied the lowlands, the Batak were driven to upland areas. The map of Batak habitation in the past many decades shows these people spread small number of household living in river valleys with greatest concentration in Sitio Kalakwasan in Barangay Tanabag, Sitio in Barangay Maoyon and Sitio Mangapin in Barangay Langogan, which are the remaining Batak strongholds. The other river valleys being occupied by small number of Batak households with greater number of Tagbanua and Cuyonon migrants.

The present study investigates the Batak people's engagement in sand mining and its impact on their health, economy and environment.

Specifically, the present study aimed to answer the following questions:

1. What are the impact on the following of Batak people's engagement in sand mining?
  - a. economy
  - b. environment and
  - c. health
- How do the people perceive their engagement in small scale sand mining?

## 2. METHODOLOGY

The present study made use of descriptive qualitative design. The Mangapin Valley in Langogan, North of Puerto Princesa is one of the eight valleys originally inhabited by the Batak. Sitio Mangapin can be

reached by taking a motorcycle from the national highway to Sitio Macandring. Sitio Macandring is nine kilometers away from the Langogan proper. From Macandring, one has to make a four-kilometer walk with four river crossings to reach Mangapin. Currently, this Batak community has around forty seven households.

Data were collected between January to June of 2019 from the Batak men and women of Mangapin Valley. About 20 couples were engaged in quarrying between January to March 2019. Nine men and eight women representing the couples were interviewed in March. Starting April, only eight couples remained in the area who were directly engaged in the quarrying. These eight couples were interviewed by pair in June of the same year. The elders and local leaders of Sitio Mangapin served as informants during focus group discussions. Apart from interviews, observation of the couples as they engaged in quarrying were conducted from January to June.

### **3. RESULTS AND DISCUSSION**

This section discusses the findings from interviews and FGDs conducted within the six-month period.

#### **3.1. Reasons for Batak people's engagement in small-scale sand mining**

For the longest time, the Batak have been greatly dependent on almaciga and honey gathering, wild pig hunting and subsistence rice farming. Since honey is seasonal in nature and wild pigs no longer abound in the area, only almaciga gathering has been retained as the source of people's livelihood. Subsistence rice farming takes place once in every year and the Batak have difficulty engaging in it because of the implementation of law against 'kaingin' (slash and burn farming).

According to the males, almaciga gathering is a very difficult task since it takes half day to reach the area of work. Normally the males have to live in the area for weeks to gather the resin. When the sacks are full, each male will carry on his back about 40 to 50 kilos of resin and walk for hours until they reach the river where they will transport the sacks of resin through balsa. A kilo of resin costs Php 18 pesos. A sack therefore would cost about a thousand pesos. A hardworking male in his twenties will normally make five sacks in a month but this does not happen monthly since it takes a few months to be able to collect resins from trees again. A male therefore, works for two months and rest for the succeeding two to three months after the resins have been sold. During the lean months, the males may either hunt wild pigs or make mats. Honey gathering takes place only between March to June while planting can be done only between June to September which is the rainy season. The Batak buy rice sold in the locality for Php 45 to 50 pesos. Only few have planted palay this year because of government's restrictions.

Admittedly, the families that engaged in quarrying in January to March are those who are resting from gathering almaciga. Since the honey is in season during summer, the males had left the quarry to gather honey and almaciga at the same time. The males in these families are the relatively young, those in their twenties and thirties and are healthy.

Five of the eight males who have remained in the quarry until now have history of tuberculosis or pneumonia, which were acquired when they were younger and were gathering almaciga. According to them, they were advised by the doctor not to engage in heavy work again. The presence of quarry gave these men an option.

##### **3.1.1. Income derived from quarrying**

The families are not hired by any company for their services. Their earnings come from the sacks of pure sand which they sell for Php 5 per bag (cement bag). Downtown, each bag of sand is normally sold for Php 35 pesos. A Batak male has to work for three to four days to be able to fill 100 bags to earn 500 pesos. The earnings will normally go to 10 kilos of rice with some sugar and coffee and other very basic needs. When asked whether they can still purchase goods for viand, they reported that this happens only

at very rare times since the money is almost just enough for 10 kilos of rice. Most of the time, families depend on rootcrops and vegetables around them for viand and when there is no rice anymore, the main food will be boiled unripe bananas from morning to evening.



Fig 1: A Batak woman at the quarrying site.

The Php 500 earning weekly, normally lasts between three to five days depending on the number of children living with parents. The wife normally helps the husband in the area by putting the purified sand into the sacks or even by screening the sand themselves but it is really the husband that does most of the work. Putting together, a couple will earn no more than Php 2,000 pesos a month which is relatively lower than what they earn when they were still gathering almaciga resins.

Quarrying therefore, does not have much a positive impact on their life for what they earn at present is hardly enough for a living but a better option than seeing their children go hungry. A few of the males interviewed said:

Excerpt 1. Konting tulong lang po ang naibibigay ng pagkwa-quarry. Kung may ibang hanapbuhay lang po, mas gugustuhin kong iba na lang. A hirap ng buhay namin, puwede pa ba kaming mamili? [Quarrying helps a little but if there were other means of a living, I would rather be doing something else. With our poverty right now, do we have much options?]

Excerpt 2. Mahirap po ang buhay namin. Minsan wala kaming makain, saging lang. Kahit papaano, sa pag kuquarry, nakakabili kami ng bigas. Basta may makain lang ang aming mga anak, okay na. [Our life is difficult. Sometimes, we only feed on bananas. At least we earn something from quarrying so we can buy some rice. As long as we can feed our children, that's what matters to us].

Focus group discussions with elders and local leaders of the community showed that the members of the Batak community did not really want the sand mining to take place and they wished they were consulted by the barangay officials first about the matter. Even the participants in the sand mining reported that the community was just informed about the quarrying activity by the barangay officials yet their opinion on the matter was not taken. The local leaders reported that the community was promised a share for every truck of sand that was to be hauled from the river every time and that the barangay administration would do the collection of shares then eventually turn this over to the Batak community. However, the informants admitted that for the almost eight months that the mining has been operating, no share from the hauling was remitted to the community. Even the promise of cementing the road being used by the people from Sitio Macandring to the Batak habitation was not realized.

Based from the interviews and FGDs, the Batak people are being denied of their right to ancestral domain and the barangay officials are not helping them to enjoy such right. Data from interviews and FGDs suggest issues of breach of trust, broken promises and lack of transparency among local leaders (barangay officials).

It has been observed that rivers flowing in indigenous people's habitations in many parts of the country are often beset with problems of uncontrolled sand mining affecting the immediate users who are the community members themselves.

### 3.2. Impact of Sand Quarrying on the Environment

Since the actual quarrying started only in January 2019, the prediction of the extent of damage to the surrounding environment may not be estimated yet. Still, the Batak participants who were engaged in quarrying believe that the quarrying activity may carry negative impacts on the environment especially during heavy rains and typhoons. What the participants were afraid of is the impact of this activity to the Batak community in the future.

The quarrying site is only less than a kilometer away from the Batak habitation. According to the Batak, the Department of Environment and Natural Resources (DENR) has allowed the extraction in the area for two years which means the operation will last until December 2020. Actual sighting of the area in the last five months (February to July) have shown considerable changes in the river. The large stones have been set aside by machines to reveal the sand which the trucks from the two trucking owners hauled to be transported outside. A good part of the area has become the work area of the Batak where they patiently cast the sand into the screener to yield pure sand which later on goes into the cement bags to be sold at Php5.00 each.



Fig 2: The sacks of sand collected by the Batak bought by trucking companies at P5.00 each

Apart from the dark water produced by the quarrying activity which flows in the river, affecting daily users (e.g. those who take a bath and wash clothes in the river), there is an obvious transformation of the natural environment since the river has widened to accommodate the extraction of sand. What is more, while quarrying should take out only the sand on the riverbank, the machine used for extraction was sighted doing the extraction of gravel from the river itself, which is a violation already. The proponents however, did not confront the persons involved in the activity to prevent conflict and avoid possible threat to safety.

There are large holes created at the middle of the river bank which according to the Batak were formed when the stones were set aside. On the surface, the river looks like the inner layers have been altered already because the river looks muddy on the surface even when nobody is touching it. The first three

river crossings where quarrying activities have taken place in the past few years (according to the people in the area), also look muddy every time.



Fig 3: One of the large pits created in the river by bulldozers

About five of the male participants reported during interviews that some representatives from the Department of Environment and Natural Resources (DENR) people would visit once in a while but they would often stay for about five minutes and would not really come closer to examine the mining site. When asked whether the National Council for Indigenous Peoples (NCIP) knew about the activity, the participants reported that the NCIP has full knowledge of the activity for the NCIP personnel were present during the barangay meetings held during consultations with the local leaders of the community, which took place a few months before the quarrying activity started in January 2019. The elders and local leaders validated the information about DENR people and NCIP's presence in the local meetings during FGDs.



Fig 4: The bulldozer collecting sand from the middle of the river.

When asked whether the National Council for Indigenous Peoples (NCIP) personnel came to Mangapin to speak with the Batak community prior to the quarrying activity, to seek the members' opinion and explain the consequences of the activity to their environment, the people reported that no consultation with the general members took place. It was only the elders of the community who were called to attend the meetings in the barangay. About three meetings were called involving the elders. The members of the community recalled that their signatures were sought in the paper by the barangay officials as proof that they approved the quarrying operation. The informants admitted that they were offered some kilos of rice and modest amount of money during the meeting.

What conditions came with the Batak community's approval of the quarrying activity?

Focus group discussions with some elders in the community yielded three conditions which prompted the community to give their approval of the quarrying activity. The first is that the community asked for a Php 200.00 share for each truck of sand hauled from the site ( apart from the bags of sand bought directly from the Batak, there are trucks which regularly hauls trucks of sand and gravel from the site. The second condition is that a road will be constructed from the first river crossing to the Batak habitation to allow easy passage of motorcycles for the people. Some Batak own motorcycles to transport goods and people since the community is relatively far from the barangay proper. The third condition is that the Batak will be prioritized as workers in the quarry site.

Two construction companies had been hauling gravel and sand for about six months already but the first two conditions have not been fulfilled. According to the elders, the community has not received a single share from any of the trips since January. When they confronted the landowner, who aggressively sought their signatures prior to the commencement of the quarrying activity, the latter claimed that the company has not paid him/them yet. In the word of the participant,

Excerpt 3. "Puro utang daw kasi kaya wala pa siyang maibigay sa amin". (I have not been paid yet, hence, I can't pay you)

As to the second condition, the promised road to serve the Batak has not been built yet. The constructed road up to the quarry site was evidently built to serve the trucks. Ironically, the construction of the road

going to the Batak community may take place in the future, not really to serve the Batak but the trucks that will go up near the area or on the community itself to haul more sand. Based on the observation, the riverbank in the 'untouched' portion of the river near the Batak habitation has very wide presence of smooth sand.

Since the construction companies have been in operation for half year at the time of the study, it would be difficult to predict what could happen in the river after two years. The situation in another Batak community, that is Sitio Riyandakan in Barangay Maoyon sets an example of destruction made by unmonitored sand mining in the area. Firstly, the Batak who were living in Sitio Riyandakan which is the upper portion of the valley after many months of sand quarrying, could no longer use the river for washing clothes and bathing. Very large pits were created in the rivers which are dangerous during raining season. At the time of the present study in Sitio Mangapin in Langogan was being conducted, the Batak inhabitants in Riyandakan were relocated in Sitio Lipso, still in Barangay Maoyon but the river was not ravaged by quarrying.

Findings in studies abroad establish the negative impact of sand mining on the environment. For instance, Victor (2013), assessed the environmental and sociological impacts of sand mining in the Anayeri catchment and found that irrespective of the large quantity of sand being mined from the catchment with its economic importance, it is concluded that socially and environmentally, sand mining activity is causing more harm than good. Likewise, Madyise (2013), conducted case studies of environmental impacts of sand mining and gravel extraction in Gaborone, South Africa and found that Pit sand and gravel are extracted from open areas creating uncovered deep pits, which caused of accidents to children and livestock. Erosion and environmental degradation occur due to continuous mining. Miners dispose waste on open areas and riverbeds causing land pollution. Dust and noise pollution from tipper trucks ferrying sand and gravel are a cause of concern to villagers as the trucks move even at night, disturbing sleep.

Similarly, Pearce (2019), reporting on the global problem of unsustainable use of sand, established that the very high volume of sand being currently extracted is having a serious negative impact on rivers, deltas, and coastal and marine ecosystems, such as loss of land through river or coastal erosion, the lowering of water levels, and decreases in the amount of sediment supply (p.9), and is affecting the economic and social development as well (Torres, 2017). Further, (Filho, 2021). found that because sand is being extracted at a far greater rate than that at which it is naturally replenished, the depletion of existing sand reserves is damaging fauna and flora at significant level. Further, illicit mining activities compound environmental damages and result in conflict, the loss of taxes/royalties, illegal work, and losses in the tourism industry. Analysis pointed to the need for swift action to regulate sand mining, monitoring, law enforcement, and international cooperation.

### 3.3 Impact of Quarrying on Miners' Health

Data from interviews showed that 100 percent of the participants believe that engagement in quarrying like what they do everyday, is not good for their health. As a matter of fact, about two of the 12 males who had engaged in quarrying in the first few months had to stop because they have acquired tuberculosis. Although they do not attribute quarrying as the main cause of TB, they admitted that their weak health because of age and lack of food, the hard work and their exposure to sand dust and extreme heat of the sun, all contributed to their current state of health. Likewise, one of the six males who have remained in the quarry site is also on medication for TB but he is still working at the time of my last interview. As of the writing of this article, one of the men who had history of tuberculosis and who was engaged in quarrying died.

The Batak wives who were interviewed admitted that they are aware of the risk they are taking for engaging in this work but since their husband cannot gather almaciga resins anymore because of their frail health, the only option left is to engage in mining. Admittedly, it is difficult but according to them, it is not as difficult as almaciga gathering. The income is a lot smaller but as they said,

“Sa pagkuwa-quarry, pwede naming matulungan ang aming asawa. Pwede kaming lumilim kung mataas ang araw at puwedeng magpahinga kung pagod na. Di man sapat ang aming kinikita, kahit paano, pwede kaming mabuhay ng mas matagal.”[By quarrying, we can help our spouse. We can seek shelter anyway in the midday heat and rest when we get tired. Although what we earn is not enough, at least we can live longer].

Despite the health risks, all the participants believe they will still engage in quarrying unless, a better opportunity comes to them. FGDs with leaders and local leaders validated the responses from individual interviews. The local leaders admitted that some of the sand miners have history of tuberculosis which prompted them to stop gathering almaciga resins. Yet the community is very rarely visited by doctors and other health workers. Whenever a family member is sick, the relatives have to take the sick to the hospital or clinic in the city for check up since there are also no doctor in barangay health center. Oftentimes, unless the case is critical, member of the community would rather consult a health worker at the barangay health center who is either a nurse, a midwife or a barangay nutrition scholar (BNS) whose knowledge is often inadequate in conducting diagnosis of patients.

The proponents of the present study observed that the male workers who have history of tuberculosis were unusually thin and were frequently coughing during the interview. Likewise, the proponents also observed that one of the female workers who is in her forties was also very thin and was shyly trying her best not to cough while being interviewed. Like these informants, it was noted that the informants' skin were darkened by constant exposure to sun almost every day. The proponents stayed in the mining area during weekends from January to June and noted that couples help each other but it is the males who do the harder part, digging the sand and casting it to the screen to purify it while the women would do the sacking.

A study conducted by Michigan State University( Capital News Service, 2022) involving 1, 207 surface miners who have worked for more than 15 years in the industry and had exposures to silica, other allergens and irritants. Data show an increase in doctor visits for shortness of breath among long term sand and gravel mine workers in the state compared to the rate for production workers in other industries. Similarly, a rapid review of the literature on worker and community health impacts related to mining operations, sand mining included, (Stephens and Ahern, 2002) of the London School of Hygiene & Tropical Medicine revealed among others that 1) small scale mines are more hazardous than large-scale mines in terms of risks of accidents and injuries are workers are often inexperienced.

It should be stressed that the small scale mining studied in the two literatures cited here are the formal small scale mining where workers are formally hired and therefore, their services are paid by company owners. This is unlike the kind of small scale sand mining performed by the Batak whose services are not hired by construction companies. Apart from the large scale sand mining performed by operators, the construction companies buy sacks of sand manually produced by the Batak at very low price. There is no existing study done previously that is specifically concerned on the health impact of small scale sand mining that miners are involved manually where no technology is used and no special protective gears are worn by miners.

### 3.3.1 Where lies the better opportunity?

The participants were asked whether any help was offered by government agency or NGO to make their situation better. The interviewees reported that a long time ago, a few NGOs would come and offer help.

Excerpt 4. “Pero ma’am panandalian lang po ang tulong na binibigay nila. Madalas, pagkain o damit. Pagkatapos aalis na sila at di na babalik. Pakiramdam namin, ginamit lang nila kami para makakuha ng pondo sa ibang organisasyon.” (Some help come to us but they’re just temporary, oftentimes in the form of food or clothes. Then the donors will leave and never come back. We feel we’re just being used to seek funding from organizations)

Excerpt 5. “Ma’am may kilalang NGO noon na madalas bumisita sa amin maraming taon na ang nakakaraan. Nagalok ng mga proyekto tulad ng poso negro. Alam po ninyo peke sila. Makalipas ang ilang linggo, nagpapakita sila sa tabi ng poso pero po yung poso sa taas lang yun, ipinatong sa semento. Wala pong tubo sa ilalim.” [There was a known NGO before who came to us many years ago. They’re fake. They offered us a deep well. A few weeks later, they had a picture in front of a supposed deep well but it was just a picture. There’s no well down there.]

Excerpt 6. “Nung ipatupad ng gobyerno ang batas laban sa pagkakaingin, marami sa amin ang hindi na nagtatanim sa takot namin na hulihin kami. Nakakapagtanim ang ilan sa amin pero di na kagaya ng dati. Madalas bumibili kami ng bigas sa ibaba na napakamahal para lang me makain. Yun ay kung may pambili kami.” [When the government implemented the law against “kaingin”, many of us no longer engage in rice farming because of our fear to be apprehended. Some of us still plant but very rarely. Oftentimes, we just buy rice but these are very expensive; that is, if we have the money to buy]

When asked whether they an agency offered another option for a living such as farming, the participants in unison said they do not recall any agency visiting them, asking them if they are all right or offering alternative source of livelihood. When asked what kind of help would the Batak wish the government could extend them, about two couples maintained that they need food and medicines but a greater majority from both young and old couples asserted that they need a better source of livelihood. About 85 percent of the females said that they wish they could create gardens near their homes so they can help their husband.

Excerpt 7. “Ma’am sana mabigyan kami ng gobyerno ng itatanim. Yung pwede naming pagkakitaan tulad ng mais at gulay.” [We wish the government would give us seedlings of plants which we can sell later such as corn and vegetables]

A few of the males reported that they need to learn more skills on farming and wish they could receive farming tools and seeds from the government. The Batak of Palawan are only 600 in number at present and this dwindling population live only through almaciga and honey gathering which is often seasonal. The government’s law against “kaingin” (cut and burn farming in upland) restricts the ability of the Batak benefit from farming, not to mention that they often lack the government support for tools and seedlings.

Some people from the mainstream society perceive the Batak to be lazy and dependent. A survey conducted by Tajolosa (2011) showed that the Batak is ascribed low status because of their physical attributes, lack of education along with their language they speak, Batak. Several years of interaction with these people have shown that the poverty and lack of education can be attributed to the people’s lack of opportunities. Just like the circumstances of many indigenous community members, most Batak were born from poor parents and were hardly educated. One challenge in getting education is the distance of the Batak habitation to school which is located in the barangay about two hours away. Interview with women yielded that as much as they wanted to give their children better education, the need to stay in the

barangay for many days to take care of their children and the need to provide a decent meal is a great challenge for the families that hardly earn a living to survive. It was observed that parents would start sending their children to elementary school at the start of school year but after barely two months, parents would give up owing to lack of provisions. It is therefore common to find that children would finish Grade two or three. For the past many years under this situation, male children at the age of ten or eleven, would begin helping their father in collecting almaciga resins and honey. It is not surprising to find that children would often complete Grade 2 since they have to leave school to help their parents make a living.

It is only very recently that elementary schools were built in Batak communities. Gradually the Batak parents have embraced the idea of sending their children to school to acquire a better future. Yet at the time of the study, most of the adults interviewed reported how difficult life has been and although they know that sand quarrying itself would not be good for the environment and engagement in it is risky for their health, it was the only option of the people to survive the lean months, especially for the males whose health could no longer allow them to engage in the difficult task of almaciga gathering. According to the males, their lung problems had most likely started while they were still engaged in gathering and hunting.

#### 4. CONCLUSION AND RECOMMENDATIONS

Based on the foregoing findings, the present study concludes that the Batak are aware that the small economic benefits they acquire from participation in the quarrying do not outweigh the potential environment and health risks the community is exposed to in their engagement to this kind of work. **Despite the awareness of the hazards posed by sand mining on their health and environment, the need to survive hunger and illness during the lean months and lack of government support had prompted the people to engage in small scale quarrying which could worsen the damage being created by large scale sand mining already taking place in the river.**

To reduce the possible risks to environment and safety of the people, the present study recommends the following:

Firstly, **findings of the study are significant in getting the attention** of the Department of Environment and Natural Resources (DENR) , the Palawan Council for Sustainable Development Services (PCSDS) and the local government unit may need to review the implementation of the law protecting ancestral domains and the mining act of the Philippines. **The Philippine Development Plan covering 2017 to 2022 clearly stipulates that "Ensuring ecological integrity, clean and healthy environment" is among the targets of the government to achieve within the five year period. Similarly, the Department of Science and Technology, in its Harmonized National Research and Development Agenda between 2017 to 2022, under President Rodrigo Duterte's administration, highlights among its priorities the following: 1) SAKLAW Program (Saklolo sa Lawa or River Rescue) which aims to conduct lake assessment studies, coastal vulnerabilities and fundamental studies of all types of mining areas. 2) ATIN program (Ang Tinig Natin or "Our Voices") whose priorities include studies involving documentation of indigenous knowledge and analysis of social phenomena. It appears however, that the government agenda which are supposed to benefit the environment of indigenous people and give voice not only to their traditions but also the adversities they encounter, have not been realized at the time of the study.**

**Secondly, to gradually address the problem of limited economic opportunities, and the clamor of the Batak for help in farming, the government through the Department of Agriculture may provide agricultural tools and seedlings for free to the members of the community which the agency provides for farmers in the mainstream society. Raising the awareness of the agency about the specific needs of the Batak may help the government in achieving a more equitable distribution of resources for Filipinos. In addition, the DA may provide trainings for the people on ways to yield better harvest and address farming-related challenges.**

**Thirdly, the findings in this study is significant in getting the attention of the Department of Health to provide a more consistent health program that may benefit indigenous populations such as the Batak.**

The aim is to bring the services closer to the beneficiaries who often cannot afford to come to the city to access health services.

Fourthly, the proponents of the present study were planning to present the findings of the research before the City Council in the late part of 2019 yet was hampered work-related responsibilities and lockdowns due to Covid-19 pandemic. Evidently, there is a need to update the situation of the community and knowledge about the sand mining operations in the area. One important goal of the research is to raise the awareness of the local government on some activities which although legal, may have long term impact on the environment and safety of minority groups. Findings of this study and similar endeavors may inform policy and practice in managing the environment. After all, the government should find better ways to ensure fair and lawful use of natural resource of the earth while protecting the rights and welfare of indigenous peoples whose lives are attached to river.

The present study has been delimited in scope and samples. Findings therefore, cannot be generalized to the Batak inhabitants of other river valleys and the experiences of other indigenous groups in Palawan. It is therefore recommended that a mixed method inquiry involving not only the Batak communities with similar problem but also informants from government agencies be invited to participate in surveys and interviews to give better light to issues surrounding sand mining and lend more credibility and generalizability to findings

Finally, to address the gaps in indigenous people's knowledge of their rights to a balanced ecology, the academe, may take an important role to empower both the adult and young Batak about their rights and responsibilities in preserving the environment. To be specific, the 1987 Philippine Constitution, under Article II, Section 16 of the 1987 Constitution, stipulates that the State is expressly mandated to "protect and advance the right of the people to a balanced and healthful ecology in accord with the rhythm and harmony of nature." Also, Section 16 of Republic Act No. 7160: r, specifically enjoins local government units to "promote health and safety, enhance the right of the people to a balanced ecology," and "preserve the comfort and convenience of the inhabitants" within their respective localities. The academe may also serve as the link between the local government and the indigenous people's community bringing to concerned agencies the people's situations which may need prompt attention and remedies.. In addition, academic institutions may adapt communities which help in literacy, health and livelihood and can be an instrument in raising the mainstream society's perception of aborigines like the Batak and in turn raise the people's perception of themselves, raise awareness of their rights and the roles they play in protecting their environment

Being the most important arm in nation building, schools should provide opportunities for students to absorb not only the knowledge of laws, the people's rights and duties but more importantly, imbibe virtues which will enable them to be citizens who truly care for the environment and who safeguard the welfare of their countrymen, mindful that sustainable development can only take place where there is equitable sharing of natural resources and where users allow resources to replenish for future use.

## Consent

As per international standard or university standard, Participants' written consent has been collected and preserved by the author(s).

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