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Residents' Perceptions on the Manifestation of the Natural Resource Curse in the Tarkwa-Nsuaem Municipality, Ghana

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Abstract
Natural resources have often been found to be a curse to some nations that possess them instead of being a blessing. In several developing economies, civil wars, environmental and health hazards have been associated with the extraction of such natural resources. This paper investigated residents' perceptions on the effects resulting from natural resource extraction in some mining communities in Ghana. Underpinned by the interpretivist philosophy, this case study employed in-depth interviews, focus group discussions and observation to collect data from the residents in Odumase and Teberebie communities in the Tarkwa-Nsuaem Municipality, in the Western Region of Ghana. Purposive and snowball sampling techniques were used to select 77 respondents for the study. Data collected was transcribed, coded into themes and categories, and manually analysed. The study found that the mining communities were confronted with a number of environmental challenges, including pollution (air, water, soil, and noise), deforestation, abandoned mine pits and dumping of rock waste on fertile agricultural lands. Residents have become marginalized as a result of the difficulty to access potable drinking water, fertile agricultural lands and inability to come out of poverty since their livelihoods have become unsustainable. It is recommended that collaborative efforts should be adopted by various stakeholders to sustainably manage the exploitation of mineral resources. Central and local governments' policies and regulations regarding natural resource use, and in particular mining need to be enforced with local residents in mind.

Keywords: Environmental management, Deforestation, Stakeholders, Mining Communities, Natural resource curse

Introduction

"We are partly to blame, but this is the curse of being born with a copper spoon in our mouths." (Kenneth Kaunda, former President of Zambia, 1964-1991). "All in all, I wish we had discovered water" (Sheik Ahmed Yamani, Oil Minister, Saudi Arabia, 1962-1986).

Why should a country be rich in natural resources, and yet be poor? What would make someone express regret for their country's abundance of natural resources? Why should a resource be given such a negative connotation as a "curse"? The natural resource curse (NRC) phenomenon is probably one of the abnormal correlations between natural resources and a country's economic development (The World Bank Group, 2006). Besides the imbalance of this relationship, civil and ethnic wars have persistently plagued some developing economies with these endowments of nature.

A dismal picture is often presented of countries such as the oil states in the Gulf, Nigeria, Cote D'Ivore, Sudan, Angola, Congo, Mexico, Venezuela (Frankel, 2010; Sachs & Warner, 2001)and many others. Nigeria's "disastrous development experience" is often cited as an example of NRC because of the deepened poverty situation which has increased from 30 per cent of people living on less than $1 a day before oil was discovered in the mid-1970s to the current rate of 70 per cent (Sala-i-Martin & Subramanian, 2003;Newshour, n.d.). The resource curse thesis is, however, not always proven right, as Botswana, a developing country, has lived beyond the "curse" (Sachs & Warner, 2001).

Much of the literature on NRC presents it from the economic, political and social perspectives. Among the favourite topics are decline in terms of trade for primary commodities, killing of manufacturing industries, revenue volatility, civil war, poor state institutions, and the afflictions of the "Dutch Disease"; not much attention has been paid to the environmental fall out of NRC (Frankel, 2010; Kuwimb, 2010; Siegle, 2009; The World Bank Group, 2006; Mehlum, Moene & Torvik, 2006; Caselli, 2006; Alayli, 2005; Palley, 2003; Ross, 1999). Critical issues presented in most of the literature on the subject are reduced to units and figures which often ignore the effects on residents who are the target of every development effort. This paper presents empirical evidence of the NRC from the perspective of view of residents in two mining communities in the Tarkwa-Nsuaem Municipality of the Western Region of Ghana.

Genesis of the resource curse thesis

Richard Auty is credited with having first used and popularised the phrase "natural resource curse" in 1993 in his book *Sustaining Development in Mineral Economies: The Resource Curse Thesis (RCT)* (Frankel, 2010; Kumimb, 2010). The RCT describes a paradoxical phenomenon of countries that suffer from slow or little economic growth, and/or are plagued by armed civil conflict in spite of their ownership of abundant natural resources. According to Kuwimb (2010), Auty found himself in a "dilemma" trying to understand why the long-established notion of the role of natural resources in sustaining economic growth and development had failed to be the case in most resource-rich economies. He argued:

> A growing body of evidence suggests that a favourable natural resource endowment may be less beneficial to countries at low-income levels of development than the conventional wisdom might suppose. Two important pieces of evidence are the developing countries' post-war industrialisation efforts and the performance of mineral-rich developing countries since the 1960s. The new evidence suggests that not only do many resource-rich developing countries fail to benefit from a favourable endowment, many actually perform worse than less well-endowed countries. This counter-intuitive outcome is the basis of the resource curse thesis (p.28).

In addition to Auty's (1993) seminal discourse, there is a large volume of evidence that tends to corroborate the thesis. Sachs and Warner (2001) report that the works of Sachs and Warner (1995, 1999), Sala-i-Martin (1997), Gylfanson et al. (1999), Doppelhofer et al. (2000) and many others have also extensively digested the phrase since its introduction. A surprising feature of economic life is that resource-poor economies invariably outperform resource-rich economies in economic growth (Sachs & Warner, 2001). Since its inception, the subject of NRC has spread rapidly among academia, policy makers, donor agencies and non-governmental organisations. This observation is perhaps due to its link to instability, corruption, confrontational governance and poverty. It is very common for politicians and politically-connected individuals in natural resource-rich countries to greedily benefit at the expense of the many (Siegle, 2009).

Transmission channels of the natural resource curse

There are four well-known explanations to the resource curse thesis; these are (i) the decline in terms of trade for primary commodities in resource-rich countries; (ii) instability of international commodity market; (iii) the poor economic linkages between resources and non-resource sectors; and (iv) the repercussions of the "Dutch Disease". There is also the view that ownership of resources (property rights) may have direct or indirect explanation to the curse (Ross, 1999). According to Kuwimb (2010), all other explanations to the cause of the curse could best be grouped into legal, economic and political facets.

Legal explanation

Two legal hypothetical explanations exist in the literature on the causes of the curse in resource-rich economies. The first originates from the neoliberal economic model of the principal-agent theory. The theory, credited to the work of Luong and Weinthal (2006), looks at the ownership structure and control over the extraction of resources, and stipulate that the curse may arise from the kind of legal structures of ownership and control of

natural resources (Kuwimb, 2010). To Luong and Weinthal (2006), four ownership regimes – state ownership with control, state ownership without control, private domestic ownership, and private foreign ownership could be identified.

The private domestic ownership regime is the most acceptable form of ownership structure for resource-rich developing countries in order to avert the curse of a resource boom. Thus, unlike the other regimes, the private domestic ownership promotes and strengthens local institutions since domestic owners depend on local supplies and also produce for the local market. Profit generated from their operations is eventually re-invested locally. In spite of its dire consequences, the state ownership with control is renowned in many resource-endowed developing countries, perhaps, due to international factors such as the structure of the international oil market, and policy convergence. Another reason is the legacy of colonialism inherited by most developing countries which sanctioned the state as the owner of resources in her terrain. The bane of the state ownership with control is its notorious ability to incapacitate fiscal and regulatory institutions which are supposed to supervise the exploitation of state resources. This mediocrity results from blurred and equal relations that exist between state elites and bureaucrats (main actors in the management of resource exploitation), which allow them to engage in what Kuwimb (2010) refers to as "mutual hostage-taking". These managerial accomplices take advantage of their relationship to freely access and hide capital from resource exploitation for unprofitable endeavours.

Wenar (2008) advances the second legal explanation to the resource curse and postulates that a curse is the eventual outcome in most resource-rich developing countries because unscrupulous and corrupt regimes take ownership of resources from traditional landowners and sell them to international corporations. This is how Wenar (2008) bluntly put it: "The natural resources of a country belong...to its people. The blessing of resources turns into a curse when tyrants and insurgents are allowed to sell off a country's resources while crushing popular resistance, and to use the proceeds in ways that make the people worse off"(p.8).

Economic explanation

Two main economic explanations have been popularised in orthodox economic literature as the causes of the RCT. They are the Dutch Disease and the crowding-out effect. There are others such as linkages failure, long term decline in the terms of trade, and revenue volatility. In this paper, only the two main explanations are briefly discussed. The Dutch Disease appears to be the highest-flying economic explanation for the ailment of resource-exporting countries since the 1980s (Ross, 1999). The phrase is often used to

describe an economic situation whereby the manufacturing and agricultural sectors of a resource-rich economy decline and suffer general inflation as a result of booming natural resource exploitation. Sachs and Warner (1995) describe the situation in this manner:

> The greater the natural resources endowment, the higher the demand for non-tradable goods, and consequently, the smaller will be the allocation of labour and capital to the manufacturing [and agricultural] sector. Therefore, when natural resources are abundant, tradable production is concentrated in natural resources rather than manufacturing, and capital and labour that otherwise might be employed in manufacturing are pulled into the non-traded goods sector. As a corollary, when an economy experiences a resource boom (either an improvement in terms-of-trade, or a resource discovery), the manufacturing sector tends to shrink and the non-traded goods sector tends to expand. The shrinkage of the manufacturing [and agricultural] sector is dubbed the "disease" (p.6).

Bagattini (2011) affirms this explanation because, according to him, the natural resource sector is capital-intensive, and the growth of the sector is not enough to absorb the lost jobs in manufacturing and agriculture (labour-intensive). This in turn, makes the economy de-industrialise and become more dependent on the now booming natural resource sector. Also, the Dutch Disease has gained currency because of the underlying assumptions of the explanation –that an economy's capital and labour are fixed in supply, and are efficiently and fully used before the boom; and that domestic and foreign goods are perfect substitutes (Ross, 1999). Granted that the assumptions are right, especially the second, manufacturing sectors of the resource-rich developing economy can import intermediate goods, which becomes cheaper when the exchange rate appreciates, hence boosting their ability to compete.

Related to the Dutch Disease is the crowding-out effect which describes a situation where large oil, gas and mineral projects (as compared to other sectors of the economy) effectively, are able to attract some resources like skilled labour at the expense of the other sectors of the economy. The wealthy minority are the major beneficiaries of a natural resource boom in developing economies. These groups of people unfortunately do not reinvest the revenues they accrue in the economy; instead, they adopt "Western" consumption and spending patterns, an act which may be normal for the individuals' wellbeing, at the expense of social welfare. Their newly adopted affluent lifestyle results in the rise in the prices of non-tradable goods and services. Since the manufacturing sector uses non-tradable goods and domestic labour as inputs for production, their products will not be

competitive on the world market, hence, killing the manufacturing sector (Kronenberg, 2004). This account of the curse is highly applicable in smaller countries where the size of the investment project is relatively large.

Political explanation

There are several explanations to the political cause of the NRC. According to Ross' (1999), there are the cognitive, societal and statist approaches to explaining the curse. The cognitive approach first appeared in the works of Machiavelli, Montesquieu, Adam Smith, John Stuart Mill and Bodin's (1967) *Six Books of a Commonwealth* which maintains that "men of a fat and fertile soil, are most commonly effeminate and cowards, whereas contrariwise a barren country makes men temperate by necessity, and by consequence careful, vigilant and industrious" (cited in Ross, 1999:309). In plain terms, the approach implies that resource boom or exploitation leads to myopic or short-sighted euphoria among leaders in either public or private sectors. This position received much popularity in the 1950s and 1960s, from several development scholars including Wallich and Levin (1960) as well as Nurske and Watkins.

Ross (1999, citing Wallich and Levin, 1960) argues that development patterns of sugar exporting economies are mostly thwarted by the "sugar-mentality" resulting in sloppy economic planning and insufficient diversification. Again, Ross (1999, citing Nurske and Watkins posits that any economy with excessive resource exploitation "leads to irrational exuberances, producing a get-rich-quick mentality among businessmen and aboom-and-bust psychology" among decision-makers. Despite the criticism of this approach, including the fact that it has no explicit and testable basis (but rather are deployed in an ad hoc manner), the cognitive approach has succeeded in providing a simple means to make clear why resource boom countries, and especially their governments fail to make full benefit of the exploitation of their resources.

Societal approach or explanation suggests that resource export empowers sectors, classes, and interest groups (non-state actors) that encourage growth-impeding policies. This is a highly exceptional case in most developing countries since natural resources, i.e. minerals, timber, oil, and many others are state-owned, and for that matter have first claim of resource rents (Ross, 1999). An opportunity like this should consequently grant the state leverage over the non-state actors by giving the state non-tax revenue cushion to shield it from interest group pressure and finance payoffs to government opponents. Contradictory scenarios are rather the case in most of these countries, resulting in the curse.

The last aspect to the political explanation is the state-cantered approach, a hybrid of the cognitive and societal arguments. The approach argues that institutions of states with resource boom appear to be weakened by the exploitation of such resources. According to Ross (1999, p.312), "if policy makers are rational and the behaviour of societal actors are held constant, it becomes difficult to explain why resource exporters should respond so poorly to their predicament". This approach has been very popular in explaining the non-democratic nature and poor development in oil-exporting nations of Middle-East, and recently, to the underdevelopment of commodity-exporting states of Sub-Saharan Africa (Clark, 1997; Yates, 1996; Bellin, 1994; Chaudhry, 1994).

In addition to the three approaches to the political explanation by Ross, Robinson, Torvik and Verdier (2006), four new political approaches to the political explanation can be cited. These are: The political tendency to over-extract natural resources relative to the efficient extraction path because they discount the future too much; Efficiency of the extraction path caused by resource booms; Resource boom raises the value of being in power and by providing politicians with more resources which they can use to influence the outcome of elections, causing increased resource misallocation in the rest of the economy; and the overall impact of resource boom on the economy depends critically on institutions since institutions determine the extent to which political incentives map into policy outcomes.

Study setting and methodology

This study was conducted in the Tarkwa-Nsuaem Municipality (TNM) of the Western Region of Ghana. The municipality is located between Latitudes 4^0N and $5^0$40' N and Longitudes $1^0$45' W and $2^0$10' W (Figure 1). It shares boundaries with four other districts, namely, Wassa-Amenfi East to the north, Ahanta West to the south, Nzema East to the west, and to the east by Mpohor-WassaEast.TNM has a total land area of 2.578km^2. Tarkwa is the administrative capital of the municipality (www.ghanadistrict.com).

Precambrain rocks such as Birimian and Tarkwaian dominate this forest-disserted plateau region with the land rising between 240 meters and 300 meters above sea level (Dickson &Benneh, 2001). Several mining companies are found in the municipality since several important minerals such as gold and manganese are imbedded in these rocks. Indeed, the municipality has nearly a century of gold mining history and has the largest concentration of mines in a single district on the continent of Africa. These mining companies are located around a number of settlements in the municipality. Mining communities constitute almost about half of the total settlements in the TNM (Akabzaa & Darimani, 2001). For the purpose of this study, two of these communities – Odumase and Teberebie – were

selected. The choice of these two communities was based on the fact the communities have been home to mining companies such as Golden Star Resources and AngloGold Ashanti Iduapriem in Odumase and Teberebie respectively, for at least, a decade. Naturally, the operations of these mining companies have come with a number of consequences that raise concern, hence their choice.

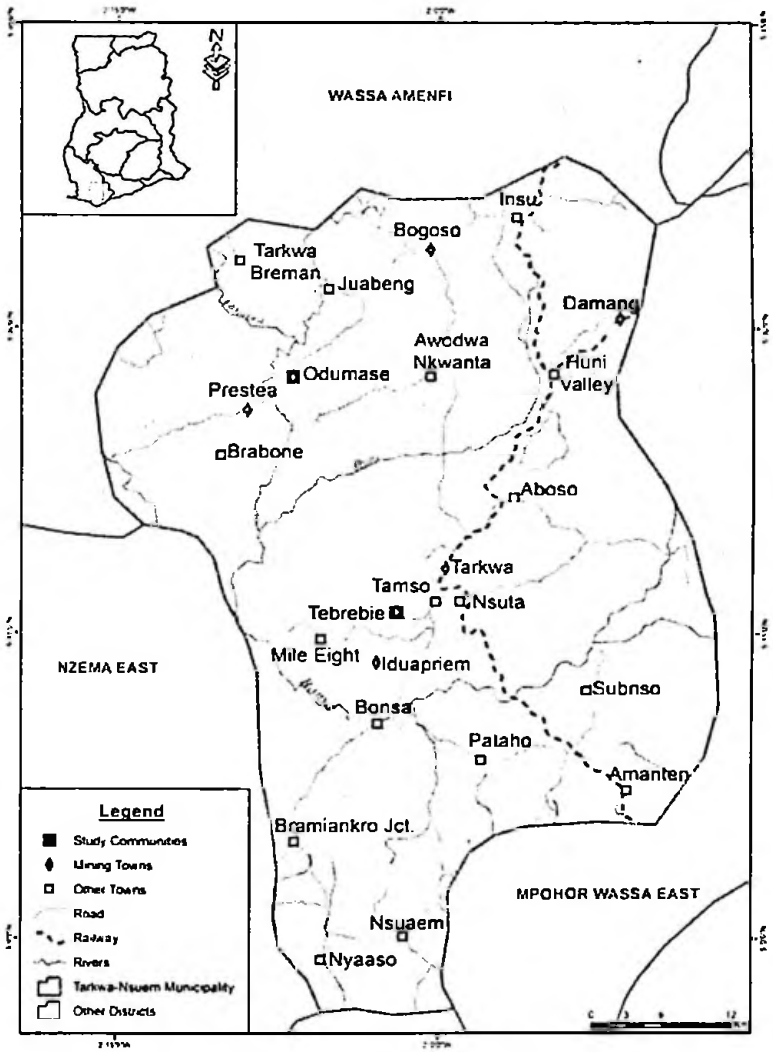

Figure 1: Study Area in Regional and National Contexts
Source: Cartography and Geographic Information System Unit, Dept. of Geography and Regional Planning, UCC

The single case study research design was employed in this paper and was built on the interpretive philosophy or school of thought where people do construct their own social world view (social constructivism) (Creswell, 2007; Mertens, 2005). This philosophy is based on the reality that people constantly change their views about the environment or the things around them. Interpretivists believe that people are able to describe reality in a language they understand (subjective) and not what others think might be the case (objective). In the view of Creswell (2007), interpretive researchers mostly depend on "participants' views of the situation" (p. 20) being investigated. The approach gathers mostly qualitative data in a natural setting, a method which is referred to as naturalistic inquiry.

Accordingly, non-probability sampling techniques were employed in the selection of respondents. For instance, purposive sampling technique was used to select certain members of the Wassa Association of Communities Affected by Mining (WACAM), an environmental non-governmental organisation (ENGO), officials of government agencies, and opinion leaders. Snowball sampling technique was also employed to select individuals mainly from the study communities who had benefited directly from the operations of WACAM in a number of ways. These include people whose capacities have been built on Ghana's Mineral and Mining Act, human rights issues and on environmental management. Again, WACAM has supported some residents to claim compensations due them. Snowballing technique was also used to sample some residents who strongly believe that the activities WACAM in the communities were detrimental to the development of the communities.

In all, primary data were sourced from 77 respondents using focus group discussions (FGDs), in-depth interviews (IDIs) and observation. There were 66 participants in the FGDs (31 in Odumase and 35 in Teberebie). Thus, in all four FGDs were organised in each of the two communities. In each case, composition was done with respect to age and sex covering people 18 years and above. Additionally, 11 IDIs were conducted. These key informant interviews were conducted with seven WACAM officials, two opinion leaders and two (2) government agencies. Altogether, for both the FGDs and IDIs carried out, 40 males (52%) and 37 females (48%) were covered.

A major limitation worth mentioning was that the mining companies were not willing to participate in the study. Consequently, the inputs of mining companies in the study area that would have provided useful perspectives and also thrown more light on pertinent issues raised by the mining communities are missing in the analysis. In spite of this shortcoming, the study provides some useful insights into the negative fallout of mining as

well as challenges facing mining communities as a result of mining operations in the area.

Results and discussion

Ordinarily, mineral extraction in an economy should be a source of relief to residents in whose environment the resource is found. This is because of the numerous socio-economic benefits that accrue to the economy at large, and sometimes, the communities in particular. However, there is the perception that poverty and lack of sustainable development in mining communities and Ghana in general have been caused by the behaviour and operations of mining companies (Boon & Ababio, 2009). In the current study, mineral extraction and mining companies in Odumase and Teberebie were perceived to be responsible for the marginalisation of residents. Residents perceived mining companies as entities whose operations were detrimental to their livelihoods. They further complained that mining companies were only interested in taking over their farm lands without due process. As stated by a 41 year old man in a FGD at Odumase:

> You know, the mining companies are to blame for our woes; most of the time, they do not inform one before taking over one's farmland. Before you realize, they are working on it and destroying whatever property on it; no negotiations; nothing!.

In a similar manner, a 34 year old man in a FGD at Teberebie found nothing good with the mining companies and their operations. According to him:

> Most mining communities are at the mercy of the mining companies. They come and grab the wealth in the land and leave nothing for us; they act with impunity; they destroy the resources on the land without any proper arrangements for compensation.

Another resident believed that not only did mining operations affect physical environment negatively, it also infringed on their human rights. According to him:

> The mining company violates our human rights almost on daily basis. Could you believe that when one complains they do not care a hoot and when you organize demonstration, the company is able to bring armed personnel, sometimes including the military and dogs' to thwart your efforts? [A 32 year old FGD participant, Odumase)

These sentiments by residents are shared by others around the globe. For instance, a survey conducted in some mining communities in Canada indicated mining as the least preferred industry, out of 24 others. Destruction to visual environment and agricultural lands, water siltation and contamination, destruction to forest, damage to recreational lands and native claims, noise, dust, truck traffic, and many others were reasons why

residents ranked the industry low (www.ualberta.ca). In a similar survey, residents of Tapanahonie and Brokopondo Regions of Suriname [in Central America] recounted awful experiences about mining for the same stated reasons (Heemskerk & Olivieira, 2003).

Residents' views on environmental degradation and compensation issues

Several of mans' economic activities contribute to making the environment unsuitable for agricultural activities. These include farming on a particular land for a long period of time, especially when farming methods include slash and burn and inappropriate use of agro chemicals (fertilizers, pesticides, and weedicides). This concern is captured by a 68 year old opinion leader from Odumase as follows:

> Long before the arrival of mining companies here, the environment was serene and the land very fertile. Whatever you planted did so well. But now, the whole place is totally destroyed.

The current state of the environment does not reflect the earlier description of the area in the literature; namely a forest dissected plateau. It is not uncommon these days to come across mined pits and waste rock dumps rising steeply around the communities. For the residents, the heap of rock waste denies farmers space (farmlands) for farming and, hence, makes it difficult to earn a decent living. To some residents, their lands are less able to sustain socio-economic activities such as farming and hunting as a result of the mining activities. An opinion leader, a 68 year old man at Odumase in an interview complained:

> These days our environment is really degraded. Our lands and streams etc. are all gone... My father and my forefathers left for me lands, which fed me and my children for decades. Things changed with the advent of surface mining in Odumase by the mining companies; all our lands, including our rivers and all our properties, have been destroyed...
>
> ...This[pointing to an uncompleted building near-by] used to be my house. It was brought down by the blast from the pit (blast sites). Again, a falling rock from the blast site cut through my roof and entered my room in 2001. At the moment, our lives are at risk in this community.

It emerged from the study that residents were not satisfied with the compensation packages paid them (the lucky ones) for the destruction of their farmlands and other properties. Residents almost always had to resort to court action before securing compensation from the mining companies. A 47 year old farmer in a FGD at Odumase expressed her anguish in this manner:

> Imagine you have for decades been farming on a piece of land and, suddenly without any notice a mining company begin excavation on your plot. You are treated like rag; nobody listens to your protestations because you're an illiterate villager. This is not fair, you know!

It is often difficult to believe that residents were not consulted at all before their farmlands were taken over by a mining company--often without compensation. But this was the general view held that emerged at both the FGDs and IDIs. Most residents were unhappy about the take-over of their farms –without consultations and without compensation. Where are agreements are reached prior to mining operations,, these could be broken with impunity by the mining companies. On the issue of compensation, it could be inferred from residents' narrations that should the mining companies pay the 'right' compensation to the indigenes the unending conflict between them and the communities would be forestalled. This could be surmised from the following complaint by a 54 year old FGD participant in Odumase:

> I must say that though I own the land, but the concession is in the hands of the government for the good of the country, and so it must be managed well. But if you leave it in the care of the companies, they will extract the very last ore from it. When they arrived here, we had cocoa, cassava, yam, pepper and many more on our farms. But we understand that the minerals buried in the land belong to the state so all I need is the right compensation for clearing my farm; the state can take the minerals. In that case, everyone will be comfortable. That's all we pray for!

Supporting views were expressed by other FGD participants from Teberebie as follows:

> You don't just give me any money and tell me that the cocoa farm I have worked on for over 40 years is "small" [44 year old female petty trader].
>
> When the company came to destroy our farm, they gave us what amounted to a pittance; they cheated us because they felt we were illiterates. The compensation paid us was nothing to write home about. It was woefully inadequate! These lands were cultivated by our forebears before being inherited by us, but when the company takes over we are paid only GH¢200 which can hardly see my family through one month [51 year old male, a farmer].

Farming, a traditional occupation handed down to descendants, is the main source of livelihood for the people of Odumase and Teberebie. The advent of surface mining in the communities, however, has been stifled and therefore

insufficient to support their livelihoods. Nevertheless, there are is evidence gathered from the study to confirm the claims by Aubynn (n.d.) that destruction caused to the farmlands as a result of surface mining caused unemployment among local residents in the mining communities. Some residents, male, female, the youth and the aged alike have almost lost their major source of livelihood – their natural capital, the land resources. In Teberebie, a disgruntled34 year old woman said in an FGD session:

> Let me tell you, we had a land around Badukrom but the company came to claim ownership of it, and that we should not come there again. Anytime you make attempt to go there, they chase you with their big dogs. They even threaten us with guns...and truly if you dare, they'll shoot you. Since then we only depend on one of my brothers who's working in Tarkoradi...he support me and my parents because there's no job for us to do...me especially.

Unfortunately for residents, the hope of being employed in the mining companies have, at the time of the study, been a mirage as the residents were denied of jobs in the mining companies for lack of competence or skills and meaningful education. This tends to agree with Aubynn's (n.d.:30) opinion that "the job losses to subsistent agriculture will not be compensated for by employment in the mining sector although secondary jobs can emanate from the mining activities". To buttress this, a 27 year old man from Odumase remarked that:

> ...even they won't employ the chief's son...how much more you who is nobody in the community. Yes, I don't know anybody so I won't even go there...Ask this man here, we have been there so many times but they only tell us we don't qualify to work there. My brother, do you need a certain qualification to sweep or to become a messenger?

Other physical conditions

Residents' perception of the nature of water and air quality

Apart from the destruction caused to the physical structure of the land and hence agriculture with its attendant problems, massive pollution of water bodies and air is evident in Odumase and Teberebie. Undoubtedly, clean water is of primary importance to all manner of people. It provides drinking water as well as water to cook, bathe, and wash clothes and dishes. Residents claim that water existing bodies, either surface or underground, are rendered non-potable due to mining operations which to them, occur through seepage of some soluble minerals into underground water, and through direct discharge of toxic product used in mineral processing into rivers. Eventually, most water bodies in these communities have dried up or even extinct. A male opinion leader from Odumase cries that:

> The company has deprived us of so many things, and now the community is a ghost town because the entire environment particularly water bodies have totally been destroyed. Mind you "water is life", but water is totally destroyed here, and God is the one who is taking care of us, either than that all of us would have been dead...We are even going to lodge a complaint against them because the silt (mining waste) that they have dumped on our lands has washed down into our rivers to destroy it, even at the downstream at Mansim and so all the farmers along the banks of this river have suffered this effect.

A 51 year old woman shares a similar sentiment. She says:

> It's serious! When you put water in a saucepan, there is rusting of the saucepan over a short period. When you cook with the water, the food becomes dark. For instance, when you put a peeled plantain in the water, it becomes dark. We can even demonstrate it to you now. It's amazing. Something serious should be done about these things...[FGD Participant, Odumase].

To confirm the observation about the water turning blue-black (dark) when it comes into contact with fresh plantain, a demonstration was done with the participants of the FGD in Odumase. The pictures indicated as Plates 3a-3d show the demonstration stages:

The plausible explanation to the blue-black (dark) colour of the groundwater from the borehole selected and many others could be attributed to the type of rock in the area – Birimian and Tarkwain. Particularly, the Birimian rocks have a very high iron (Fe) content which renders groundwater *p*H falling below 6.5. For instance, Kortatsi (2007) found that some boreholes at Odumase had *p*H below 4.0, which indicate strong acidic character. This value falls below the recommended World Health Organisation's (WHO) limits of *p*H range for water potability of 6.5 to 8.5. The high acidity increases the capacity of the water to attack geological materials and leach toxic trace metals such as cobalt (Co), nickel (Ni), silver (Ag), etc. into the groundwater. When this toxic or polluted water comes into contact with any starch (as is found in plantain), it forms a complex with the Co, Ni, and Ag, etc., giving it the blue-black or dark colour.

Though the mining companies may not be directly involved in this natural occurrences, they are to a great extent blamed for accelerating the process. Possibly, explanation such as these could be advanced that: persistent blasting of rocks by mining companies in these mining communities create fracture in the rock structure in the area, making it vulnerable for acidic water to leach toxic trace metal from near-by sources to pollute

groundwater. Moreover, the fractures also increase the rate of seepage of toxic chemicals from tailing dams owned by mining companies into groundwater aquifers, hence, polluting it. Also added to these is the fact that provision of boreholes in most mining communities mainly rest with the mining companies (sometimes in collaboration with the Government of Ghana) who does it as part of their corporate social responsibility.

Scientists of the mining companies, realising the impurity of the groundwater from the boreholes could have capped it, instead of fixing a pump on it for use. They could also have raised awareness to the communities about the poor condition of the groundwater to prevent the communities from using the borehole. The other reason why the mining companies could be blamed for the poor conditions of the groundwater in the study communities is that the intense mining activities have polluted the surface waters (rivers and streams) which used to be the main source of drinking water for Odumase and Teberebie (Kortatsi, 2007). This leaves the communities with no option than to use the polluted groundwater. The use of the underground water affects the communities in a numbers of ways.

Groundwater in hard-rock aquifers, particularly in mining areas is well-known to be susceptible to contamination making it potentially harmful for human consumption. The high acidity of the water gives it a sour taste (Kortatsi, 2007). A number of studies in Odumase and Teberebie have shown that water quality in these communities is not good for human health (Armah et al., 2010; Commission on Human Rights and Administrative Justice (CHRAJ), 2008; Kortatsi, 2007). For instance, the CHRAJ report showed that the amount of silica in the Teberebie borehole water was higher than the levels allowed by the WHO. Additionally, the hardness of the groundwaters (resulting from carbonate sources since alkalinity values have exceeded the total hardness in most cases) leads to soap wastage or more soap requirement for washing.

There is also the issue of air pollution confronting the residents in the study communities. Laing (1994), thinks that all dust, be it toxic or not, carries with it a serious nuisance for nearby communities and has damaging effects on vegetation through the blocking of plant pores and reducing light penetration and photosynthesis. The dusts are mainly generated through the explosion of rocks by mining companies at their various blast sites. Odumase and Teberebie are no exception to these consequences due to the decades of mining operations in these communities. However, the situation is relatively worse in Teberebie than Odumase since the concession site is so close to the community. Moreover, movement of mining trucks and other vehicles of the mining companies pass through the community, generating clouds of dusts, which *cover* the communities on a number of occasions. Below are some complaints from the two study communities:

...Oh as for the dust, don't talk about it – we eat it; drink it; smell it; wear it; bathe with it and what...just name it? Every time they will blast, and their cars are always moving up and down on this dusty road [pointing to the road]...so what do you expect...you can't stop them. So we only watch them. Look, when their cars pass by right now, you'll[referring to interviewer] close your nose; but I won't because I am used to it.[FGD participant, 31 year old man, Teberebie]

Even now, as am talking with you, when they blast the rocks at 13:30, you will feel the smoke (fumes) that will come out. It's really bad! [A 68 year old man, opinion leader, Odumase]

Residents' perception on the impact of mining on their health

Admittedly, there are elementary problems in establishing a direct association between the present increasing surface mining activities and the state of health. It is evident that pollutants, accidents, and direct inhalation of toxic particles could be responsible for the poor health condition of these communities. While it takes a long period of time to see the negative health effects of some of the pollutants (such as mercury), others like cyanide is immediate (Akabzaa & Darimani, 2001). In as much as residents of Teberebie and Odumasemay not have scientific proof to buttress their assertions, they perceive their deteriorating health conditions are as a result of the mining activities in the area. A 30 year old woman at Teberebie complained that:

Sometimes I am even scared. At night, my husband will be coughing seriously as if he's going to die. It always difficult for him to sleep...Yes, it's because of the mining because it wasn't like that when he was in Agona-Nkwanta until he came to settle here about three years ago.

And to support this allegation, 38 year old woman put it:

Who told you he's the only one suffering from that disease? It is TB, and I can say without excuse that everybody in this community has it...yes, am serious, everybody has some in this community.

There is enough evidence to support the accusations made by residents in these mining communities. For instance, according to Akabzaa and Darimani (2001) data available at the Municipal Medical Office, Tarkwa, indicated that mining impact related diseases such as malaria, diarrhoea, upper respiratory diseases (pulmonary tuberculosis and silicosis), skin diseases, acute conjunctivitis and accidents form the top ten diseases in the area. Specifically, tuberculosis (TB)was noted to have a strong history in these areas due to the very high silica content of rocks which contains the gold. Therefore, the dust generated by mining activities contains silica,

which causes the silicosis, tuberculosis and silico-tuberculosis diseases. Anyone, miners and residents, who inhale this dust, are thus exposed to these diseases. This explains the increasing trend for respiratory diseases in the area. It is reported that between 1992 and 1998, the incidence of upper respiratory tract infections (URTI) was relatively high in the Municipality, with an annual average of 840 reported cases. Pneumonia and pulmonary tuberculosis follow, with annual reported cases of 199 and 109 respectively (Akabzaa & Darimani, 2001).

Discussion

There are some forms of destruction and deprivation resulting from the extraction of mineral resources in the study areas by various mining companies. The destruction, including deforestation and pollution of all forms deprive the residents of Odumase and Teberebie respectable livelihoods, human rights; and eventually, plunging them into vicious cycle of poverty. Indeed, the curse of the resource, as it is the case in several other resource-endowed countries, is explained by either one, two, or in most cases, all of the transmission channels. The current study is not different. Within the local context (i.e., per the study area), it is convenient to attribute the curse to the legal and political explanations of the resource curse thesis. There is little evidence to disprove the fact that residents of Odumase and Teberebie have been denied their traditional ownership of lands available to them so many years back. These lands which hitherto were their major source of livelihood have been taken over by the state of Ghana, vested in the President, and eventually transferred to multinationals – argument advanced by Wener (2008) to explain the legal cause of the curse. This is clearly made known in the Mineral and Mining Act (703) (2006), Section 1 (*Ownership of minerals and cadastral system: Minerals property of Republic):*

> "Every throughout the country, the exclusive economic zone and an area covered by the territorial sea or continental shelf is the property of the Republic and is vested in the President in trust for the people of Ghana." mineral in its natural state in, under or upon land in Ghana, rivers, streams, water-courses.

This power offered by the constitution of the Republic is not a hidden truth, as some residents are aware of, and has fewer problems with, as speculated by a 48 year old male FGD discussant at Odumase:

> I will say that even though I own the land, but the concession is in the hands of the government for the good of the country, and so must manage it well. But if you leave it in the care of the companies, they will do things anyhow.

Residents' major concern is how the resource is extracted and managed at the expense of their comfort; leaving them with nothing but excluding them from enjoying their full rights as citizens of the Republic of Ghana.

Furthermore, aiding and abetting with the mining companies to cause destruction to the environment and human life were some of the accusations made by residents against government officials. According to Luong and Weinthal's (2006) *principal-agent theory* of the legal explanation, such "mutual hostage-taking" allows manager of the resource free access to revenue accrued from the exploitation of the natural resource. Undoubtedly, this situation would thrive on weak institutions and policies of state, as explained by the political cause of the curse (Robinson et al., 2006; Ross, 1999; Clark, 1997; Yates, 1996; Bellin, 1994, Chaudhry, 1994). This evidence supports the aforementioned facts in relation to Odumase and Teberebie. For instance, a 37 year old man from Odumase, in an FGD alleged:

They [Ghana's Mineral Commission] *are one of the "bogus" and useless government institutions I have ever seen.*

Similarly, 41 year old man, a public servant in the same discussion group comments that:

The EPA and those people, we should not even talk about them. They are only interested in their selfish interest. That is all!

Now the thing is that the government has "share" in whatever money they make, so they don't care about the people.

(Female FGD participant, Teberebie)

Possibly, it would be logical to reject the orthodox economic explanation to the curse as argued in this paper based on these obvious reasons. However, recent studies have debunked the influence of both the Dutch Disease and the crowding out effect. The situation is not always the case. A study by Gelb (1988, cited in Ross, 1999) indicated four out of seven oil exporting countries during the 1971 to 1983 boom witness a drift of labour and capital from the manufacturing and agricultural sector to the resource sector. Again, they are discredited as less common and evident in less developed countries than earlier on professed in the 1980s. Thus, it is unacceptable to fit "a square peg in a round hole" – relating situations in an advance economy like Holland to a resource-rich developing country like Ghana, and for that matter, a local (micro) condition in the Tarkwa-Nsuaem Municipality.

This contention seems plausible because many resource-rich countries are neither industrial nor commercial agricultural-based economies as postulated in the Dutch Disease and crowding out effect explanations. They are rather "mineral economies" as described by Auty (1994) or subsistence-

based economies since most people in such economies are simply dependent on the subsistence sector (Kuwimb, 2010). Additionally, governments of developing countries can offset the problems associated with the Dutch Disease and crowding out, should they feel it is necessary (Ross, 1999). This is strongly supported by Neary and Wijnbergen (1986) who argue that *"in so far as one general conclusion can be drawn [from our collection of empirical studies] it is a country's economic performance following a resource boom depends to a considerable extent on the policies followed by it governments"* (cited in Ross, 1999: 307).

Following from the above on the possible transmission channels of the curse in many resource-rich countries, and in the case of the Tarkwa-Nsuaem Municipality, *managerial or leadership (style)* is at the centre. Thus, as strongly believed by authors such as Ross (1999) and Neary and Wijnbergen (1986), tied to the successful stories of natural resource booms of Norway, Finland, and Botswana; we tend to be convinced that good policies adopted by governments unquestionably would ward off the problem of the curse. Thus, there is ample evidence to show that many resource-rich countries such as Britain, Germany USA (in the late 19th century) and Botswana have experienced stable economic growth as a result of good government policies, strong political leadership, and wise use of proceeds from natural resources (Hobenu, 2010; Newshour Extra, Iimi, 2006; n.d.).

Therefore claim by Bodin (1967) in *Six Books of a Commonwealth* that: ***men*** *of a fat and fertile soil, are most commonly effeminate and cowards, whereas contrariwise a barren country makes* ***men*** *temperate by necessity, and by consequence careful, vigilant and industrious* (cited in Ross, 1999) cannot be wholly accepted in the light of these questions: which element in a fertile soil is responsible for the timid behaviour of people; which element in barren soil makes people behave courageous and active; and taken that there are such elements, what is responsible for the differences in outcome in space, and perhaps, time – the case of say, Botswana and Nigeria?

The very common feature emanating from the ensuing argument of the NRC thesis is apparently, leadership – the human *(men)* factor. The problem is not the physical existence of the resource, rather the humans, or what may be referred to as *"natural resource managerial defect"*. This is taken to mean that all the hullaballoo of curse associated with natural resource boom lay with the behaviour/attitude of managers(or stakeholders), and policies and institutions of management of the resource in question, and therefore makes a lot of sense to deal with the curse from the root – managerial (human) perspective.

Conclusions

This paper has brought to the fore, some of the negative impacts associated with mining operations on the environment, and eventually on the residents of Odumase and Teberebie in the TNM of Western Region of Ghana. Arguably though, the ultimate outcome has been the low income situation of the people, and they being excluded from enjoying some natural and social benefits due them – clean air, water, ambient environment, job opportunities, good health, and several others. Residents acknowledged how they have been deprived of a number of assets, particularly the natural and physical ones, plunging them into vicious cycle of poverty. All these happenings are eagerly due to the loads of mineral resources concealed underneath of the region. It is therefore not wrong to conclude from the findings that these communities studied feel accursed with the natural resources within their borders.

Recommendations

Considering the misconception residents have about the mining companies and their operations, coupled with occasional clash (either between some community members themselves or some community members and mining companies), it is recommendedthe sustainable management of the exploitation of the mineral resources by involving all who matter –aged, youth, men's and women's groups, chiefs and opinion leaders, non-governmental and civil society organisations, the mining companies, and any concerned arm of government. This effective collaborative measure is likely to avert allegations of payment or not, of appropriate compensations paid to families and individuals whose land properties will be taken over by mining companies. Appreciatively, this strife of compensation settlements will persist, but probable to trim down with effectual cooperation.

It is erroneous to think that there are no reliable and persuasive policies to dealing with some of the problems that come with the exploitations of mineral resources. The concern is the non-implementation of these policies on the part of government, giving the mining companies the audacity not to comply with it statutes. It is therefore right for central and local governments to enforce policies and regulations regarding natural resource (particularly mining) use and exploitation, with local residents in mind.

References

Akabzaa, T. & Darimani, A. (2001).*Impact of mining sector investment in Ghana: A study of the Tarkwa mining region.* Report to SAPRI.

Alayli, A. (2005). ***Resource rich countries and weak institutions: The resource curse effect.*** Berkeley, CA: University of California, Berkeley.

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References

Akabzaa, T. & Darimani, A. (2001).*Impact of mining sector investment in Ghana: A study of the Tarkwa mining region.* Report to SAPRI.

Alayli, A. (2005). ***Resource rich countries and weak institutions: The resource curse effect.*** Berkeley, CA: University of California, Berkeley.

Armah, F. A., Obiri, S., Yawson, D. O., Pappoe, A. N. M. & Akoto, B. (2010). Mining and heavy metal pollution: Assessment of aquatic environments in Tarkwa (Ghana) using Multivariate Statistical Analysis. *Journal of Environmental Statistics, 1* (4), 1 – 13.

Asamoah, Y. (2010). *Performance assessment of the Wassa Association of Communities Affected by Mining (WACAM) in the Tarkwa-Nsuaem Municipality.* Unpublished MPhil Thesis, University of Cape Coast.

Aubynn, A. K. (n.d.). Economic Restructuring Dynamics and Environmental Problems in Africa: Empirical Examples from the Forestry and Mining sectors of Ghana. ***UNU/IAS Working Paper, 34.***

Auty, R. M. (1993). Industrial policy reform in six large newly industrializing countries. *World Development*, 22, 11-26.

Bagattini, G. Y. (2011). *The political economy of stabilization funds: measuring their success in resource-dependent countries.* A Working Paper, 356. Institute of Development Studies, Brighton, United Kingdom.

Bellin, E. (1994). The politics of profit in Tunisia: utility of the rentier state paradigm? *World Development, 3,* 22.

Bodin, J. (1967). *Six books of a Commonwealth.* (Ed. and trans., M. J. Tooley). New York: Barnes and Noble, 5 (1), 565.

Boon, E. K. & Ababio, F. (2009). **Corporate social responsibility in Ghana: Lessons from the mining sector. In *Proceedings of the 29th Annual Conference of the International Association for Impact Assessment: Impact Assessment and Human Well-Being, Accra International Conference Centre, Accra, Ghana, 16-22 May 2009.*** Retrieved from www.iaia.org.

Caselli, F. (2006). *Power Struggles and the Natural Resource Curse.* LSE Research, London

School of Economics.

Chaudhry, K. A. (1994). Economic liberalisation and the lineages of the rentier state. *Comparative Politics,* 27.

Clark, J. (1997). Petro-Politics in Congo. *Journal of Democracy 8*, 62–76.

Commission On Human Rights And Administrative Justice (2008). *The state of human rights in mining communities in Ghana.* Retrieved from http://www.nodirtygold.org/HumanRightsInGhanaMiningCommunities.pdf.

Creswell, J.W. (2007). *Qualitative enquiry and research design: Choosing among five approaches* (2nd ed.). California, USA: Sage Publication Inc.

Doppelhofer, G., Miller, R. I. & Sala-i-Martin, X. (2000): *Determinants of Long-Term Growth: A Bayesian Averaging of Classical Estimates*

(Bace) Approach. In *SSRN eLibrary.* Retrieved from http://ssrn.com/paper=214976.

Frankel, J. A. (2010). *The Natural Resource Curse: A Survey.* In *NBER Working Paper*

(w15836). Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1583795.

Government of the Republic of Ghana (2006).*Minerals and Mining Act: Act 703.* Ghana: Accra.

Gylfason, T., Herbertsson, T. T. & Zoega, G. (1999).*A mixed blessing: Natural resources and economic growth.* Macroeconomic Dynamics 3, 204 - 225.

Heemskerk, M. & Olivieira, M. (2003). *Perceptions of small-scale gold mining impacts: Results from focus group discussions in mining camps and affected communities.* World Wildlife Fund – Guianas Grant Agreement FG-64 Paramaribo, Suriname.

Hobenu, J. (2010). Optimising the use of revenue from Ghana's oil fields: Case for oil funds. *Journal of Business and Estate Management Research, 2 (1), 53–69.*

Iimi, A. (2006). *Did Botswana escape from the resource curse?* A Working Paper 138, International Monetary Fund.

Kortatsi, B. K. (2007). Groundwater quality in the Wassa West District of the Western Region of Ghana. *West African Journal of Applied Ecology, 11,* 25–41.

Kronenberg, T. (2004).The curse of natural resources in the transition economies. *Economics of Transition, 12 (3), 399 - 426.*

Kuwimb, M. J. (2010). *A critical study of the resource curse thesis and the experience of Papua New Guinea* (Doctoral thesis). Retrieved from http://eprints.jcu.edu.au/11667.

Laing, E. (Ed.). (1994). *Ghana Environmental Action Plan. Technical Background Papers by Six Working Groups.* Environmental Protection Council. Accra: Advent Press.

Luong, P. J. & Weinthal, E. (2006).Rethinking the resources curse: ownership structure, institutional capacity, and domestic constraints. *Annual Review of Political Science, 9,* 241 –263.

Mehlum, H., Moene, K. & Torvik, R. (2006).Institutions and the resource curse. *The Economic Journal, 116,* 1–20.

Mertens, D. M. (2005). *Research methods in education and psychology: Integrating diversity with quantitative and qualitative approaches.* (2ed.) Thousand Oaks, USA: Sage.

Newshour Extra (n.d.). *Analysing the natural resource curse.* Retrieved from www.pbs.org/newshour/extra.

Palley, T. I. (2003). Lifting the natural resource curse. *Foreign Service Journal, 80,* 54–61.

Robinson, J. A., Torvik, R. & Verdier, T. (2006). Political foundations of the resource curse. *Journal of Development Economics, 79,* 447-468.

Ross, M. L. (1999). The political economy of the resource curse. *World Politics 51,* 297-322.

Sachs, J. D. & Warner, A. M. (1995).Natural resource abundance and economic growth.

National Bureau of Economic Research Working Paper 5398.

Sachs, J. D. & Warner, A. M., (1999). The big push, natural resource booms and growth. *Journal of Development Economics 59,* 43-76.

Sachs, J. D. & Warner, A. M., (2001). Natural resources and economic development: the curse of natural resources. *European Economic Review, 45,* 827-838.

Sala-i-Martin, X. (1997). 'I just ran two million regressions'. *American Economic Review, 87(2),* 178-183.

Sala-i-Martin, X. & Subramanian, A. (2003). *Addressing the Natural Resource Curse: An*

Illustration from Nigeria. Washington, DC: International Monetary Fund.

Siegle, J. (2009). *Governance strategies to remedy the natural resource curse.* UNESCO,

Blackwell Publishing Ltd.,

The World Bank Group (2006). *From curse to blessing: natural resources and institutional quality.* Environmental Matters, Annual Review.

Wenar, L. (2008). Property right and the resource curse. *Philosophy and Public Affairs, 36 (1),* 2-32.

Yates, D. A. (1996). *The rentier state in Africa: oil rent dependency and neo-colonialism in the Republic of Gabon.* Africa World Press Inc., Trenton, New Jersey.

http://www.ualberta.ca/~jbb/files/4222012Lec02%20Public%20perception%20of%20mining.pdf

http://www.ghanadistricts.com/districts/?r=5&_141&rlv=location