



## **The physical and socio-economic assessment, and policy solutions of soil erosion in Oguta Lake watershed, Imo State South East, Nigeria**

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In Nigeria, the demand for sand for building and other construction purposes is rapidly increasing, reflecting the rise in human population as well as their need for houses. However, sand mining often results in serious environmental problems such as soil erosion, land degradation and loss of agricultural lands. This study assesses the environmental and socio-economic impact of sand mining in Oguta Lake watershed, Imo State, South East Nigeria. Remote Sensing and a Geographical Information System were used for identification, mapping of the sand mining sites and processing of soil erosion images. In addition, two focus group discussions and 44 semi-structured interviews were conducted with the relevant stakeholders to obtain a deeper understanding of the social nature of the problems. This innovative integration of the physical and socio-economic aspects of the problem forms a sound basis for policy solutions. Twenty active and four abandoned sand mining sites were identified and characterised. Ground reconnaissance showed that eight of the twenty active sand mining sites are in-stream while the remaining twelve are off-stream. It was also found that about 80% of the rural population depends on land resources for their livelihood and over 50% of the youth is unemployed. Moreover, it was discovered that the large population of unemployed youths was responsible for the intense sand mining. Consequently, many agricultural lands have been converted to sand mining sites by the local miners without any approval from the government, which is against the provisions of the Land Use Act of 1978. This in particular is a huge threat to food security for a population of local people that depend so much on subsistence agriculture for their livelihood. The ground reconnaissance showed that active sand mining activities have a direct link to soil erosion. Firstly, clearing of vegetation and excavation of mining pits exposes the soil to direct rainfall impact and, thus, triggers sheet and rill erosion. Secondly, abandoned sand mining sites gradually evolve into erosive gullies or trigger landslides as a result of previous sand mining pits. In combination with this, poor institutional structure and lack of participation of local stakeholders in decision-making were found to be social drivers of soil erosion in the watershed. From the focus group discussions, it was found that the vast majority of local sand miners are in the business due to poverty and unemployment and, thus, have no plan of disengaging from the business unless alternative jobs or incentives are provided by the government. This study proposes institutional reforms that include the participation of local stakeholders in decision-making for effective and efficient management of the watershed. For the land use, recognition of the powers of the local stakeholders, like the traditional rulers and trade union members, in allocation and ownership will not only reduce misuse of lands but also encourage sustainable use of land as stipulated in the Land Use Act of 1978. This is because the local resource users are likely to trust and comply more with local stakeholders' directives than the government's.