

Change Detection Analysis on the Impact of Illegal Mining (Galamsey) in Ghana; Case Study focusing on Land cover Changes in some Selected Districts within the Country.

Joseph Osei Ababio and Kofi Bonsu (Ghana)

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SUMMARY

Illegal mining (Galamsey) has become a national pandemic over the past decade resulting in the destruction of natural resources (Land, Water, Forestry) mostly within the Ashanti, Western, Eastern, Central and Brong Ahafo Regions of Ghana. There have been several efforts by the government and some well-meaning personalities including traditional leaders, university lecturers, environmental professionals, social commentators, etc. to help halt these activities, remedy the effects and initiate the structuring of relevant policies and laws for proper mining activities by small and medium scale enterprises. This paper analyzes all the changes spanning from Galamsey activities in the selected districts to assist decision-making bodies in preparing the best strategies for restoring its effects. Four remotely sensed images were adopted for the analysis; LANDSAT Images dated January 1, 1991, April 2, 2001, December 31, 2015, and January 3, 2018. Radiometric, spatial and spectral enhancements were performed to enhance the quality of the images. Vegetation and Water Indices were generated for analysis. Maximum likelihood Supervised Classification was performed on the images. Finally, change detection analysis was performed by observing the Image Difference technique and the Post Classification Technique. The results clearly show that there have been drastic changes to our land cover over the past two decades with most of the changes occurring in the past few years. The Land being degraded as a result of Galamsey activities grow each year with the total area covering approximately one-third of the total area observed as human settlements. To help monitor land cover changes that have already taken place, activities currently ongoing and activities of the future, we need to invest into remote sensing technologies and commission a division to provide decision makers with spatial analysis to assist our development as a nation.

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