FORESTRY RESEARCH INSTITUTE OF GHANA

ADDRESSING THE MENACE OF ILLEGAL MINING – CONTRIBUTION OF CSIR-FORIG

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Background

The boom in small scale mining operations, popularly known as 'galamsey', is fast becoming one of the major factors contributing to the rapid decline of forest resources in Ghana.

Forests play important roles in the maintenance and provision of goods and services that are beneficial to all segments of society. As a natural resource pool, forests store and recycle nutrients, protect land and water resources, provide valuable genetic resources and habitats for wildlife. In Ghana, the forestry sector contributes about 2-3% of the Gross Domestic Product (GDP), down from about 10% a decade ago (FDMP, 2016). Nonetheless, the forestry sector provides direct employment to over 100,000 Ghanaians and indirect employment to over 2.5 million people (GSS, 2014). In addition, timber exports earn the country about US$180 million per annum, which accounts for about 1.5% of total exports (FDMP, 2016). Despite these benefits derived from the forestry sector, forests in Ghana are under serious threat partly due to deforestation and forest degradation.

The rate of deforestation and forest degradation in Ghana has been on the rise in recent decades. From the country's original forest cover of 8.2 million hectares from the onset of the last century, only an estimated 1.6 million hectares remain. Currently, the deforestation rate is about 2.5% of the total land area of Ghana leading to an annual loss of about 135,000 ha. For example, between 1990 and 2000, the forest cover loss was about 387,256 ha (2%) whereas a total area of 531,364 ha (3%) was lost for the period 2000-2010 (FAO, 2016). The increasing trend of the deforestation rate in Ghana has been attributed to agricultural expansion, timber harvesting, population and development pressure, and mining and mineral exploitation (GRPP, 2010; FCPF, 2014).

In most of the regions, large tracts of forests have been encroached and degraded by both mining companies and galamsey operators. For instance, about 4.4%, representing 2.5 km^2, of the total area of the Offinso Shelterbelt Forest Reserve in the Ashanti region were degraded by illegal mining in 5 years (Boadi et al., 2016). In addition, mining activities impact negatively on agricultural activities (e.g. destruction of farms), environment (pollution of water bodies), and on the social life (e.g. increase in number of school dropouts among the youth) of the fringe communities that host them. These challenges translate into social conflicts and misunderstanding in the mining communities due to grievances with mining operations, which

pose a threat to sustainable development and require a more holistic approach in dealing with such a problem.

Aware of the increasing rate of illegal mining and its associated negative consequences on humans as well as the environment, the government of Ghana has intensified its efforts to curb the illegal menace. For this reason, efforts are being made to combat illegal mining through sustainable forest management measures, including reclamation and rehabilitation of degraded mined sites.

The Forestry Research Institute of Ghana of the Council for Scientific and Industrial Research (CSIR-FORIG) is the government institution in Ghana mandated to conduct research in forestry, environment and related issues. In line with the Institute's strategic objectives (sustainable resource management, climate change adaptation and mitigation, and livelihood improvement), the institute has made conscious effort to focus its research agenda to support restoration, rehabilitation and protection of forests and water bodies, among others, in the country; thus it has a clear mandate and responsibility to execute the proposed rehabilitation of degraded mined sites. It also has the full complement of staff with sound understanding of reclamation/rehabilitation and the necessary capacity for coordinating such an activity across the country.

Impacts of illegal mining

Illegal mining impacts on the environment, water bodies, agriculture, humans and many other sectors as outlined below:

Vegetation and wildlife

- Massive destruction of vegetation and water bodies
- Loss of crops such as cocoa and oil palm plantations as well as food crop farms. The negative impacts on agricultural activities - the source of livelihood for the rural people and a key contributor to GDP is costing the nation greatly.
- Habitat loss for some plant species and wildlife will affect biogeochemical cycles and ecosystem processes, which pose as threats to life of some animals and plants.

Environmental pollution

- The release of carbon dioxide and methane from the combustion resulting from illegal mining activities increases the concentration of greenhouse gases (e.g. carbon dioxide, methane) and ultimately contributes to worsening the climate change problem.
- Accumulation of heavy metals in soils and water bodies, in addition to increased turbidity of water bodies. Irrigation of farms with such water can introduce traces of heavy metals and chemical residues in the final crops produced. Consequently, this can cause a range of health problems including cancers, heart, brain, liver and kidney diseases, muscle and general weakness

Social implications

- The negative impacts of illegal mining on the livelihoods (agriculture) of rural people translates into social conflicts and misunderstanding in the mining communities.
- With the influx of miners in these rural areas, a very important indirect social effect could be an increase in teenage pregnancy.
- The number of drop-outs from school in illegal mining communities is expected to increase as the mining activities can be a source of instant money.

Addressing the challenge

To tackle the menace of illegal mining and remediate the adverse social, ecological and environmental impacts, holistic approach ought to be engaged. CSIR-FORIG proposes the use of the Forest Landscape Restoration (FLR) approach as a long term measure. This approach seeks to restore degraded landscapes such as mined sites by addressing socio-economic, ecological and environmental dimensions of reclaiming the degraded lands. The approach ensures that economic development and livelihoods of people are taken care of in a manner that guarantees ecological resilience and sustainability of the landscape.

However, for the immediate and medium term measures to addressing the illegal mining menace, CSIR-FORIG offers to apply relevant technologies that it has developed over the years. These technologies will focus on reclamation/restoration of the degraded landscapes and the livelihood

needs of miners and their dependent labour. The table below describes the technologies, and approaches that will be employed by CSIR-FORIG in addressing the illegal mining menace.

Dimension	**Technology**	**Intervention approach**	**Area of intervention**
Ecological and environmental	Degraded landscape restoration approach (DLRA)	This approach through multi-stakeholder dialogues identifies land uses to which degraded sites can be restored. Following this, the pits will be drained, refilled and prepared to restore plant and animal life with appropriate species.	Reclamation and restoration of degraded mined sites
	Phytoremediation	The technology involves the use of plants for the removal, transfer and/or stabilization of areas degraded with contaminants	Removal of soil laden mining contaminants
Social and economic	Technologies for livelihoods	Mushroom rearing, bee keeping, snail farming, bamboo cultivation and products development	Provision of alternative livelihoods for dependent labour down the production chain
	Nursery development	Organize training workshops build the capacity of local people to establish tree nurseries	Sustainable supply of planting materials for rehabilitation of mined sites

Potential outcomes on curbing the menace

It is envisaged that addressing the illegal mining menace could yield the following

outcomes, among others:

- Restoration of some forest cover to restore ecological stability and mitigate the effects of climate change

- Safe water sources for both domestic and agricultural uses. Aquatic life and its associated ecological functions will be restored

- Increase in the production of cocoa, oil palm plantations and food crops will directly increase the contribution to GDP.

- Activities to address illegal mining such as preparation of land and planting of species on mined sites will create employment for galamsey operators.