



## Rehabilitation success at Iduapriem

In June 2007, Ghana's Environmental Protection Agency (EPA) named Iduapriem Mine as the winner of the Best Reclaimed Mine award for 2007. Says Koduah Dapaah of Iduapriem's Environmental department "The award is very important to us as it recognises the emphasis that we, as a large-scale mining company, have placed on rehabilitation and environmental stewardship.

Adds Dapaah, "Mining has been one of the key areas for economic growth, social advancement and infrastructure development in Ghana for many decades, but mining can also be harmful to the long-term and sustained use of the natural environment if no carried out in a responsible manner. A balance has to be found between the two."

This is particularly important in the Tarkwa Wassa West District of the Western region of Ghana, in which Iduapriem is located. This region is richly endowed with natural resources above and below the ground. The pristine coastline and extensive rainforest (believed to be around 40% of the country's closed forest) within the region compete in a land use sense with some of the richest gold deposits in Africa, along with the cities, towns and villages that are home to many

thousands of people, including subsistence farmers. The gold mining industry is segmented between large scale operations, such as Iduapriem and its neighbour, the Tarkwa mine, smaller scale operators and miners, and artisanal miners operating illegally. While the larger operations have a more significant impact in terms of scale, they are also more likely to fall under Environmental Protection Agency (EPA) and public scrutiny and to have formal environmental management programmes in place.

Says Dapaah, "Iduapriem recognises the environmental challenges associated with mining, particularly in this region, and has implemented both scientifically and technologically-advanced management techniques to address these challenges related to air pollution, land restoration, water management and waste disposal. Iduapriem is ISO14001 certified and has developed and implemented an integrated environmental management system (EMS) and Social Development programmes which it believes are sustainable."

Iduapriem's concession area is 110km<sup>2</sup> in total, of which 15km<sup>2</sup> or 1,500ha (14%) of the area has been affected by mining operations. And, of the affected areas, some 2.3km<sup>2</sup> or 230ha (15%) has been restored into self-sustaining forest estate. Importantly, a large portion of The Iduapriem concession area, which falls within the Neung Forest Reserve, has strategically not been mined and the company has no intention of disturbing this forested area in the future. Despite the existence of small-scale mining activities by illegal miners (galamseyers) in the forest reserve, the deposit in this area does not have favourable economics for large-scale mining.

The mine, guided by the framework of its policy and EMS, has embarked on a progressive land restoration programme, with the objective of achieving multiple land-use options that will enhance post-mining multiple land-use investment opportunities, and thereby promote sustainable development and local wealth generation. In line with this, mined-out areas and associated waste rocks dumps are reforested in stages, rather than waiting for the final closure of the mine. Additionally, some waste rock dumps which are not close to active mining areas are being considered for use as aggregate crushing sites.

Appropriate rehabilitation techniques are used (including flattening waste rock dump slopes, the application of topsoil of 500mm minimum thickness and seedling transplantation being followed up with detailed care and maintenance programmes) which enhances undergrowth and general plant growth. Where topsoil is not available or inadequate, improvised topsoil is produced by combining laterite with humus in dug-out holes and spreading sawdust with poultry droppings. It is followed up with mulching or *proka* (an Akan word which literally means rot and affect). The plant biomass is allowed to decompose in-situ, thereby adding organic matter and nutrients to the soil.



## Rehabilitation success at Iduapriem *continued*

The selection of plant species for use in the rehabilitation has also proved to be very important. The species selected need to have the ability to thrive on open lands, withstand stressful conditions, preferably be capable of adding nitrogen to the soil and provide produce that will serve the needs of local communities. The land rehabilitation programmes have specifically been designed to prevent soil erosion and restore affected land surfaces to conditions that could ultimately be used by local communities for productive farming or agro-forestry purposes.

Key objectives are to ensure agro-diversity (which enhances biodiversity and ecological stability); providing a genetic pool of plants and animals needed for breeding higher yield varieties for food security; facilitating dietary diversity within the community; and contributing to increased resource productivity over time.

The multiple and sustainable land-use options plans at Iduapriem have resulted in reclaiming and rehabilitation trials at the old tailings storage facility (TSF) and the waste rock dump. The post-mining land developed at the old TSF now supports various types of food and cash crops, and compares well with the pre-mining, silty and acidic soil types.

In order to develop and support future agricultural development, a series of trial plots have been established at the old TSF to test the productivity of rehabilitated areas. The programme has offered an opportunity to test the potential for cocoa production for example, a significant agricultural product for Ghana. Cash crops (a hybrid cocoa) and oil palm are interspersed with food crops such as plantain and fruit such as pineapple, and other plants of economic importance such as jethropha (which has the potential for biodiesel). The growth of the cocoa seedlings is currently being monitored and the plants are treated with insecticides to prevent or control attack by pests.

To investigate concerns about the possible contamination of the produce grown on the old TSF through the potential uptake of undesirable elements from the soil, mature plantains and cocoa pods have been tested at the laboratory of the Food Research Institute and Ghana Standard Board in Accra for the presence of, among other things, heavy metals and cyanide and to determine calorific value. Test results indicate that the quality of the plantain and cocoa grown on the tailings dam compares favourably with the quality of those locally produced in non-mining areas. Based on this, it is Iduapriem's belief that restored mined-out areas have the potential to become a valuable source of land for agricultural development in an area that is already experiencing land shortages as a result of population growth.