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## The Role of a National Geological Survey in Artisanal and Small-scale Mining (ASSM)

Tychsen, J.

GEUS. 10 Oester Voldgade. DK 1350 Copenhagen Oe. Denmark. JT@GEUS.DK

One way of improving the outcome of the ASSM is to get a better understanding of the geology by that mining, where it is viable; introducing simple exploration tools; and to develop low-tech exploitation technologies. National Geological Surveys has an important role to play, naturally in cooperation with the mining authorities in African countries

An artisanal miner is, in effect, a subsistence miner. These miners are not officially employed by a mining company. They rather work independently, mining their own resources or working in cooperatives. Small-scale mining includes enterprises or individuals, who employ workers for mining, but generally working with simple hand tools.

Africa hosts more than one third of the world's mineral resources and has potential for exploitation of more resources, as a large part of the continent has not been properly explored yet. This potential is yet to be harnessed for the benefit of the Africans. In 2010 Large Scale Mining (LSM) in Africa amounted to 8-9 percent of the total global mineral exploration and extraction turn-over. In addition, it is estimated that at least 12 million ASSM operators produce at least 35 different minerals with emphasis on high value commodities such as gold, diamond, coltan and gemstones.

ASSM contributes significantly to the economic development of the countries, where it is practiced. In some countries like Nigeria and CAR it constitutes the only mining activity and produce at most 100% of the mineral commodities. No proven statistics is available. It is though estimated that quantities produced vary from a few kilograms to tons of gold (e.g. 2 tones in Niger in 2013; 8 tons in Ethiopia in 2014; 42 tons in Ghana in 2014); in terms of diamond countries such as CAR produce an annual average of 400,000 carats and Angola produced average of 935 000 carats of diamonds in 2013.



*The photos show ASSM in Mozambique, Nigeria and Ethiopia*

In Africa most governments recognize the importance and significance of ASM in the remote rural economy. The fact is that in most ASSM communities mining is the only viable income generating activity. ASSM induces linkages and other ancillary economic activities, such as agriculture for food production to supply the miners.

The governments also recognize that the ASSM activity has negative impacts on societies. It ranges from social, cultural, criminal, health, safety, illegality, to hazardous environmental impact. Due to limited

financial and technical capacity some of the ASSM segments impact negatively on the environment by polluting the soil, water, and degrading the agricultural land. The activity also contributes significantly to deforestation and land use conflicts, and can reduce agricultural land available food production. In general, the ASSM do not rehabilitate land, which has been mined out and they often reopen the rehabilitated sites by large scale mines.

The research activities supporting the ASSM sector is very limited in Africa, globally even. A few technical research projects have had a focus on developing methods to reduce the use of mercury and to some extent to improve the outcome of the ASSM operations. A number of socio-economic studies have provided a better understanding of the ASSM communities too. .

