

# Use of Remote Sensing imagery for Analysis of the Spatio-Temporal Evolution of Artisanal and Small-Scale Gold Mining in Central Côte d'Ivoire, West Africa

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## ABSTRACT

Côte d'Ivoire is a country rich in base metals and precious minerals: gold, manganese, diamond, iron, bauxite, cobalt and nickel. These natural resources are vulnerable to destruction and fragmentation by mining activities. Artisanal and semi-industrial gold mining are increasingly practiced activities in our rural areas. These activities often escape the control and monitoring of the mining administration. It is therefore often a matter of clandestinity. In order to better constrain these activities on the environment, we used satellite images to see its spatio-temporal impacts in the rural world in the Center of Côte d'Ivoire. The results show that gold panning activities have been practiced since 2013 (and for some, before this date) and are experiencing increasingly significant growth. In the Booré region, we go from 0 Ha of artisanal mining in January 2018 to more than 156 Ha in March 2019. As for the Yamoussoukro-Ouest zone, where we have artisanal and especially semi-industrial mining, the exploited areas go from more than 5 Ha in March 2014 to more than 69 Ha in March 2019. For the Kouassi-Périta area, artisanal and small-scale exploitations occupied approximately 70 Ha in November 2017, to more than 184 new Ha in January 2020 and more than 124 Ha of addition in April 2021. A recent field visit (West Yamoussoukro, August 2022) shows an extension of the various gold panning sites. An area of over 447 Ha (April 2021) increased to over 6834 Ha in August 2022; approximately an increase of more than 1500% in eight months. Despite certain operating authorizations granted by the mining administration, wastewater after ore processing is discharged into the Bandama River and other waterways. There is a devastation of forests and savannahs, pollution of surface water, as well as an increase in poverty in rural areas. These activities are practiced near inhabited areas (villages). This creates a reduction in arable land. Satellite imagery therefore makes it possible to quickly map large-scale gold panning areas in time and space. Thus, it would be appropriate to remember that the clandestine exploitation of gold does not promote a sustainable economy.

**Keywords:** Gold panning, Artisanal and small-scale mining, Space and time, Remote sensing imagery, Central Côte d'Ivoire

