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## Applicant UNESCO Global Geopark

*Ijen, Indonesia*

### Geographical and geological summary



## **1. Physical and human geography summary**

The aUGGp Ijen area is located at the easternmost tip of Java Island in East Java Province included in the territory of the unitary Republic of Indonesia which includes 2 districts, Banyuwangi and Bondowoso Regency. The location is bordered in the north by Situbondo Regency, in the east with the Bali Strait, in the south with the Indian Ocean, and in the west with Jember Regency. The Ijen area is formed by three different layers of mountains, Giant Volcanic Complex in the north, Ancient Volcanic Hills in the southwest, and Karst Hills in the southeast. However, the main attraction in that area is the Ijen Crater. The volcano, which is 2369 m above sea level, has phenomenal blue flames and also a crater lake. Topographic altitude at the geopark area are between 0 m asl (coastal area) until 3212.5 m asl (the top of topography at the eastern rim of Raung volcano). As an area that borders the sea and the strait, the eastern tip of Java is an area of human crossing and trade intersection, making it a place of cross-cultural intersections and multicultural identities that are represented in a variety of cultures, arts, and traditions. The landscape also creates an agrarian and coastal culture which is still well preserved today. The total population in this area is 1,842,363 people with the composition of the Using, Javanese, Madurese, Balinese, Arabic, Chinese, and Bugis ethnic groups.

## **2. Geological Summary**

The early history of Ijen was centered on a single giant volcano which is estimated to have reached an altitude of 3500 m. Approximately 70,000 years ago, Mount Ijen Purba experienced a super-explosive eruption that threw around 466 km<sup>3</sup> of volcanic material and forming a caldera depression with a diameter of up to 20 km. The spectacular geological phenomenon in this area can be found in Ijen Crater that has the most acidic volcanic lake on earth and magnificent blue fire. The water of Ijen Crater is very acidic because of the reactions due to the interaction of water with magmatic rocks and magma vapors at this high temperature, which causes the high acidity of the lake water. Lake's water contains chemical solutions produced by magmatic volatiles, rock-fluid interactions, evaporation of lake water, dilution by meteoric water, and recycling of lake water through seepage into subsurface hydrothermal systems. These lakes act as chemical condensers for the volatile water from shallow magmatic heat sources. Magmatic volatiles can be supplied by the crater lake system by direct injection of magmatic vapor bursts through fractures that connect to the solfatara bottom or through the bottom of the lake. Another phenomenon observed in Ijen Crater is a blue fire that is formed due to the reaction of sulfur with air. Blue fire can only be observed at night because when there is light the blue color of the fire is not visible.