

## **Will Bitcoin mining lead to global environmental catastrophe?**

Ladislav Kristoufek

### **Abstract:**

Bitcoin as a major cryptocurrency has come up as a shooting star of the 2017 and 2018 headlines. After exploding its price twenty times just in the twelve months of 2017, the tone has changed dramatically in 2018 after major price corrections and increasing concerns about its mining power consumption and overall sustainability. The dynamics and interaction between Bitcoin price and its mining costs have become of major interest. Here we show that these two quantities are tightly interconnected and they tend to a common long-term equilibrium. Mining costs adjust to the cryptocurrency price with the adjustment time of several months up to a year. Current developments suggest that we have arrived at a new era of Bitcoin mining where marginal (electricity) costs and mining efficiency play the prime role. Forecasting models building on this dynamics suggest that even though the hashrate will keep increasing (as well as Bitcoin price), it will be controlled by increasing mining efficiency and reward halving. In effect, the maximum profitable electricity price will keep decreasing forcing the use of cheap/renewable sources of energy. Environmental catastrophe induced by Bitcoin mining thus does not seem likely to threaten us.