

Blockchain for solid waste management and green cryptocurrencies in cities

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Keywords: solid waste management, blockchain, nudging, cryptocurrencies

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Abstract

Blockchain presents the new paradigm for management in urban areas. However, there are some limitations: its use is limited to mobility, solid waste management and some other areas. On the other hand, blockchain is used in cryptocurrencies, that are a decentralised way to run transactions, but it also has an important limitation: it consumes a lot of energy, which may be against green policies as such, and even if mining uses renewable energy sources, it consumes a lot of energy that may be used for other purposes, or job creation, etc. Therefore there have recently appeared new green cryptocurrencies that tend to reduce energy consumption, e.g. by using proof of stake instead of proof of work, thereby reducing energy consumption by a factor of 10000. This paper analyses whether it is possible to combine both uses of blockchain technology in cities, for example by cities using their own cryptocurrencies in order to promote their policies or to nudge citizens to recycle solid waste, while at the same time trying to make cryptocurrencies themselves greener and less energy consuming. In fact, some of the energy produced by incinerating non-recyclable waste could be used to generate electricity needed to produce cryptocurrencies which could in turn nudge citizens into recycling more waste. It still has to be answered whether this process would actually be feasible and economically viable, or that it would not require specific regulation in order to avoid harmful effects or preventing the system to become unstable and unpredictable in its results. On the other hand, such models could lead to better solid waste management and better sustainability, but also financial sustainability of cities.