INVESTING › CRYPTOCURRENCY

NFTs and the Environment

By ALLIE GRACE GARNETT Published March 09, 2022

Fact checked by VIKKI VELASQUEZ

Do Non-Fungible Tokens (NFTs) Harm the Environment?

You may have heard something about non-fungible tokens (NFTs) and how they impact the environment. Even though NFTs themselves do not cause any environmental impact, the impact on our climate is linked to how an NFT is produced.

The way that NFTs are created is highly energy-intensive. Most NFTs are minted using the proof-of-work operating method, which uses large amounts of electricity. Any energy-intensive process, crypto-related or otherwise, can exacerbate climate change by adding to the atmosphere's carbon dioxide emissions. However, there are other more environment-friendly ways to mint NFTs, in particular, methods using proof-of-stake.

KEY TAKEAWAYS

- Non-fungible tokens (NFTs) may be harmful to the environment depending on how they are produced.
- Minting a single NFT using the proof-of-work method uses the same amount of electricity as an average American household over almost nine days.
- NFT buyers and sellers are finding many creative ways to lessen or eliminate the environmental impact of NFTs.

Minting an NFT doesn't have to use vast amounts of energy. Keep reading to understand more about how NFT production consumes energy, and learn the options available to acquire NFTs without harming the environment.

How NFTs Impact the Environment

NFTs themselves do not impact the environment, but how they are minted can have

are generated, to understand how their production uses so much energy.

- **NFT is listed in a digital marketplace:** Usually, before an NFT is minted, it's listed in an NFT marketplace. While listing an NFT is not energy-intensive, the location of the NFT listing will generally determine how much energy the minting process will require. Choosing an NFT marketplace, like OpenSea, that hosts the Ethereum platform, which uses proof-of-work, means that the minting process will be energy-intensive, at least for now. [1] [2]
- **NFT is purchased:** The purchase of an NFT is often the catalyst for the NFT to be minted. Using proof-of-work, the NFT is minted—"mined"—by cryptocurrency miners who control extensive computing resources. The mining process is energy-intensive, with specialized computing hardware using vast amounts of electricity. Miners race to quickly solve complex math problems, thus earning the right to mint the NFT. [1]
- **NFT is stored or transferred:** Once the NFT purchase is complete, you can store the NFT or transfer it to another person. If you transfer the NFT to another NFT marketplace that uses proof-of-work, then the same energy-intensive process that was used to mint the NFT is repeated for the transfer. Simply storing an NFT does not consume energy.

You may be wondering exactly how the mining process consumes energy. Only miners with the most computing power are likely to succeed at solving the complex math problems the fastest, meaning that miners must operate a large quantity of computing hardware—and use a lot of electricity. A worldwide network of miners is competing to validate blocks of transactions, including NFT transactions, requiring every participating miner to extensively consume electricity—even though only one miner is selected to validate each new block of transactions. [1]

Every transaction on the Ethereum proof-of-work platform, including every NFT transaction, uses more than 260 kilowatt-hours of electricity—equivalent to the electricity used by an average U.S. household over 9.05 days. [3]

> **Important:** A single NFT transaction on the Ethereum platform emits almost 150 kilograms of carbon dioxide, equivalent to 331,056 Visa transactions or 24,895 hours of watching YouTube.. [3]

Can NFTs Use Less Energy?

Minting or transferring an NFT is usually energy intensive, but does not need to be. Blockchain platforms using the proof-of-stake operating method can generate NFTs without excessively using electricity and negatively impacting the environment.

The proof-of-stake method uses less energy than proof-of-work because it does not require the extensive use of computing hardware. Whereas miners participating in a proof-of-work blockchain network are motivated to consume electricity in attempt to successfully mine a block, validators contributing to a proof-of-stake blockchain are obligated to stake—agree to not trade or sell—their cryptocurrency holdings. Implementing a staking requirement for blockchain validators is way to secure a blockchain without requiring the network's participants to excessively consume energy. [4]

NFTs, in other creative ways, can be less impactful to the environment. Here are some options:

- **Use renewable energy:** Miners using proof-of-work to generate NFTs can use renewable sources of energy. While proof-of-work mining is energy-intensive, the source of the required energy can be emissions-free. Solar power is a popular choice, but other options include wind- and hydro-generated electricity.
- **Invest in renewable energy:** With some NFTs selling for impressive prices, it's possible to devote a portion of those proceeds to renewable energy investments. A large-scale shift to renewable energy could curb or eliminate the environmental impact of producing NFTs.
- **Invest in experimental technologies:** The proceeds from NFT sales can also be invested in experimental technologies designed to mitigate or reverse the effects of climate change. Carbon capture and storage, which collects and pumps carbon dioxide emissions into the ground, is an example of an experimental technology that some believe can solve the climate change conundrum.
- **Buy carbon offset credits:** NFT investors who wish to offset the environmental impact of an NFT purchase can buy carbon offset credits. While purchasing carbon credits does not actually reduce carbon dioxide emissions, it provides a financial incentive for others to minimize their total emissions on an annual basis.

Where to Buy Energy-Efficient NFTs

If you want to buy an NFT without causing harm to the environment, then you have several options for purchasing the non-fungible token. Each of these blockchain platforms uses proof-

- **Solana:** The Solana blockchain supports a broad range of NFT marketplaces, including Magic Eden, Solanart, and Rabbit Hole.[5]
- **Algorand:** The Algorand blockchain supports Aorist, a climate-focused NFT blockchain for artists, in addition to several NFT marketplaces. The Algorand blockchain is well suited to support NFTs because the blockchain is designed to never fork—split—into duplicate versions.[6]
- **Cardano:** Cardano is the blockchain known for being environmentally friendly.[7] NFT marketplaces hosted on Cardano include CNFT and Galaxy of Art.[8][9]
- **Tezos:** The Tezos blockchain hosts several NFT marketplaces including Rarible, which both operates an NFT marketplace and supports artists' creation of NFTs.[10][11]

> **Tip:** The Ethereum blockchain is about to become less of an energy hog. Ethereum—which currently supports the majority of NFT transactions—is gradually transitioning to using the proof-of-stake operating method. The official switch or "merge" is planned to take effect in Q2 2022, according to ethereum.org.[12] Once the merge is complete, the expected energy consumption for a proof-of-stake Ethereum transaction should be the equivalent of 20 minutes of television.[13]

Can Environmentalists Invest In NFTs?

If you care about fighting climate change but want to invest in NFTs, then you might feel that those two objectives are at odds. You can protect the environment and still purchase an NFT, but to avoid using almost nine days' worth of electricity, you can't purchase just any NFT.

If you are committed to aligning your investment portfolio with your stance on climate change, then aim to invest only in NFTs that are generated using the proof-of-stake consensus method. While that currently limits your purchase options, the limitation is likely only temporary. After the Ethereum platform completes its transition to proof of stake, then environmentalists can buy NFTs using Ether (ETH) with a clear conscience.

Are NFTs bad for the environment?

It's when an NFT is minted at an NFT marketplace using an energy-intensive method, like proof-of-method, the environment can experience an impact, like an increased carbon footprint.[3] NFTs that are minted using proof-of-stake are designed to limit harm to the

How much energy do NFTs use?

Minting an NFT on the Ethereum platform uses more than 260 kilowatt-hours of electricity—the same amount of power that an average U.S. household uses in about 9.05 days.[3]

But once Ethereum switches from proof-of-work to proof-of-stake, the energy consumption is predicted to drop 99.95% or to about 20 minutes of television.[13]

Can ESG investors buy NFTs?

Investors who prioritize environmental, social, and governance (ESG) issues can still buy NFTs. Any NFT that is minted using the proof-of-stake method can potentially be considered suitable for an ESG investor's portfolio.

ARTICLE SOURCES ▼

Related Articles

CRYPTOCURRENCY
Pros and Cons of Investing in NFTs

CRYPTOCURRENCY
What's the Environmental Impact of Cryptocurrency?

BITCOIN
Bitcoin vs. Ethereum: What's the Difference?

BITCOIN
Top Cryptocurrency Myths

BITCOIN
How Does Bitcoin Mining Work?

STRATEGY & EDUCATION
What is Axie Infinity?

Related Terms

Polygon (MATIC) Definition
Polygon (MATIC) is both a cryptocurrency and blockchain scaling platform. Polygon connects and grows Ethereum-compatible blockchain networks. more

Solana (SOL)
Solana is a blockchain platform designed to host decentralized applications. Based on Proof of History, it processes transactions quickly at low cost. more

What Is Green Tech?
Green tech is a type of technology that is considered environmentally-friendly based on its production process or supply chain. more

Bitcoin Mining
Breaking down everything you need to know about Bitcoin mining, from blockchain and block rewards to proof of work and mining pools. more

Blockchain Explained
A blockchain is a digitally distributed, decentralized, public ledger that exists across a network. It is most noteworthy in its use with cryptocurrencies and NFTs. more

Algorand (ALGO) Definition