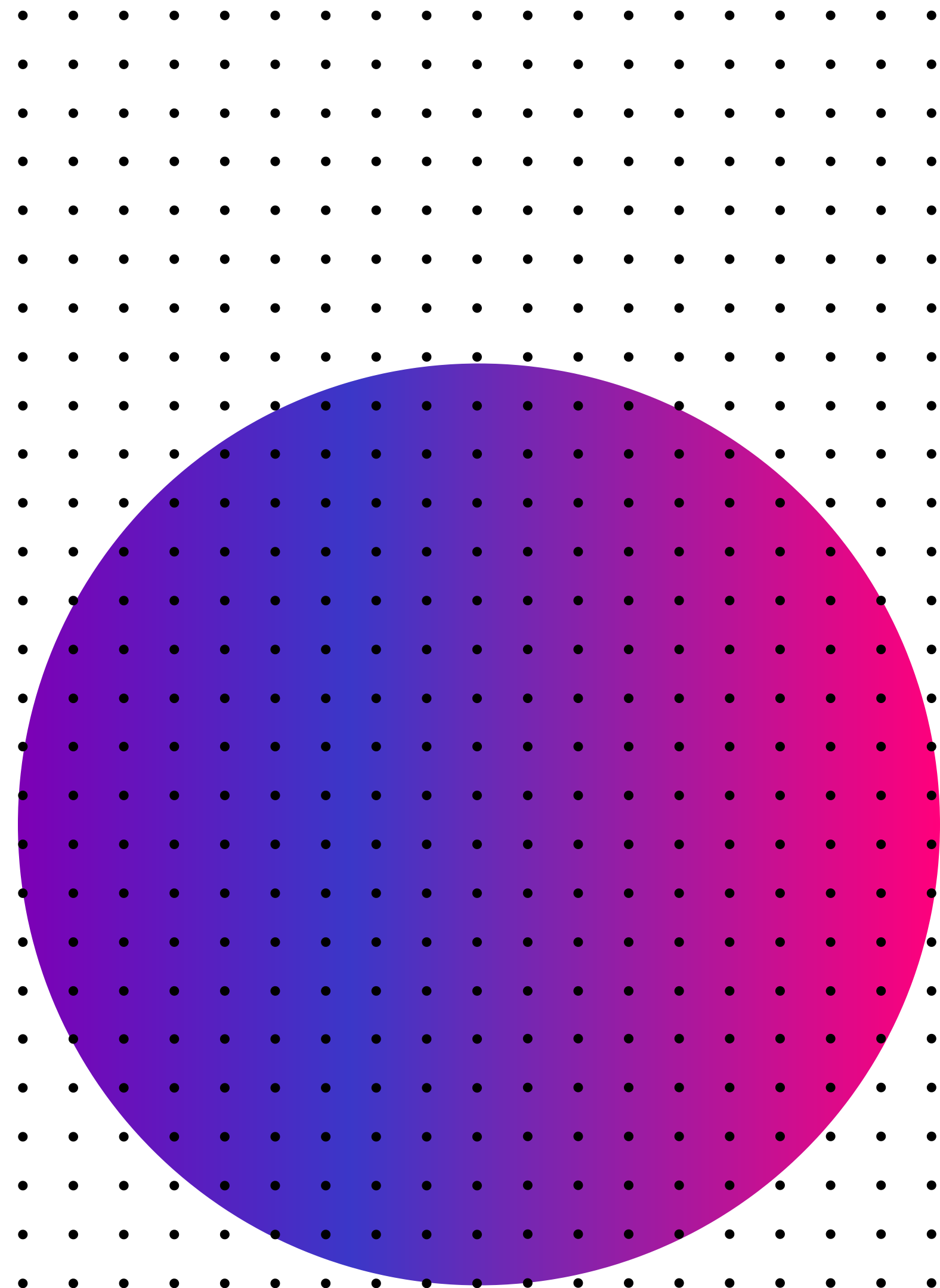


ART + BLOCKCHAIN + SUSTAINABILITY

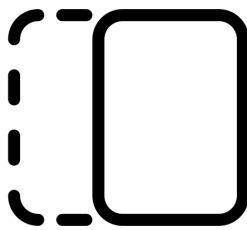
from biodiversity to cultural diversity
from Bitcoin to Ethereum 2.0
to artist empowerment and co-creation

Presented by Ieva Gurklytė
ArtTech project manager
Sustainability mentor @NFThon
ieva.gurklyte@kurkl.lt

NFThon Kaunas
Festival "Audra"
Kaunas 2022



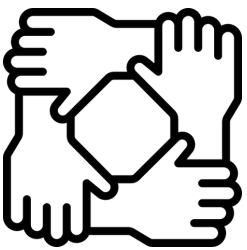
WHAT CAN BLOCKCHAIN DO FOR ARTISTS



digital scarcity
solves the problem of
infinite reproduction



monetisation
royalties, fractional
ownership



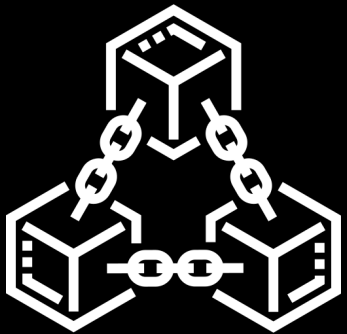
co-creation
enables artists to
reach their fans and
co-create



transparency
makes art market more
transparent

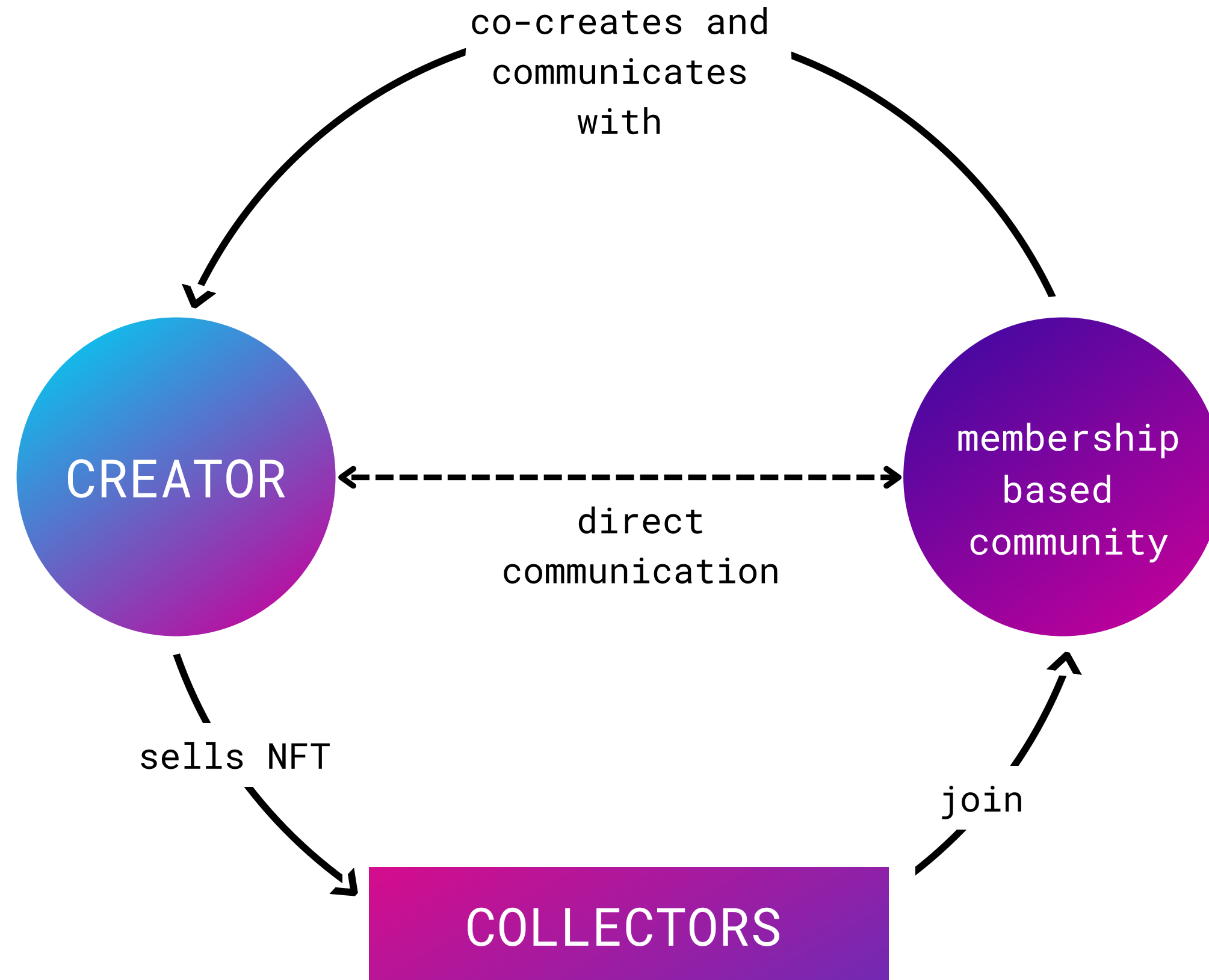


tracking
enables tracking of
artworks,
IP rights

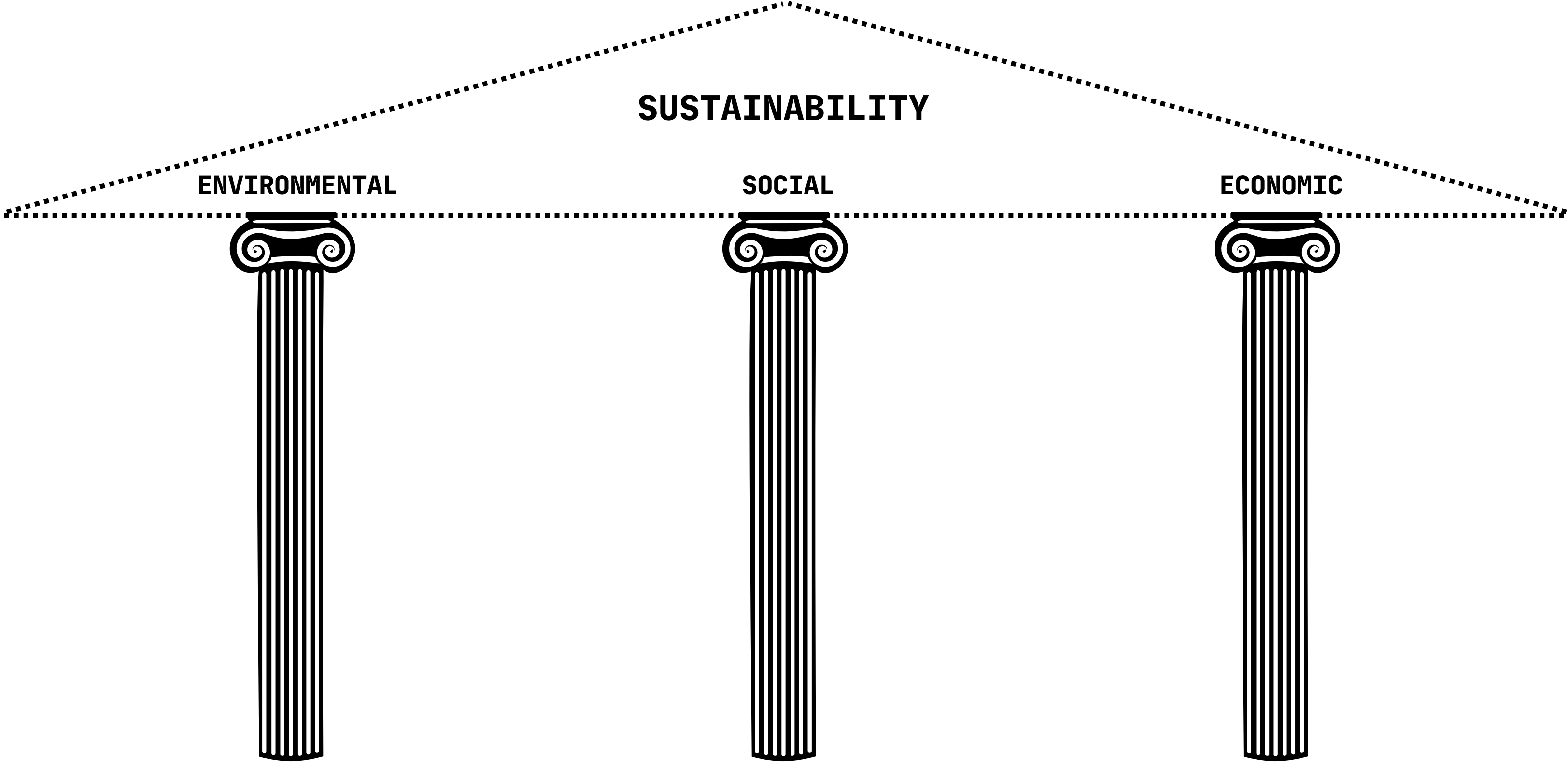


BLOCKCHAIN

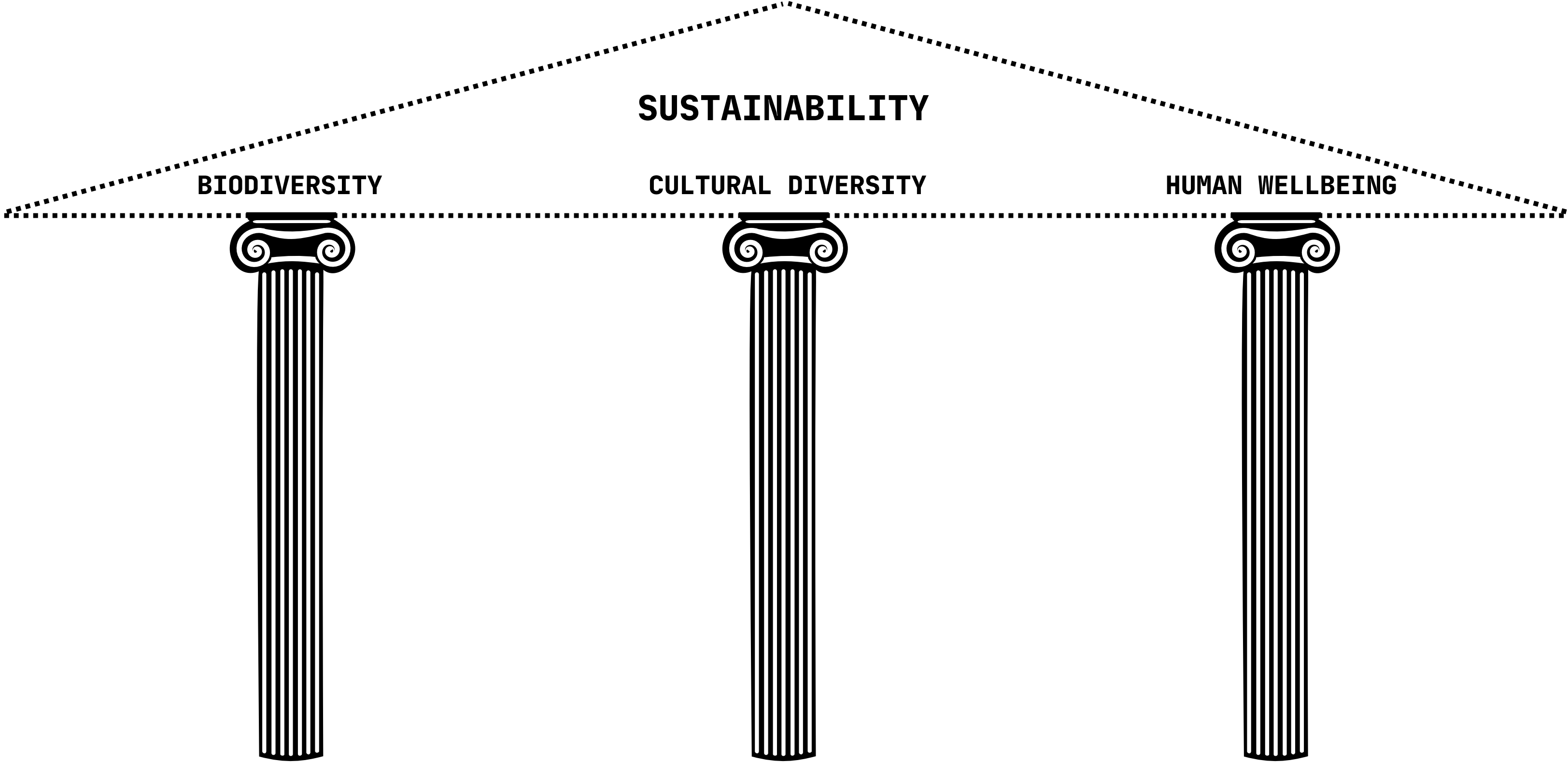
NFTS EMPOWER CO-CREATION



THREE PILLARS OF SUSTAINABILITY



THREE PILLARS OF SUSTAINABILITY RETHINKED



BLOCKCHAIN AND SUSTAINABILITY

"Blockchain uses a lot of **electricity**"

1 Bitcoin transaction = **700 to 17 000** kWh/transaction
various estimates

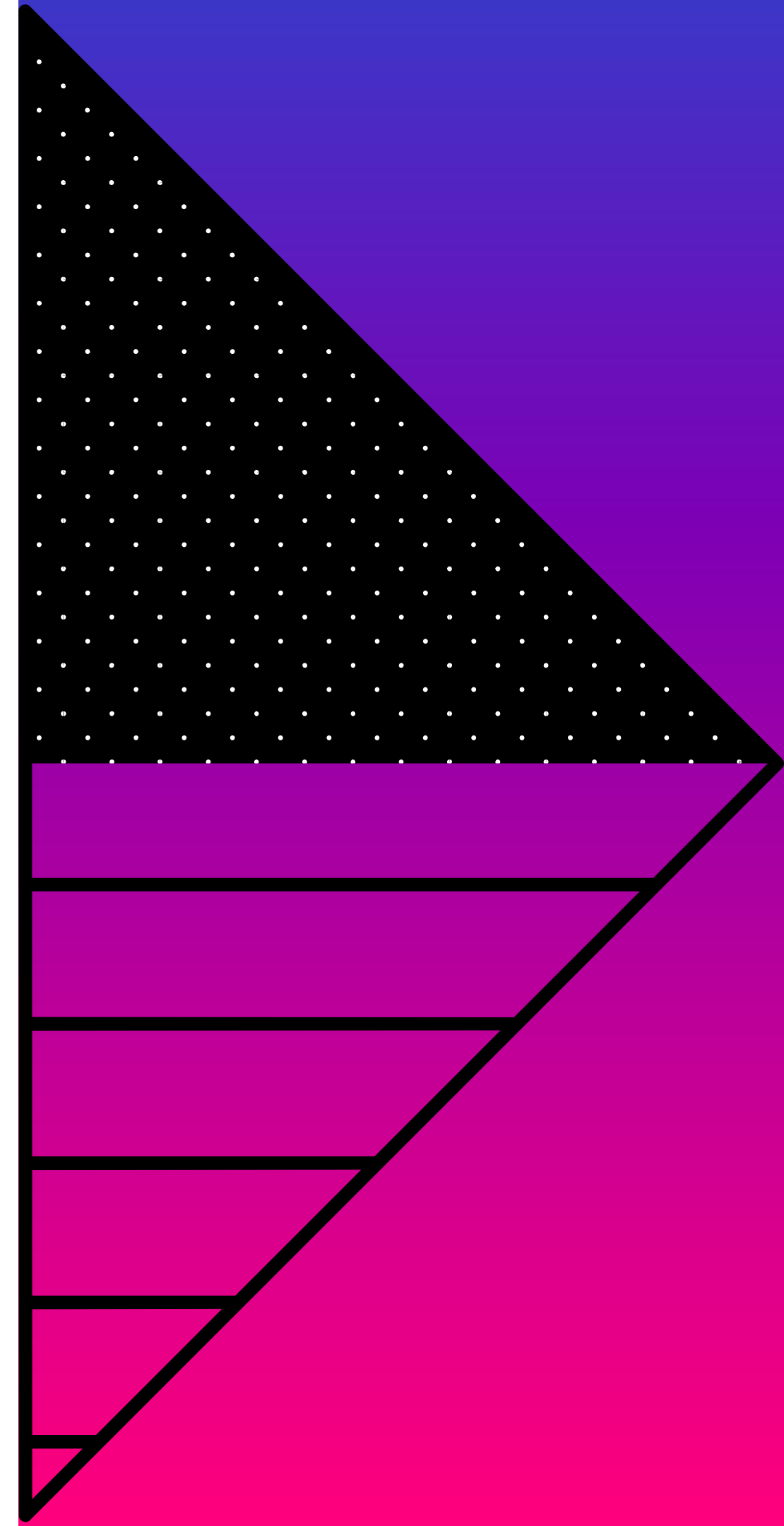
Ieva's household = **200** kWh/month
or so she thinks

BUT

- >> counting by transaction is misleading
- >> mining uses the most energy, not transactions
- >> network energy use depends on trading activity
- >> electricity can come from renewables
- >> miners are incentivised to mine at off-peak hours, using electricity that would otherwise go to waste

AND...

- (1) Not all blockchains are the same
- (2) NFTs are not minted on Bitcoin



FACTS (1)

PoW

Proof-of-Work consensus mechanism - oldest, least energy efficient
Examples: Bitcoin, Ethereum

76%

of PoW miners use renewable energy as part of their energy mix

3rd Global Cryptoasset Benchmarking Study, 2020

<https://www.jbs.cam.ac.uk/wp-content/uploads/2021/01/2021-ccaf-3rd-global-cryptoasset-benchmarking-study.pdf#page=26>

39%

of PoW cryptocurrencies are mined using just renewable energy, mostly hydro

3rd Global Cryptoasset Benchmarking Study, 2020

<https://www.jbs.cam.ac.uk/wp-content/uploads/2021/01/2021-ccaf-3rd-global-cryptoasset-benchmarking-study.pdf#page=11>

Pos

Proof-of-Stake > Proof-of-Work

Examples: Tezos, Algorand, Solana

Crypto Carbon Ratings Institute, Energy Efficiency and Carbon Footprint of PoS Blockchain Protocols, 2022, p. 22

<https://www.carbon-ratings.com/dl/pos-report-2022>

FACTS (2)

Offset

Some art NFT marketplaces offset emissions by investing in CO2 absorbing projects
Example: Aorist platform on Algorand
<https://aorist.art/about/sustainability>

99.95%

Ethereum 2.0 (PoS instead of PoW) will reduce energy use by 99.95%
Beekhuizen, C., „Ethereum's energy usage will soon decrease by ~99.95%, in: Ethereum foundation blog“, 2021 05 18
<https://blog.ethereum.org/2021/05/18/country-power-no-more/>

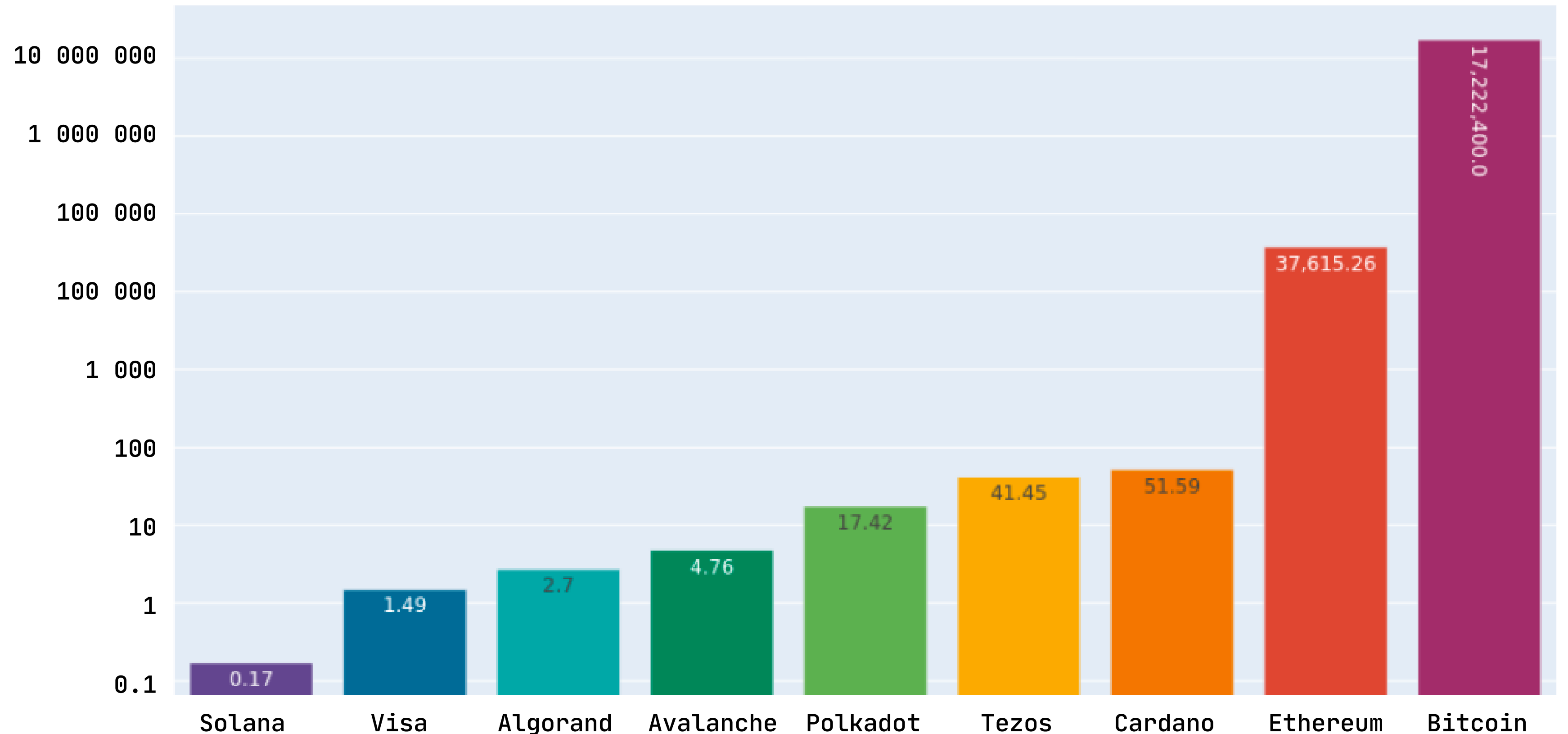
2022

Ethereum 2.0 is scheduled to launch 2022 Q3/Q4
Tim Beiko, Ethereum developer, 2022 06 17
<https://twitter.com/TimBeiko/status/1535375676848558081>

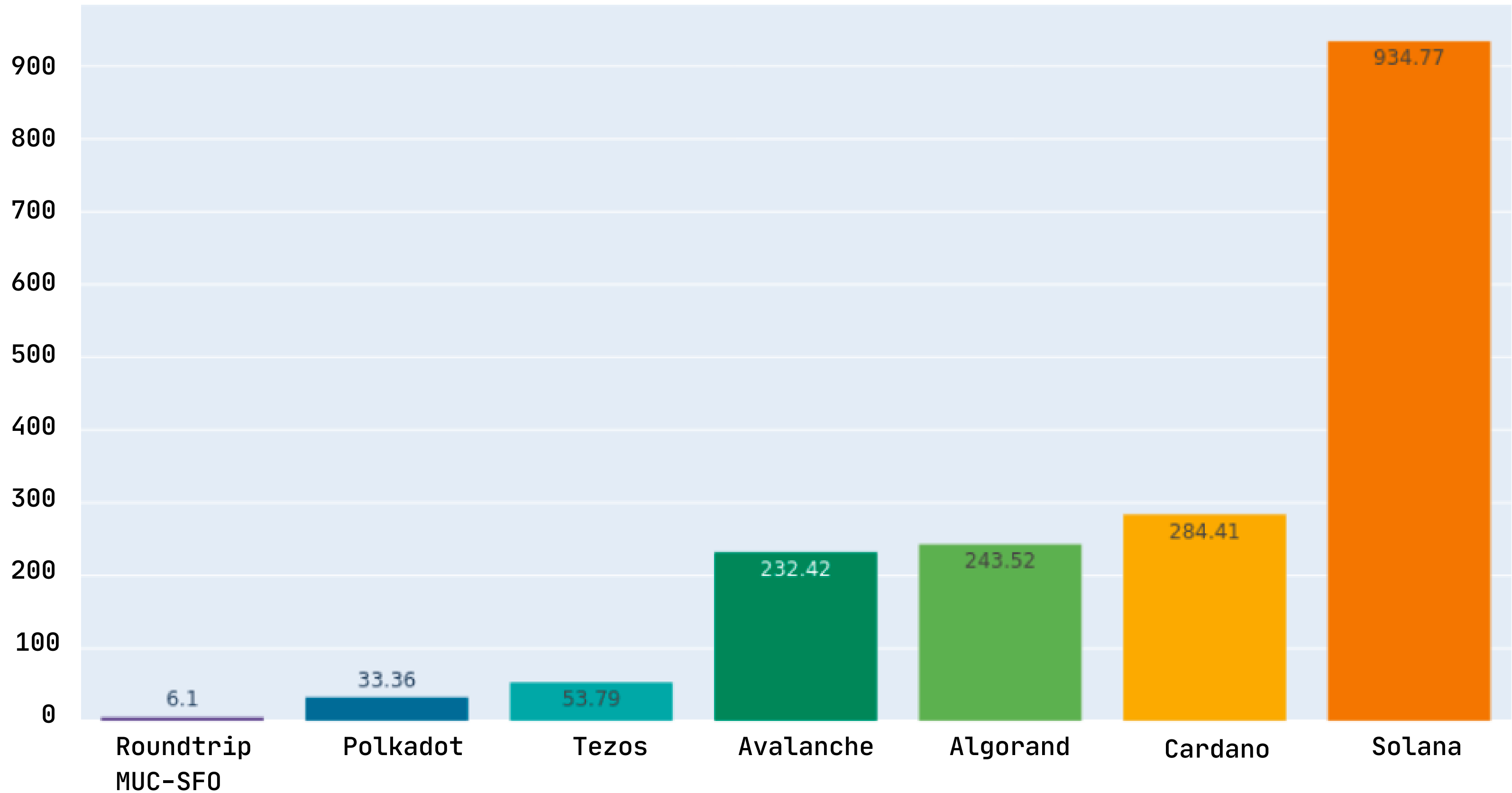
78%

Of NFT transactions are linked to blockchain games (not art)
DappRadar, Behavior Report - Macroeconomic events accelerate crypto adoption and regulations, 2021 04 29
<https://dappradar.com/blog/behavior-report-macroeconomic-events-accelerate-crypto-adoption-and-regulations>

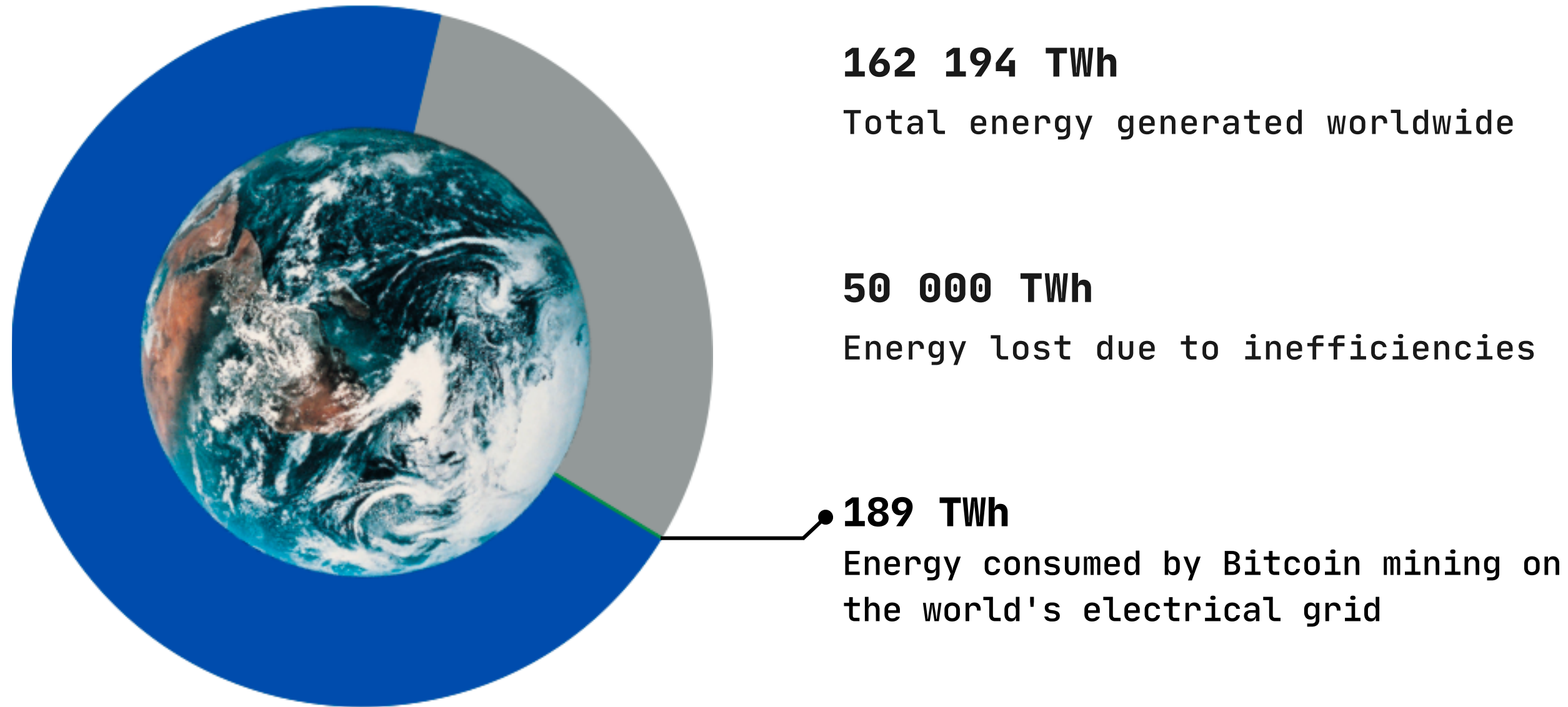
BLOCKCHAIN TRANSACTION VS. VISA ENERGY USE COMPARISON, Wh



POS NETWORKS/YEAR VS. FLYING EU-US ONCE EMISSIONS, T



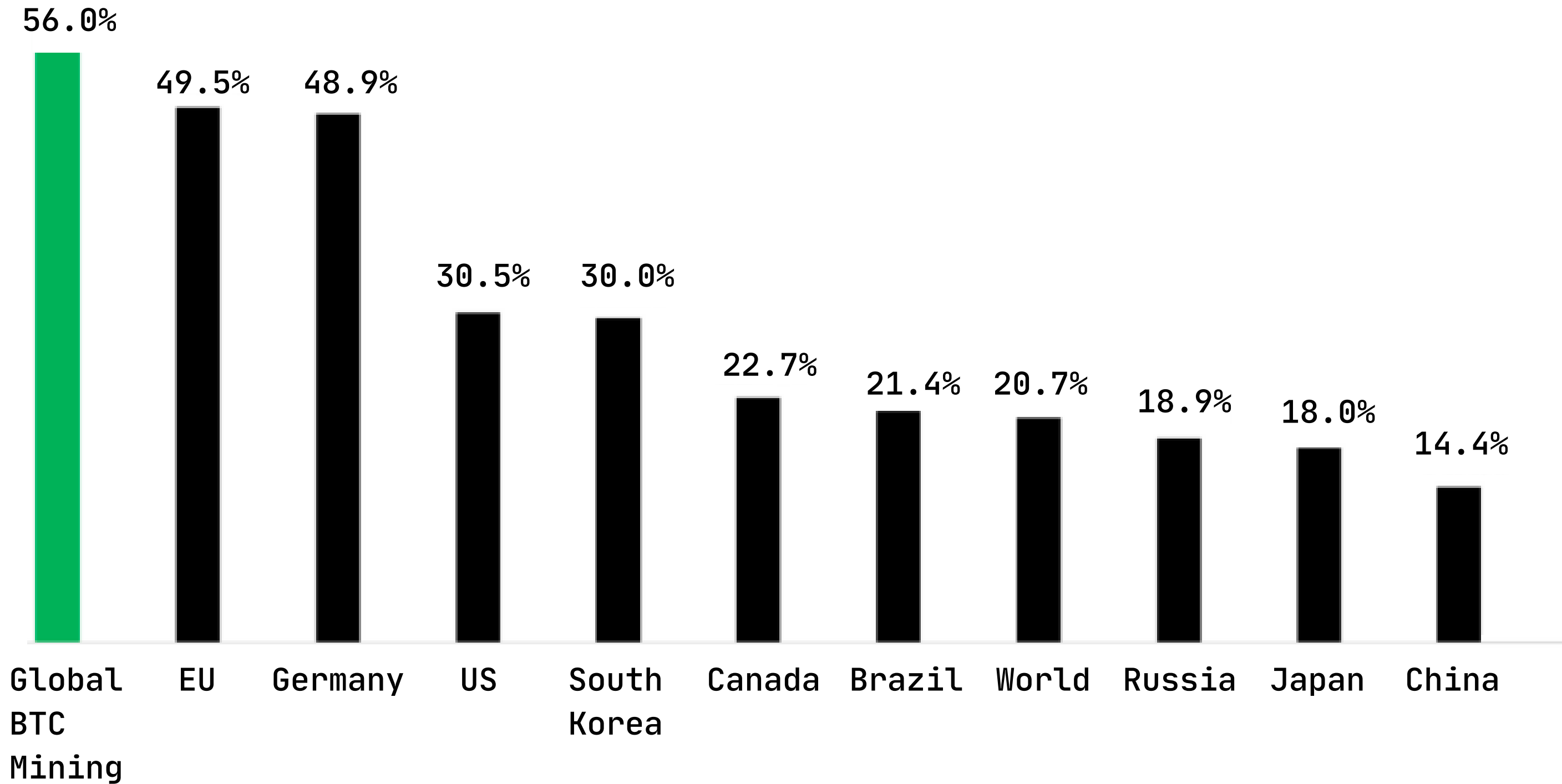
BITCOIN MINING ENERGY USE VS. ELECTRICITY GENERATION USE



Global Bitcoin mining consumes 0.1 %
of the world's energy production

global Bitcoin mining consumes 0.4%
of the world's energy wasted

SUSTAINABLE ENERGY MIX: BITCOIN VS. COUNTRIES, % OF TWH

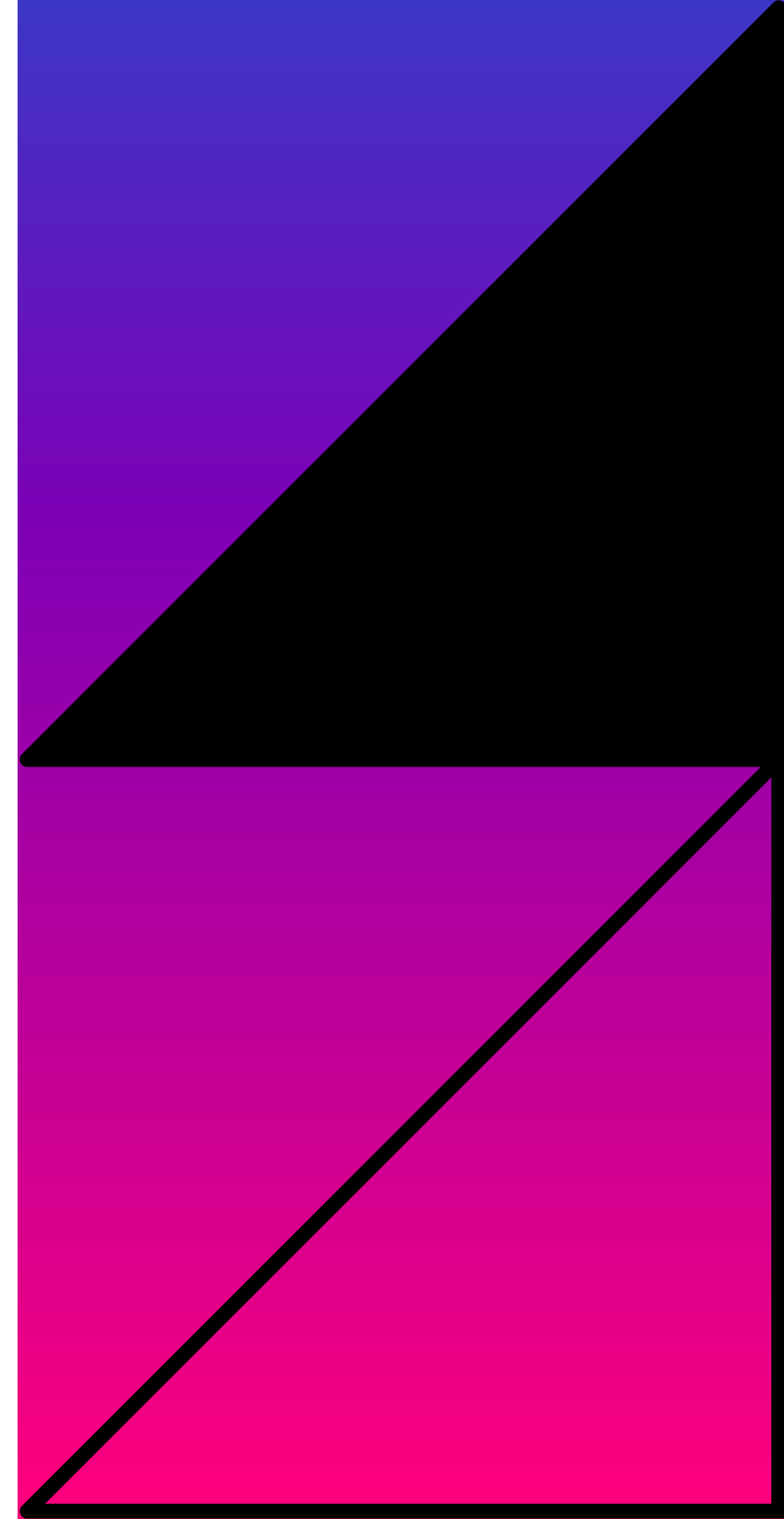


Bitcoin Mining Council, Global Bitcoin Mining Data Review, Q2 2021

<https://bitcoinminingcouncil.com/wp-content/uploads/2021/07/2021.07.01-BMC-Q2-2021-Materials.pdf>

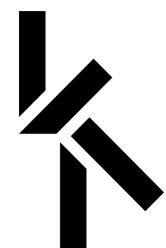
CONCLUSIONS

- >> 1st pillar of sustainability: **human wellbeing**
NFTs help artists monetize and co-create
- >> 2nd pillar of sustainability: **cultural diversity**
NFTs remove the intermediary/traditional gatekeepers
- >> 3rd pillar of sustainability: **environmental protection**
NFTs use of energy has already improved or is about to improve
- >> Bad press about NFTs and their energy use is **misleading**
- >> Ethereum 2.0 will **reduce** its energy use by **99.95%** soon
- >> Other blockchains already use many times less energy



THANK YOU

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KULTŪROS MINISTERIJA

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