Blockchain as a Catalyst for Advancing Sustainable Development Goals (SDGs)

Anisfield School of Business

Shreya Ranjan

Advisor: Dr. Nikhil Varma

What is ESG?

- ESG stands for **Environmental, Social and Governance** factors. It evaluates *how companies manage their impact on these issues.*
- Environmental factors look at how a company manages its **carbon footprint, pollution, waste, efficient use of resources** etc.
- Social factors *examine* how a **company treats stakeholders like employees, communities, customers** with issues like diversity, labor practices etc.
- Governance deals with a **company's leadership, ethics and transparency**. This helps predict future financial performance and risks.
- **ESG** is important as investors/consumers increasingly favor sustainable brands. Good ratings open access to larger ESG investment funds and help attract and retain top talent. It also future-proofs the business from risks like tighter regulations or shifting social trends. Monitoring ESG issues improves a company's overall resilience and license to operate in the long run.

How does ESG contribute to the SDGs?

SDG 9:

- The environmental factors of ESG help in gaining competitive advantage for industries by creating differentiation.
- Prioritizing resource efficiency and cleaner production processes will support ***inclusive and sustainable*** industrialization.
- High standards for social practices like fair wages and worker safety will enable **better talent management** resulting in more *innovation.*
- Strong shared governance will promote higher employee and partner engagement which will **support long term economic growth**.

SDG 11:

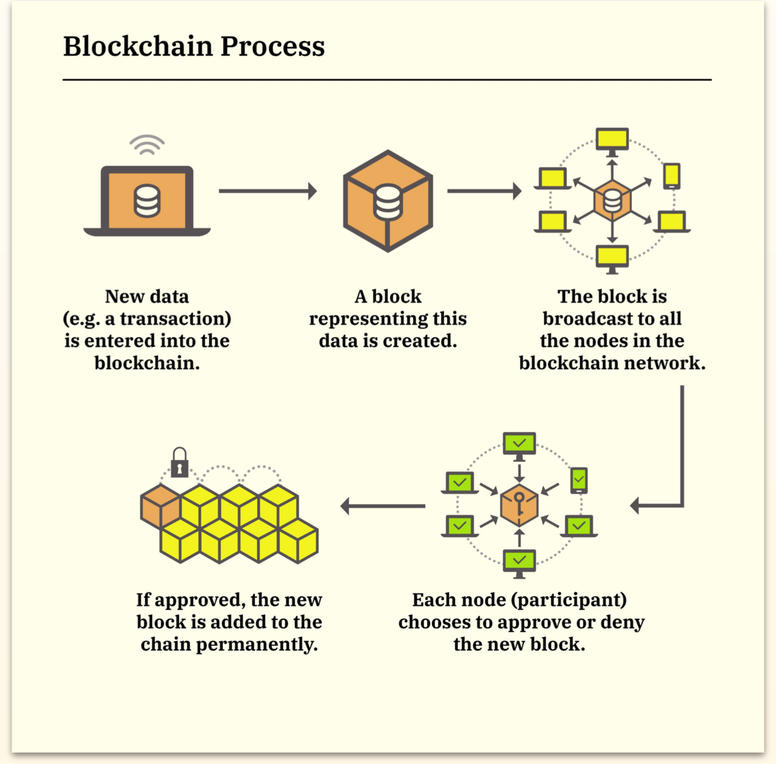
- ESG will promote **cradle to cradle models (ReduceReuseRecycle)** that will contribute to *more sustainable infrastructure.*
- ESG will support social elements like **diversity, inclusion and community engagement** that will help foster *cohesive, safe and resilient societies.*
- Participatory and transparent governance will lead to **more accountability and awareness** in urban planning and development decisions.
- **Sustainable supply chain management** and responsible procurement upheld by ESG will help communities become more *sustainable and inclusive.*

ESG reporting challenges with Web 2.0

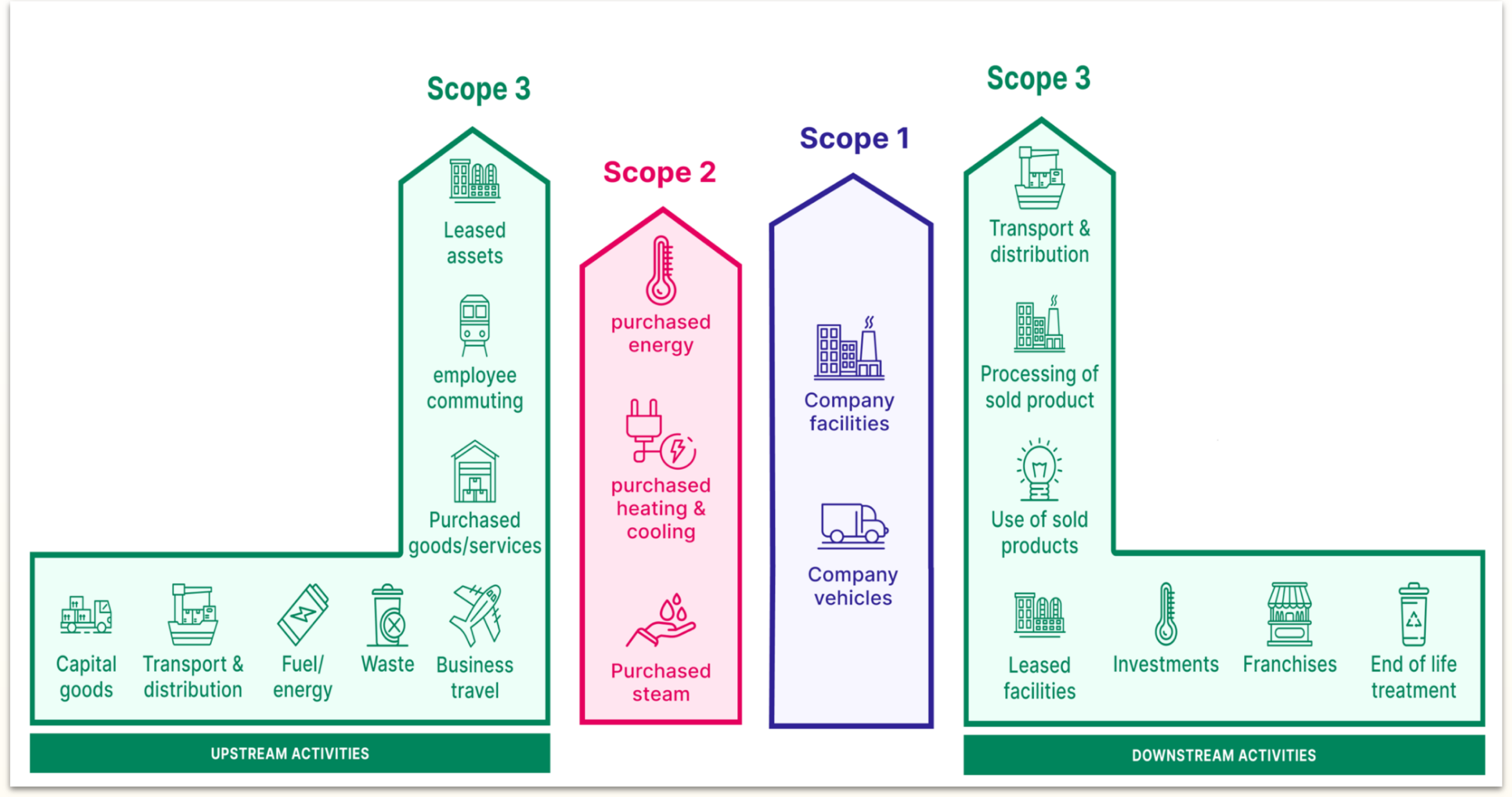
- **Data quality issues** - Manual data collection leaves *room for human error* and inconsistencies over time without automated tracking.
- **Lack of transparency** - Stakeholders have *limited access and visibility* into how metrics are tracked, calculated and validated without distributed ledgers.
- **Manipulation risks** - Offline documentation systems are *vulnerable to tampering* or intentional alterations without immutable time-stamped records.
- **Siloed information** - It's *difficult to obtain a holistic view* when data resides in separate databases under separate organizational controls.
- **High assurance costs** - Traditional audit processes involving paperwork are resource-intensive, requiring *on-site visits and document sampling* to verify accuracy.

What is a Blockchain?

- Imagine a shared spreadsheet (**blockchain**) that is viewed and updated by many people simultaneously. Whenever a change is made, it is visible to everyone right away.
- To make a change to the spreadsheet, you need to prove your identity (**public/private keys**). *This prevents unauthorized changes and helps keep the data secure and accurate.*
- Previous changes to the spreadsheet cannot be erased. While new information can be added, everything that came before is stored permanently in an ever-growing list of "**blocks**".
- Everyone working on the spreadsheet has a complete copy. So there is no single point of failure - if one copy was corrupted, there are many others to check against. This maintains integrity without needing to trust a central party.
- Changes are agreed on *by consensus* between users before being recorded in the shared blockchain. This distributed approach **replaces** *the need for controls by a centralized middleman, lowering costs while* improving transparency and reliability of the shared financial history.



https://money.com/what-is-blockchain/



Benefits of using blockchain technology for ESG reporting

- ***Immutability and transparency*** - Data recorded on the blockchain cannot be altered, ensuring reports *accurately reflect* sustainability performance over time in a transparent way.
- ***Automated tracking*** - Smart contracts can automatically record relevant ESG data like energy usage or emissions directly from IoT sensors, streamlining reporting.
- ***Verified data sources*** - The blockchain verifies the source and timestamp of all reported data, preventing errors or fraudulent changes that undermine credibility.
- ***Cross-organizational collaboration*** - Distributed ledgers *allow* multiple stakeholders across supply chains to collaborate and build consensus on performance metrics fostering cooperation.
- ***Reduction in assurance costs*** - Auditors can directly access authenticated records *reducing paperwork and validation costs* compared to traditional offline documentation systems.

Transforming ESG

- Blockchain allows for transparent, immutable and verifiable tracking of sustainability data across supply chains. All stakeholders can view reporting *in real-time* without risk of data manipulation.
- The distributed nature of blockchain makes data verification more efficient. Auditors can independently verify reporting on the blockchain **without accessing** centralized databases or records.
- With blockchain, standardized ESG frameworks and taxonomies can be coded directly into how data is captured and shared. This drives **consistency in measurement, definitions and disclosure**.
- We call on [organizations, governments] to pilot blockchain pilots for ESG reporting
- Working together, technical and reporting standards can be developed to lay the foundation for widespread adoption.
- Blockchain represents an opportunity to **elevate** *ESG disclosure* and **strengthen** *sustainability* as a core business function.