

VerumCapital

The Blockchain  
Boutique

# Blockchain & Circular Economy

by Verum Capital

November 2020



## Agenda

# 1. Blockchain and the Circular Economy

Closing loops for technical materials.

# 2. A Case Study in Cobalt

The need for recycled materials in the automotive sector.

# 3. How Blockchain can Help

End-to-end traceability for waste management.

## About Me

Co-Founder & CEO  
Verum Capital AG 

Lecturer  
University of St. Gallen 

Guest Lecturer  
Bocconi University 




Exec. Working Group  
World Economic Forum 



Matthias Weissl 




### Education



-  M.Sc. Finance
-  B.A. Economics
-  Cert. Blockchain

### Experience



-  IT/Digital Strategy
-  Financial Services Advisory
-  Strategy Consulting

### Interests



played professionally Basketball,  
Fitness, coach & entrepreneur



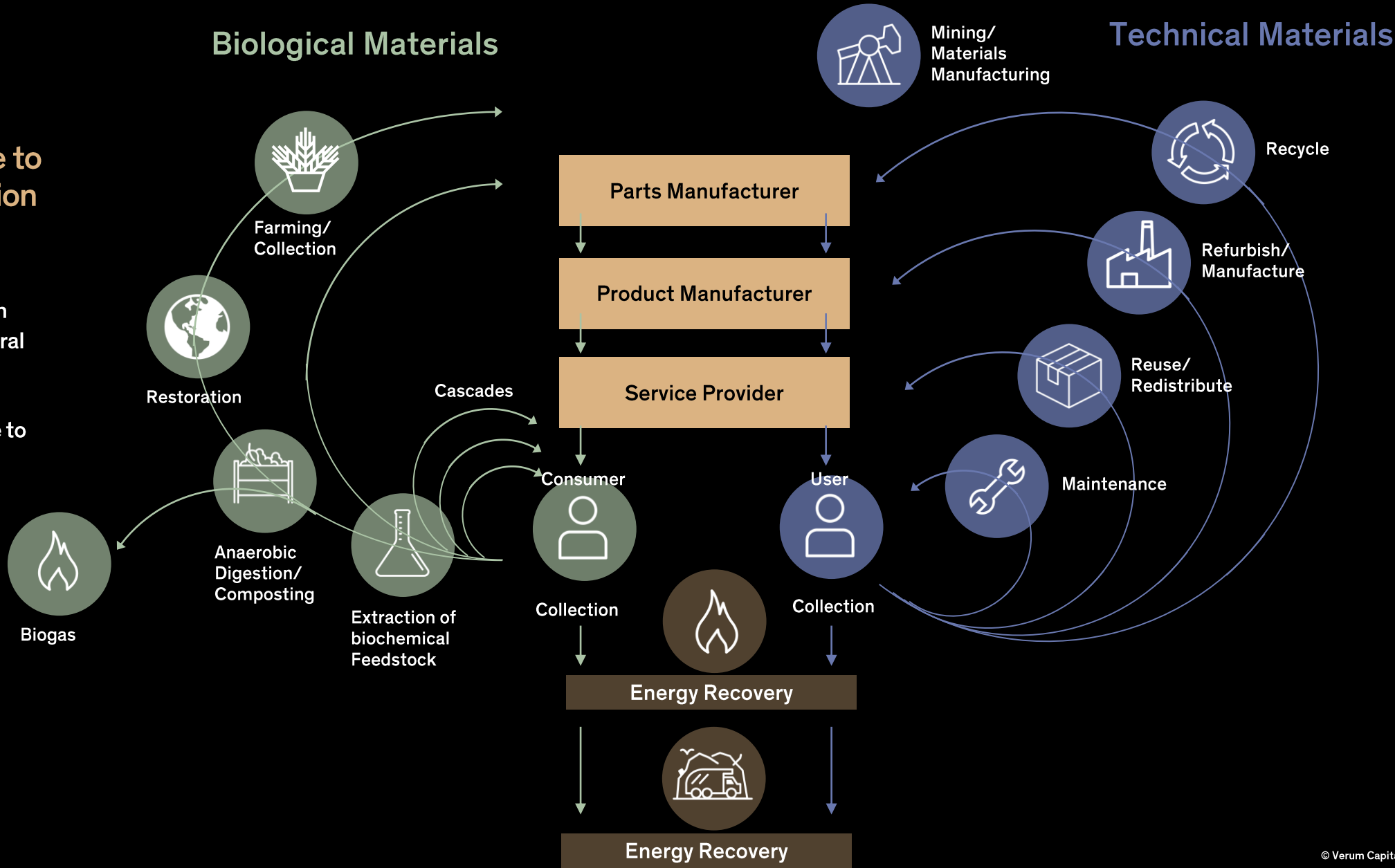
# 1. Blockchain and the Circular Economy

## Closing Loops for Technical Materials



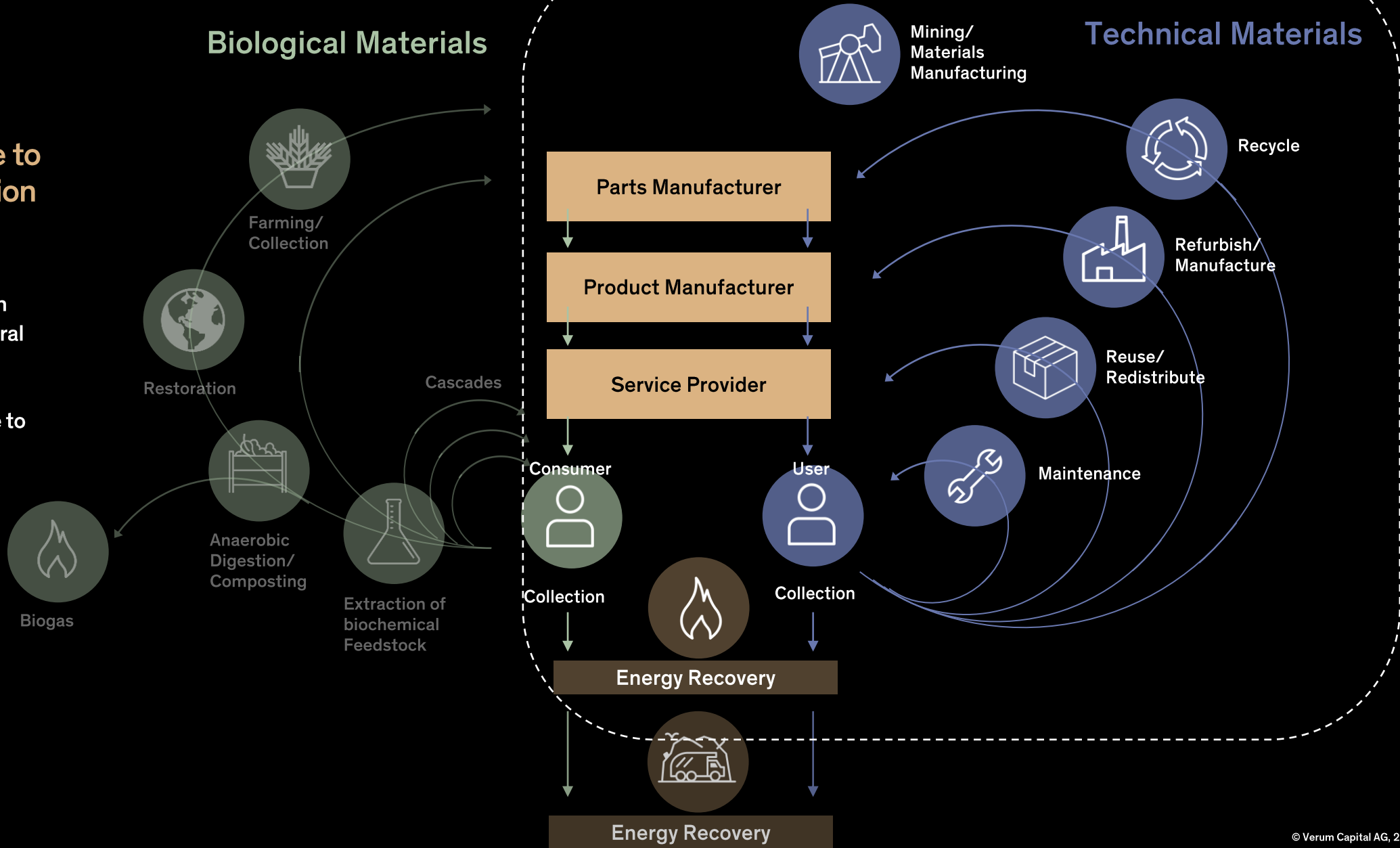
Enabling Cradle to  
Cradle Production  
Flows

The goal: To decouple  
economic growth from  
increasing use of natural  
resources by enabling  
material flows and  
processes from cradle to  
cradle.



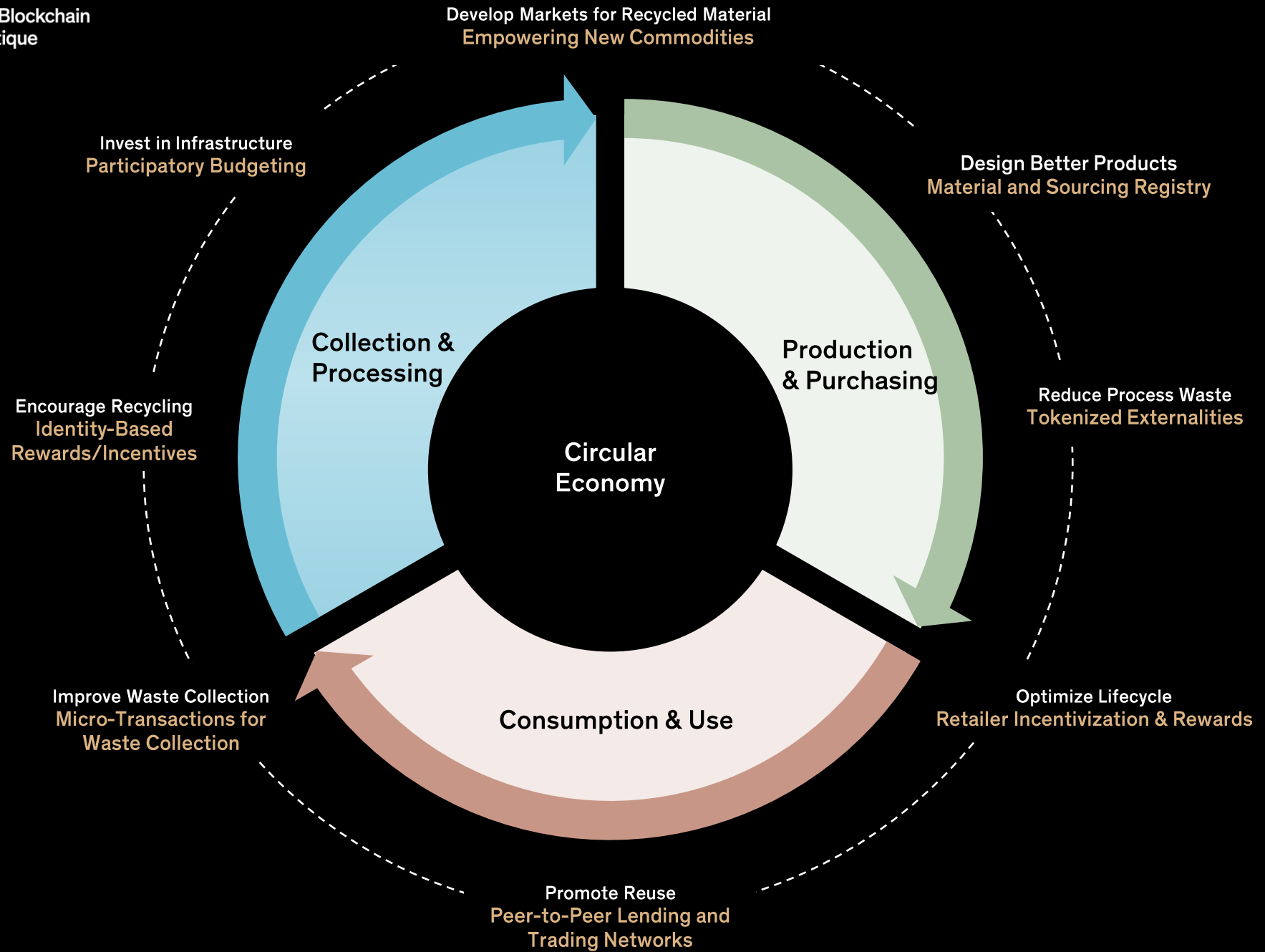
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## Blockchain & the Circular Economy

Verum Capital's overview of Essential Actions and Blockchain Opportunities.



## Blockchain & the Circular Economy

Focusing on  
blockchain's  
ability to  
empower waste  
as a commodity  
at scale to  
support  
production.

Develop Markets for Recycled Material  
Empowering New Commodities

Collection &  
Processing

Production  
& Purchasing





## 2. A Case Study in Cobalt

The need for recycled materials in the automotive sector.



## Consumption and use

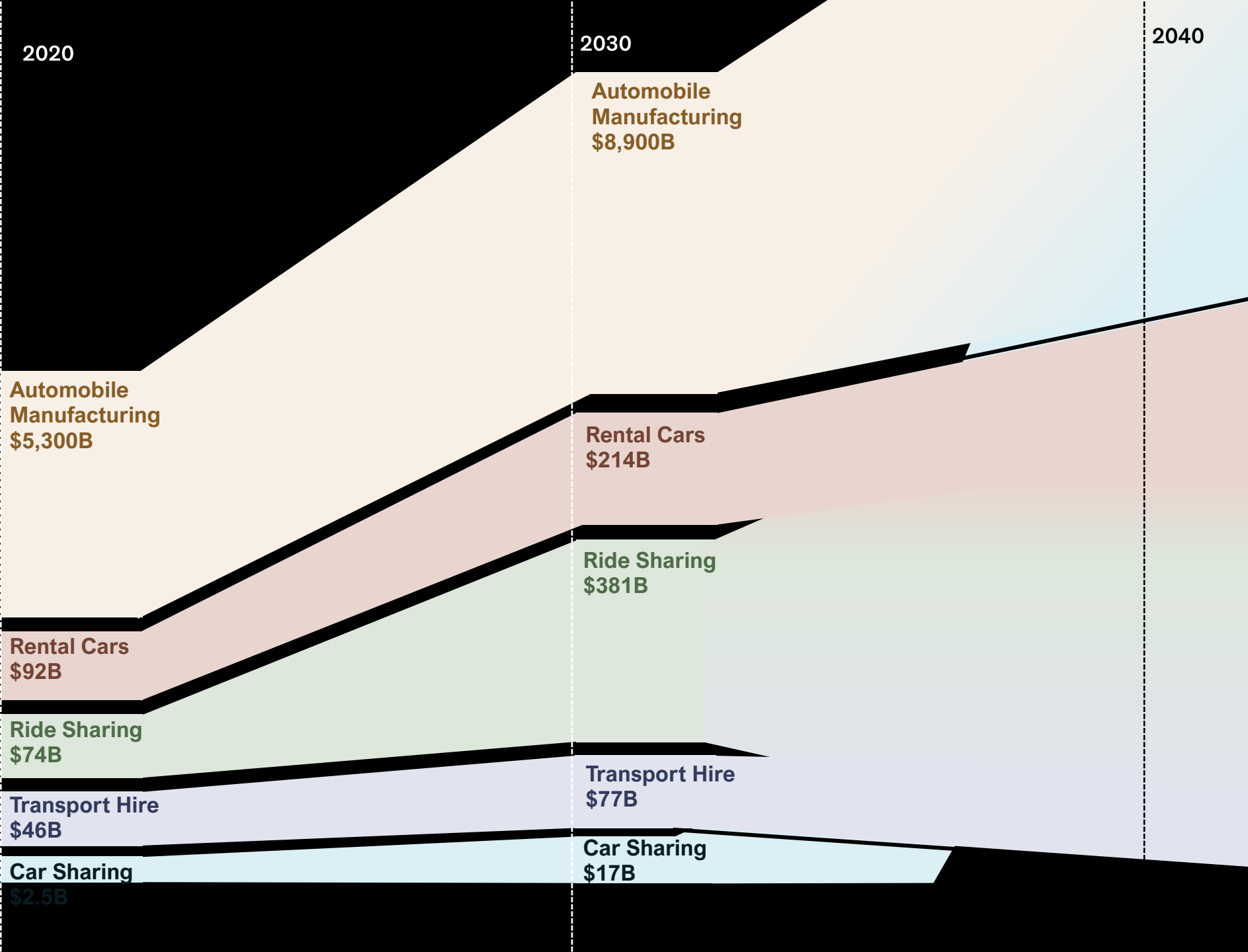
The average car is parked  
90% of the day.

- World Economic Forum





# Growth of the Automotive Sector



Battery Waste  
Produced by  
Electric Vehicles  
Purchased in 2017

250,000 Tonnes

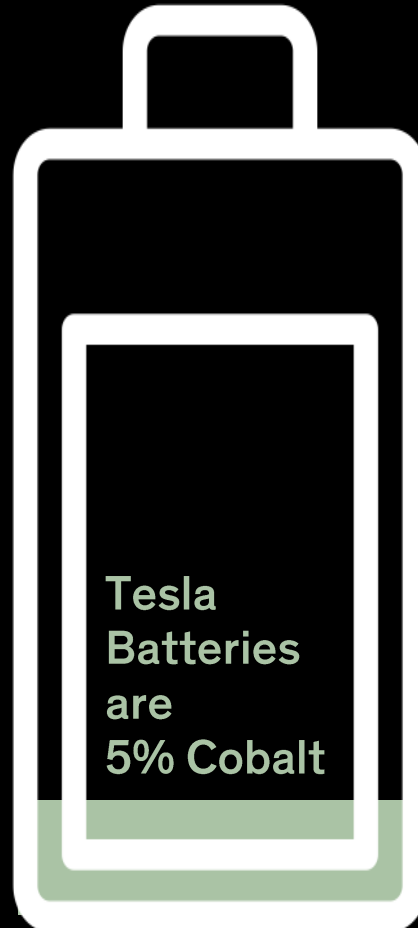
500,000 m<sup>3</sup>



6x  
Royal  
Albert  
Hall



## Mineral demands of Car Manufacturers



100,000  
Tonnes

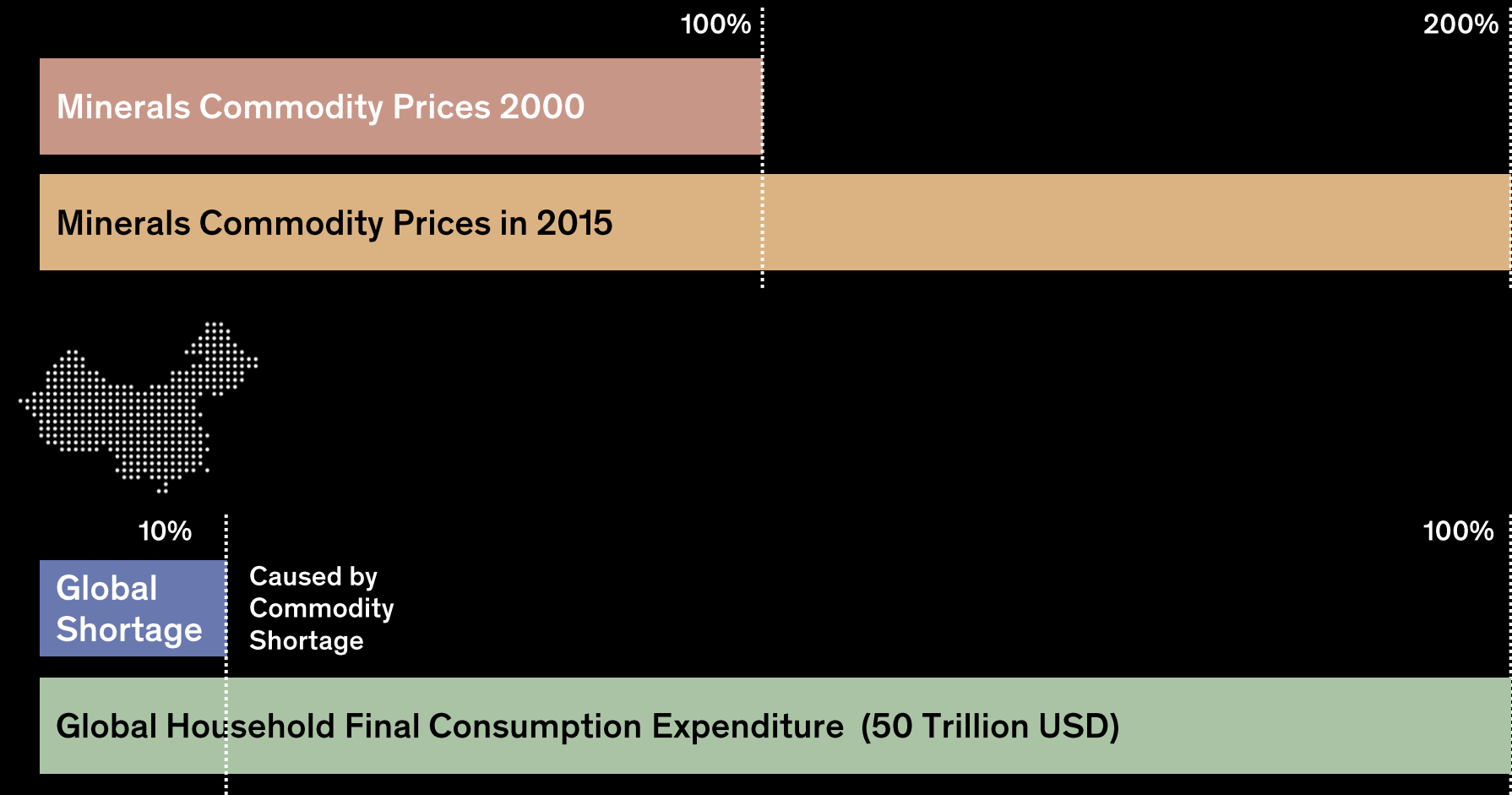
Total Cobalt  
Required by a  
Medium-Sized  
Car Maker in  
2030

**VS.**

100,000  
Tonnes

Global Mining  
Production of  
Cobalt in 2020

A Commodity Shortage is Increasing Costs and will Limit Economic Growth.





How can we keep  
up with the Material  
Requirements for  
Sustainable  
Products?





We Need a  
consistent flow of  
recycled materials  
for manufacturers.





# 3. How Blockchain can Help End to End Traceability for Waste Management

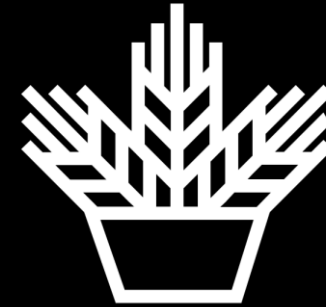


There are two basic  
types of traceability  
when it comes to  
the blockchain

## Tracking Process

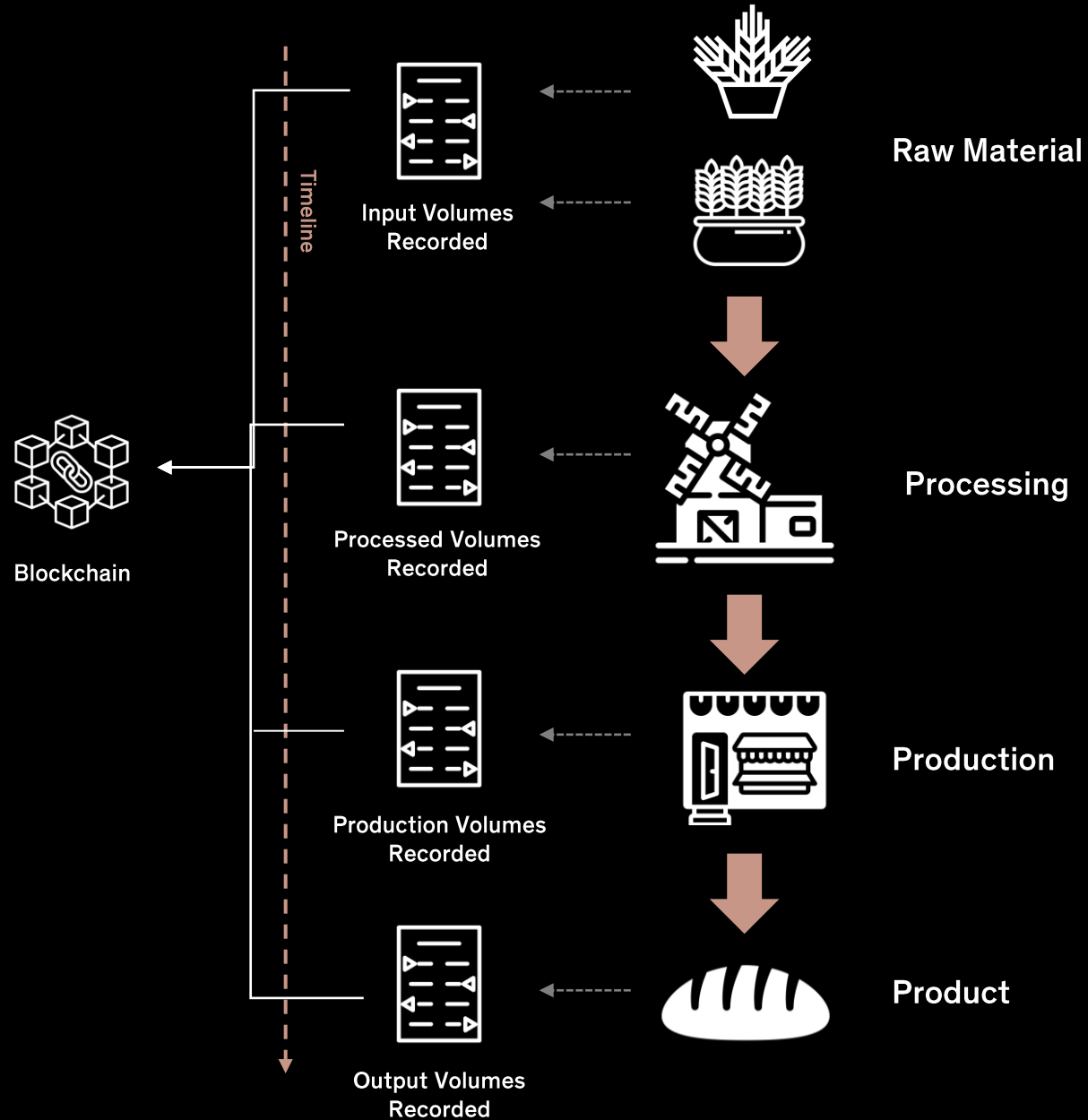


## Tracking Commodity



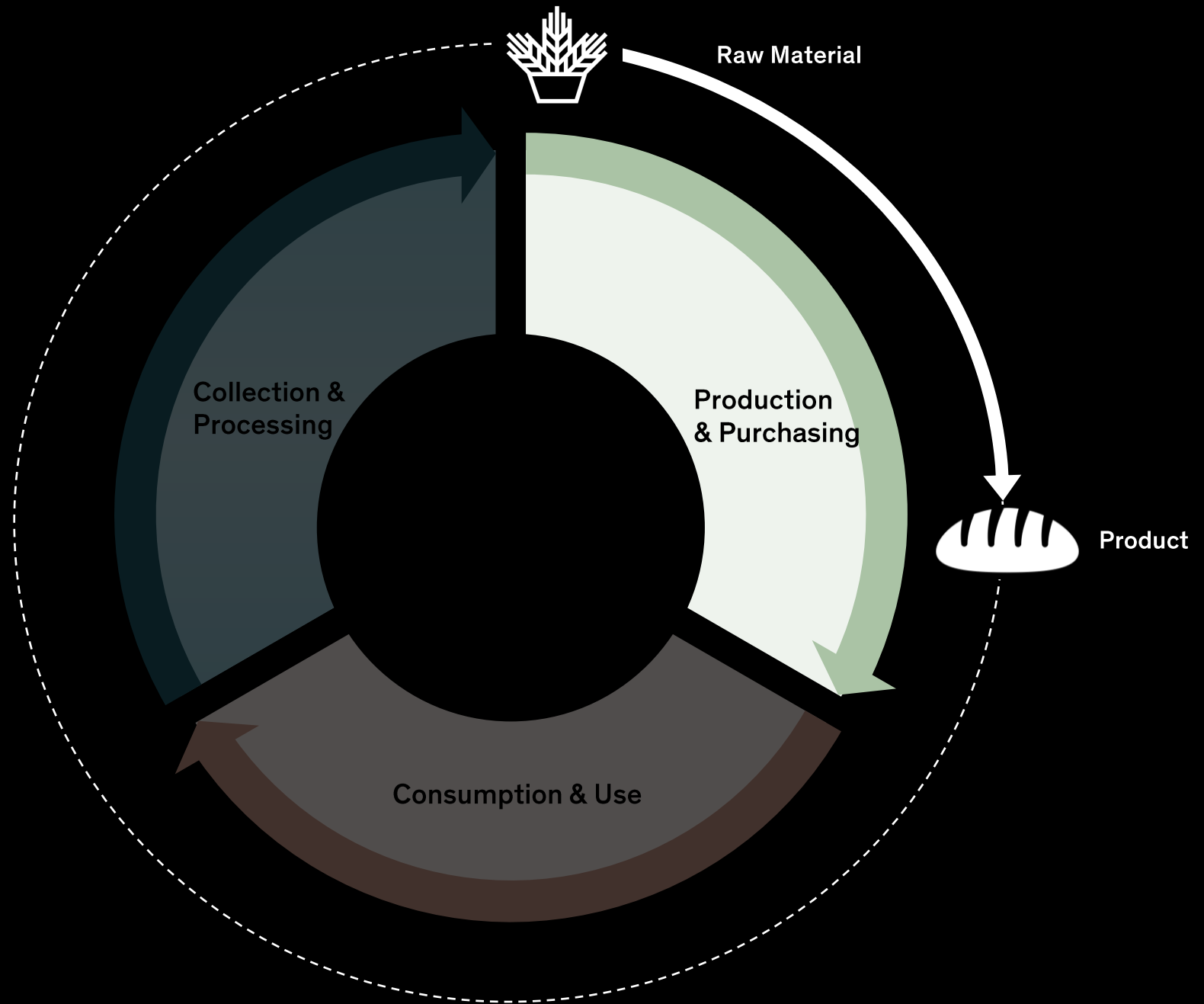
## Tracking Process

- Creating a register that enables the **secure** and **immutable recording** of inputs and outputs
- Allows a stakeholder with oversight to **guarantee source materials** based on confirmed inputs and output volumes
- Requires that conversion volumes are well established



## Tracking Process

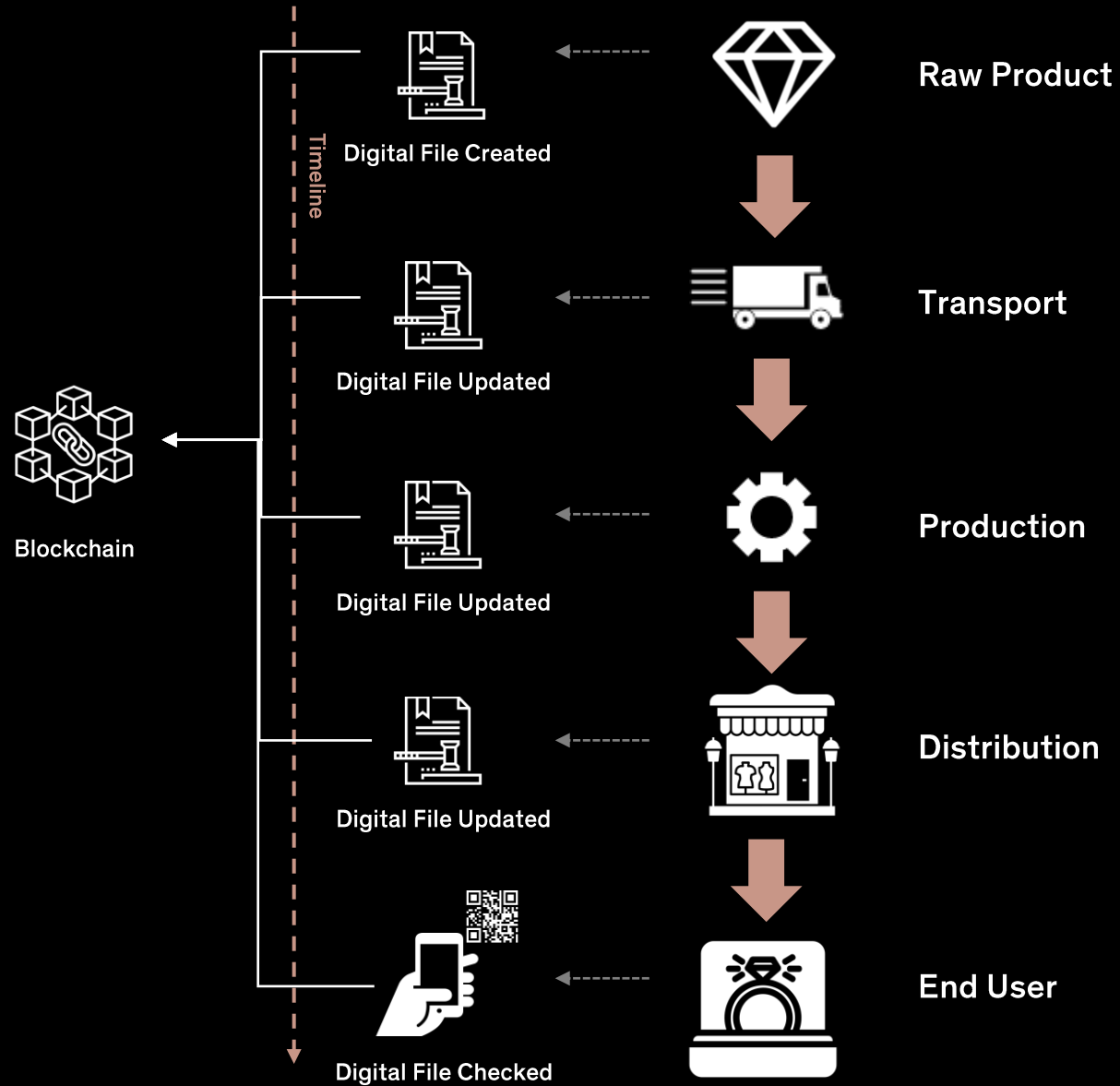
- Only gets us to the product in its finished state.
- Tells us nothing of distribution and consumption.





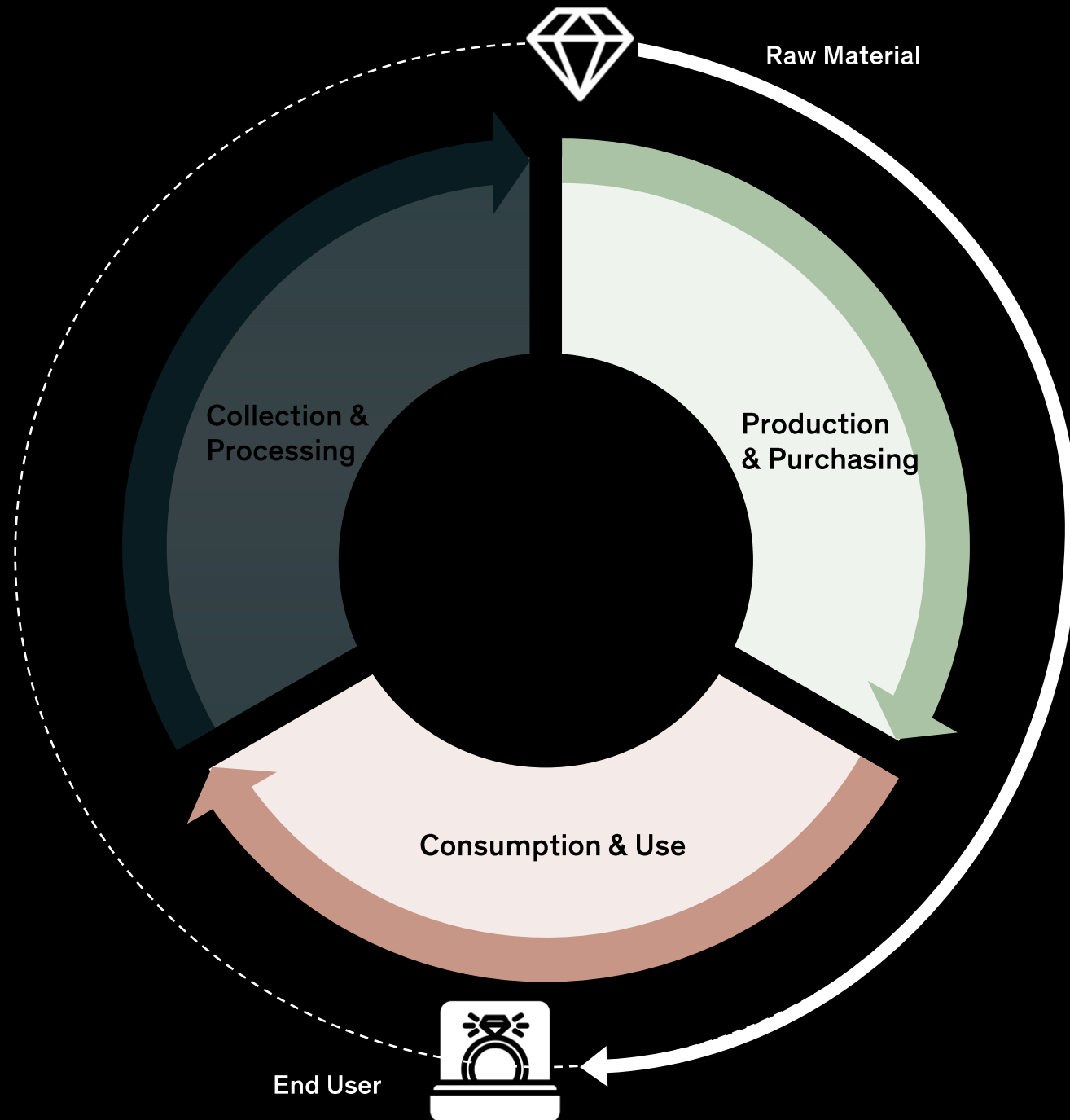
## Tracking Commodity

- Assigning the physical commodity a **digital identity**.
- Adding data as the commodity is processed into a finished good.
- It stops tracking at the end user.

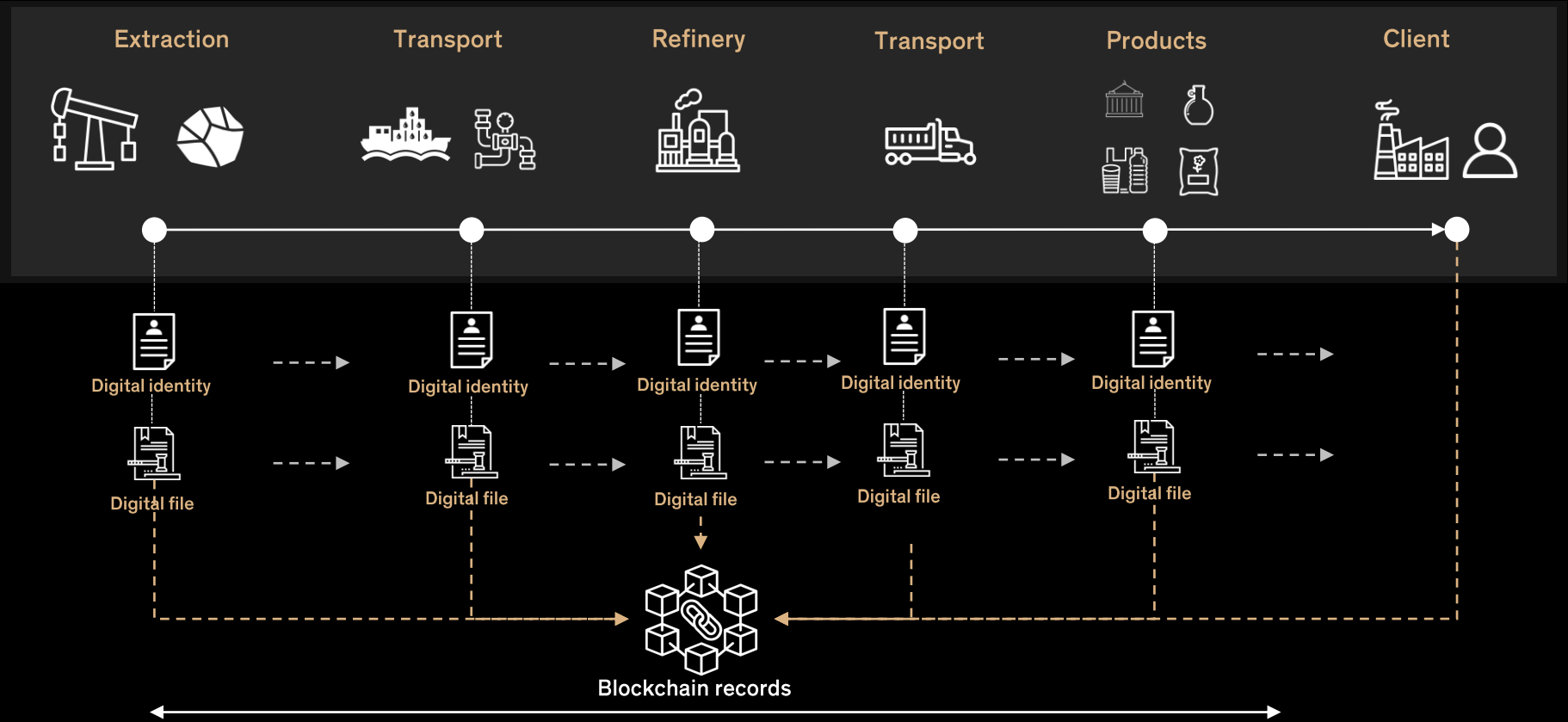


## Tracking Commodity

- Conventional Approaches take us to **the end user**.
- They are beginning to offer applications that support **legitimacy of trading on the secondary market**.



Supplier tracing



Information is accessible in **near real-time** , **immutable** and can be **reconciled** through the entire supply chain by allowed parties.



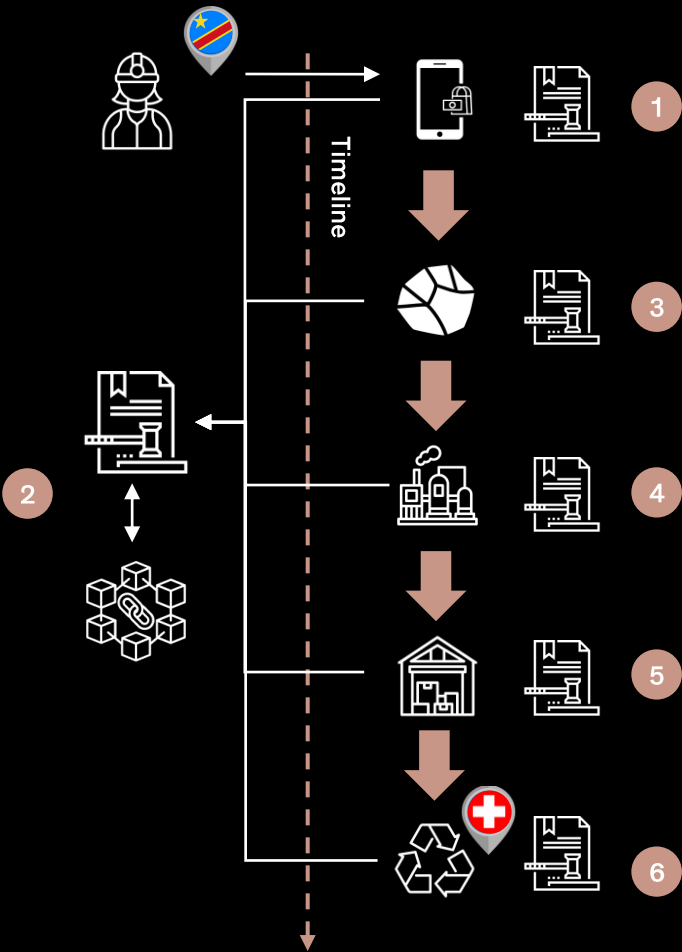
# Tracing Commodity to Close the Loop

ESG risks addressed:

- Supply chain issues
- Human rights abuse, corporate complicity
- Violation of international law
- Impacts of local communities
- Impact on local ecosystems

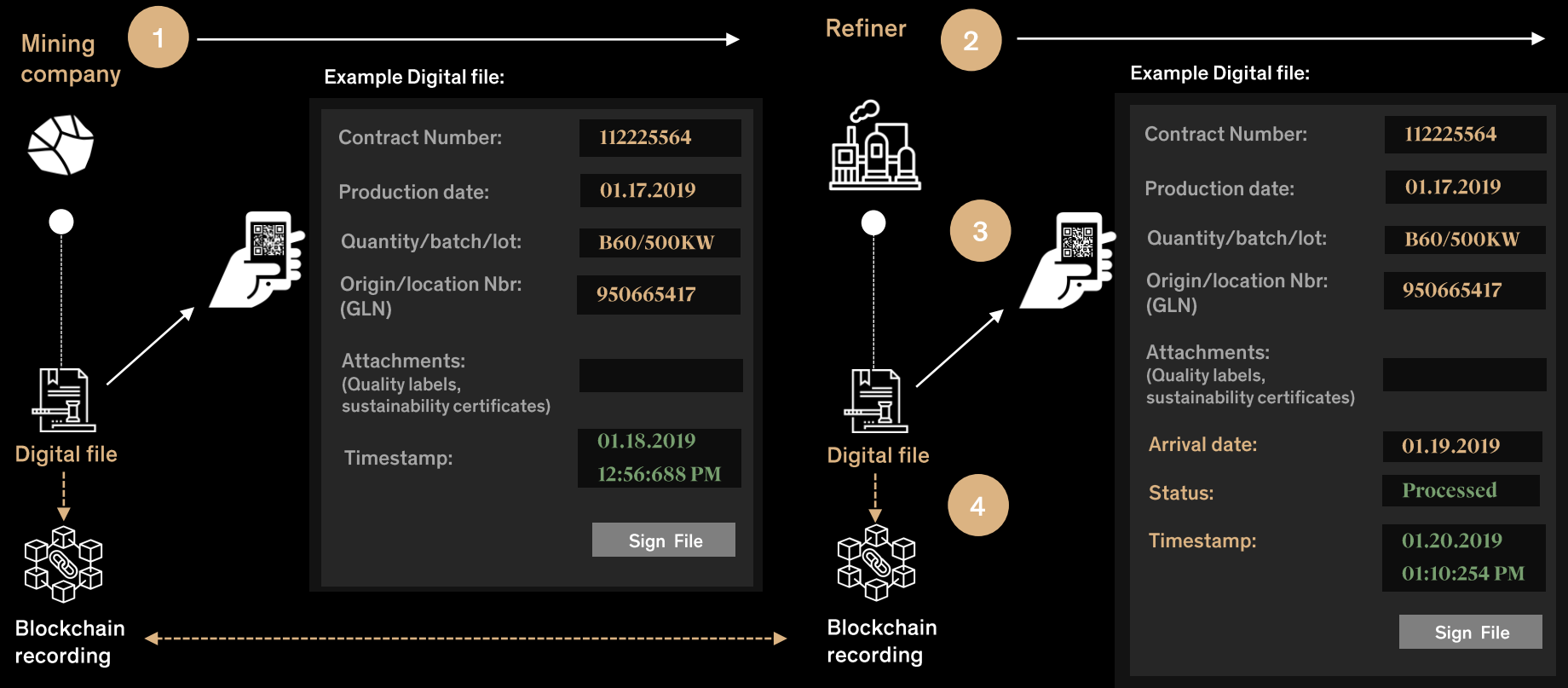
## How it works

- 1 Mining company validates the identities of their employees.
- 2 Encrypted Information is recorded on blockchain. This allows to preserve privacy while allowing to check whether a person is above certain age and, if it is in a particular region.
- 3 Employee data is linked to the mined minerals, thus allowing to benchmark data with market averages.
- 4 Data from refiners is collected and attached to the digital file of the ready-made product.
- 5 Chemicals are stored and all information is attached to the digital file. Part of the products is sold, and part will need to be disposed.
- 6 Information about chemical disposal together with a signature from recycling company is recorded on blockchain.



Tracking

Blockchain traceability solution at each step of the supply chain



Connect the  
physical and the  
digital world

## 3D hologram-based Sticker



## Nano technology

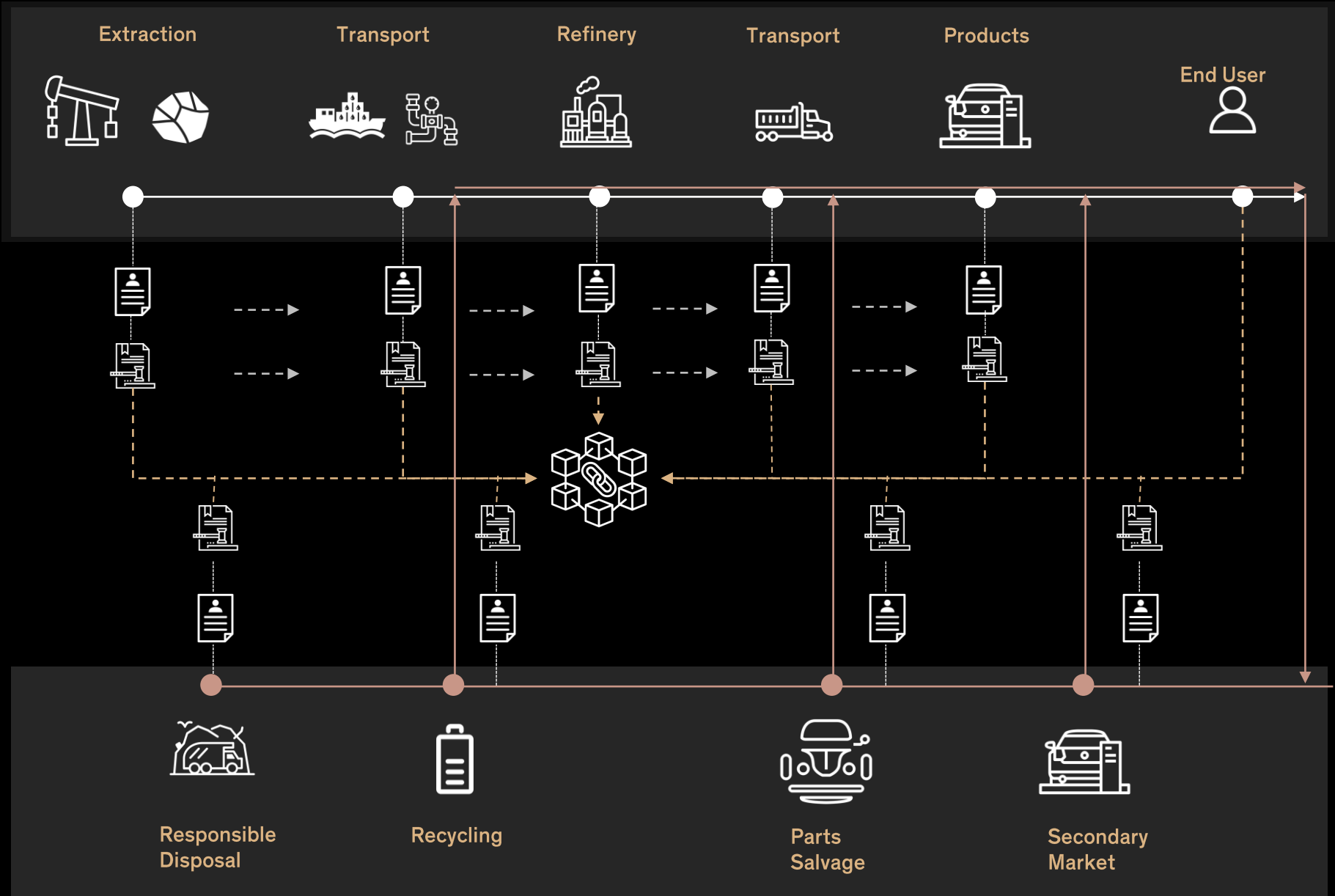


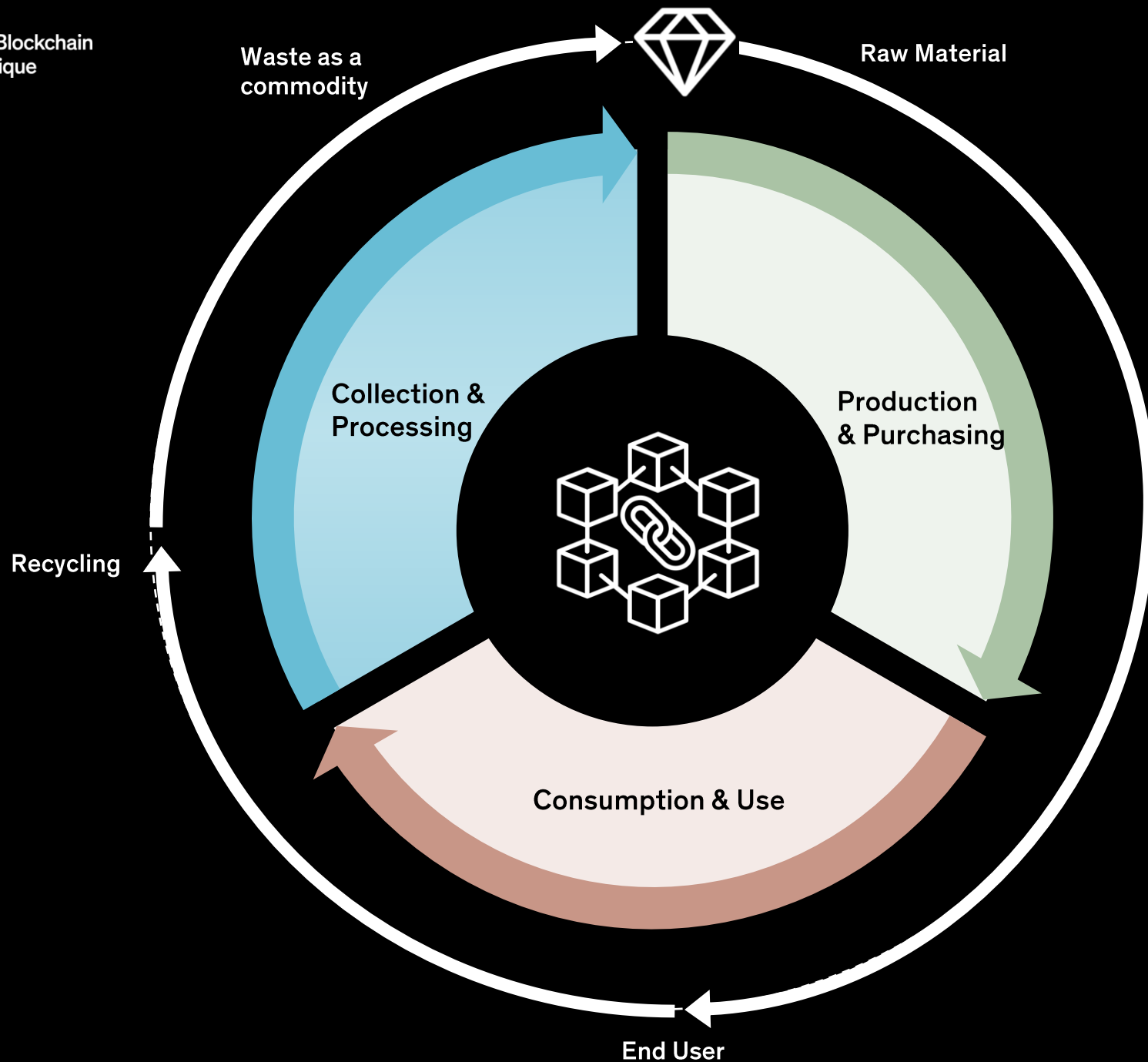
## RFID





Supplier tracing

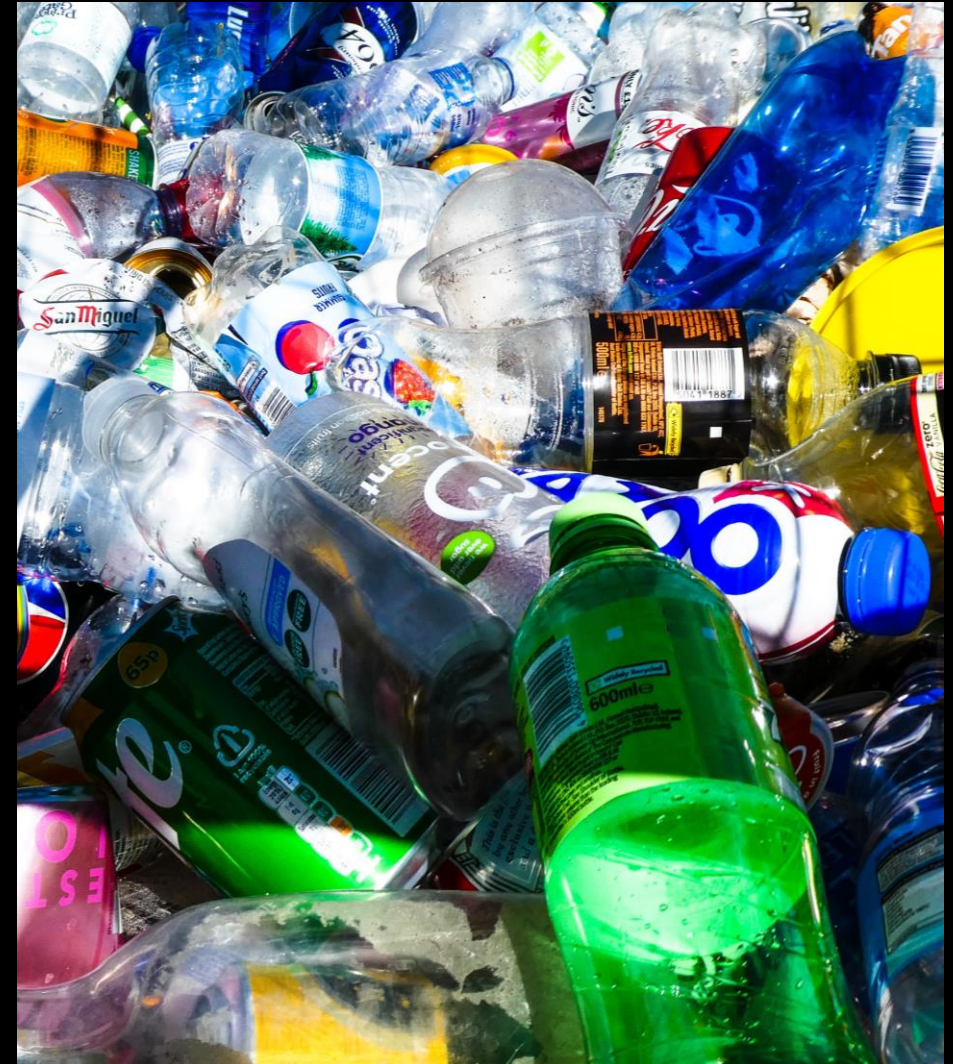




## Close the loop with Blockchain

- By continuing to **trace a commodity** through the **secondary market** and into **collection and processing** we can empower waste as a commodity.
- We can **manage** and even **forecast** reliable flows of recycled material at scale.
- And close the loop with blockchain.

Unlimited  
Opportunities to  
close the loop







**Matthias Weissl**

Co-Founder & CEO

**[weissl@verum.capital](mailto:weissl@verum.capital)**

**Verum Capital AG**

Poststrasse 5-7

8001 Zurich

**[www.verum.capital](http://www.verum.capital)**

**[info@verum.capital](mailto:info@verum.capital)**