BLOCKCHAIN IN FOREST PRODUCTS

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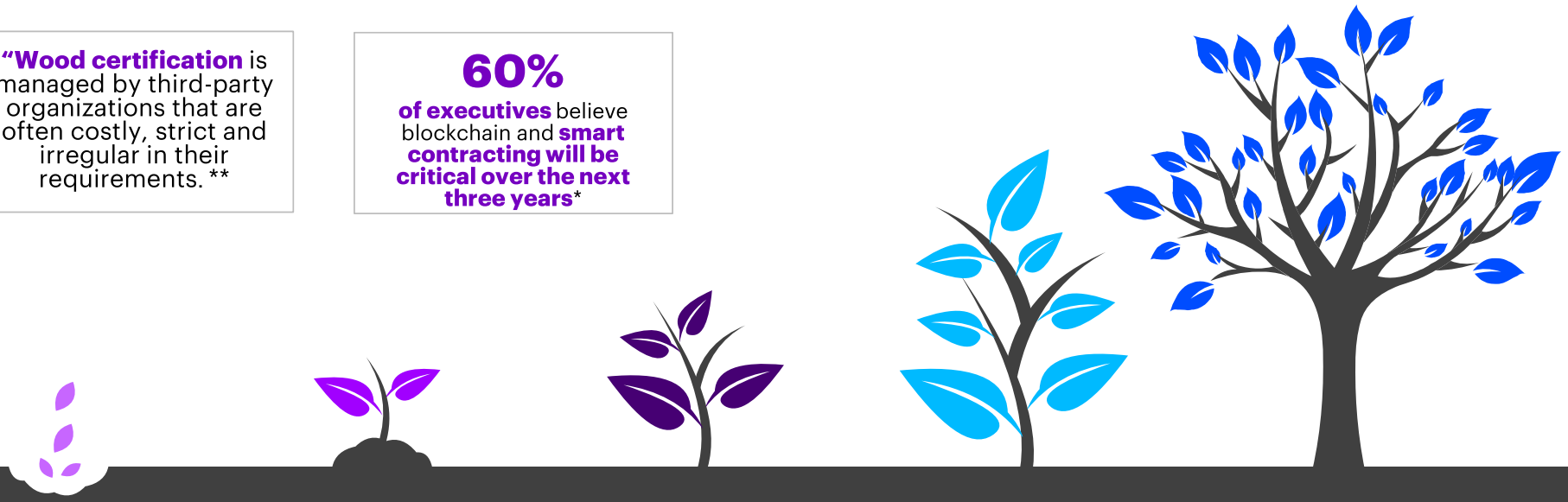
SOCIAL LICENSE TO OPERATE
FROM RISK TO OPPORTUNITY

"Wood certification is managed by third-party organizations that are often costly, strict and irregular in their requirements. **

60%
of executives believe blockchain and **smart contracting will be critical over the next three years***



Can sustainability be a competitive edge?

Will forestry be willing to bring expertise to track & trace

Can consumers connect with producers to collaborate & prioritize opportunities?

Can local communities be engaged to oversee sustainable practices?

Can digitization increase productivity by addressing environmental challenges?

*Source: "Technology Vision 2018: Intelligent Enterprise Unleashed," Accenture, 2018, https://www.accenture.com/us-en/insight-technology-trends-2018
**Source: ohansson, Cristopher. "Barriers to FSC certification for small forest owners in Sweden," Swedish University of Agricultural Sciences, 2018,https://stud.epsilon.slu.se/13485/.

BLOCKCHAIN – ENABLING MULTIPARTY SYSTEMS TO ACCELERATE TRANSFORMATION

WHAT IT IS

Blockchain is a **database system** that **maintains and records data** in a way that allows multiple organizations and individuals to confidentially **share access to the same data in real-time**, while **mitigating concerns around security, privacy and control**.

- Permissionless or permissioned
- Few or unlimited participants
- Secure – append only
- Verifiable data – I see what you see

WHY IT MATTERS

This capability creates whole **new ways of thinking** about how to **transform processes**, **drive resiliency** across complex networks like supply chains, **facilitate trust**, **verify the digital identity** of people and objects, and **build new revenue models.**

- Financial transactions – smart contracts
- Supply chain movements and transparency
- Digital identity

RECENT BLOCKCHAIN ACTIVITY IN FOREST PRODUCTS

"By having transparency into each step of the product's journey, producers and consumers will have peace of mind about the origins of their fiber and richer insight into its journey and compliance inspections," said Alicia Cramer, Senior Vice President with the Endowment. "ForesTrust will be a permissioned blockchain network that provides an efficient way of working across the fiber supply chain for member landowners, harvesters, producers, logistic suppliers, retailers, regulators, and consumers." https://www.usendowment.org/forestrust-llc-and-the-future-of-the-global-wood-supply-chain/

"Traceable and transparent supply chains are integral steppingstones to providing brand owners and consumers with the confidence that their products originate from sustainable and renewable sources of wood, free from deforestation, where biodiversity ais promoted and customary, traditional or civil rights of people are upheld. The platform is unique in the sense that it racks orders as well as shipments (actual material flow) at the same time, thereby eliminating any chance of inconsistent practices in the supply chain. The platform ensues information access only to relevant parties and full details of transparent supply chain is visible to end buyers or brands only." https://www.aninews.in/news/business/birla-cellulose-now-maps-100-forest-sources-on-traceability-platform-greentrack8482202011031715 24/

CHALLENGES IN THE NATURAL RESOURCES INDUSTRY

Where can Blockchain contribute to industry pain points and inefficiencies?

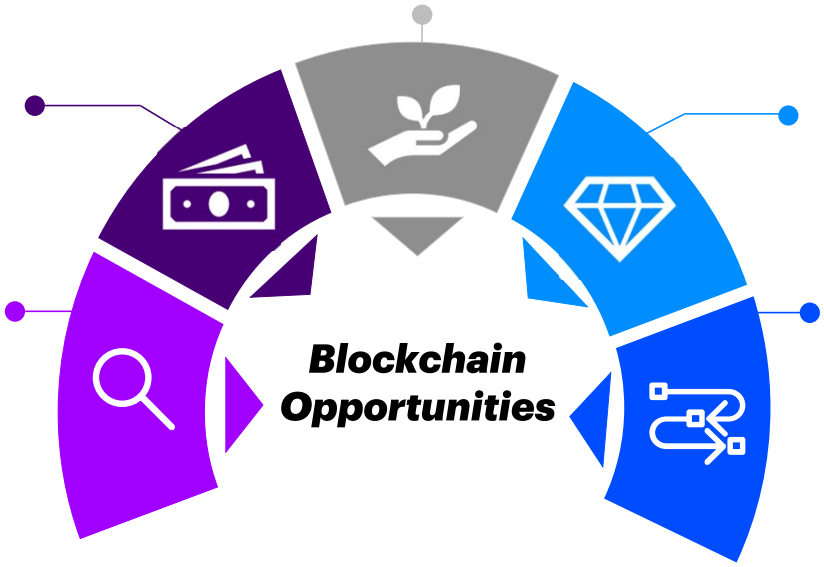
Trading & Finance

Accounting & Audit
- Inefficient outdated paper-based processes
- Complex royalty and mineral rights ownership & payments
- Post trade settlement is manual and complex

Transparency
- Custody documentation delays for cross border trade
- Lack of visibility into supply chain asset management

Responsible Sourcing

Ethics & Sustainability
- Increasing demand for ethically sourced raw materials (direct impact to financial rating and ESG scores)
- Sustainable brand reputation & integrity
- Integrate recycling into product lifecycle



Traceability & Provenance

Authenticity
- True material origin & authenticity difficult to prove
- Risk of data corruption and fraud during custody exchanges
- Guarantee commodity & trading value and eliminate fraud

Traceability
- Lack of asset tracking across parties
- Illegal logging and money laundering
- Visibility into equipment with digital twin (for maintenance usage, origin etc.)

MULTIPARTY SYSTEMS CAPABILITIES

No business has a winning business strategy around "they reconcile data better than anyone else".

Value proposition	Description
Managing supply chains	Remove the need for paper-based, manual, business models. Greater collaboration and more direct data-sharing allows stakeholders to see, agree and act on data together, in real time, so unique digital or physical objects can freely move throughout the supply chain. Secure, remote transactions.
Managing internal processes	Improve internal systems, better manage talent and rapidly onboard new business vendors for your partner networks; reduce overhead costs; and mitigate risk associated with manual, message-based interactions.
Innovating new lines of business	Create new revenue streams and opportunities to engage customers more effectively with hyper-personalized relationships that can be scaled up and down as needed without taking on unnecessary risk.
Increasing Societal Trust	Track and trace products source to confidently report sustainability and ethics practices from woodlot to consumer. Distributed ledgers will be able to track products through RFIDs ensuring different certifications can follow from raw material to product.

TOP USE CASES
BY SUB-INDUSTRY

USE CASES	MINING	METALS	FOREST PRODUCTS	BUILDING MATERIALS
Intelligent Supply Chain / Materials Provenance	✓	✓	✓	✓
Ethical / Responsible Sourcing	✓	✓	✓	✓
Carbon Credits	✓	✓	✓	
Recycling & Waste Credits		✓	✓	
Trade Finance / Trade to Settle (P2P/OTC)	✓	✓		
Autonomous Equipment / Digital Twin & Thread	✓	✓	✓	✓
Connected Worker / Workforce of the Future	✓	✓	✓	✓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