

# Unlock the Value of Data in Your Supply Chain

Combining Development, Human Rights, and Technology for a Unique Solution to Responsible Sourcing from Conflict-Affected and High-Risk Areas

# CONSENSAS



We are combining Consensas' groundbreaking technology with IMPACT's in-depth experience to transform how natural resources are managed in areas where security and human rights are at risk. We are creating a solution that allows companies to confidently source minerals from conflict-affected and high-risk areas, while supporting upstream supply chain actors to progressively meet international market standards.

#### Challenges with Sourcing Minerals in Conflict-Affected and High-Risk Areas

Companies are under increasing regulatory and consumer pressure to address a variety of supply chain risks. This is especially challenging with the extraction of minerals in conflict-affected and high-risk areas. These risks include the potential for conflict financing and corruption, human rights violations, child labour, gender-based violence, and environmental degradation.

Companies need accurate, timely, cost-effective, and secure supply chain data to better monitor, respond to, and mitigate these risks. Companies also want to better understand the broader impacts of their sourcing practices. This data can be hard to come by in conflict-affected and high-risk areas. Online connectivity is often limited, there are few credible sources of information on the ground, data is inadequate, unclear, or out of date, and vital pieces of information and documentation are often missing by the time it reaches the appropriate user. Many upstream supply chain actors have the ability to collect, manage and share supply chain and due diligence data efficiently, but need the capacity building and technical guidance to do so.

#### Combining Development, Human Rights, and Technology for a Unique Solution

To address these challenges, we are bringing together our combined expertise in mineral supply chains, natural resource management, development and human rights, cryptography, and building systems that scale with size, to create an appropriate and long-term solution.

Technology needs to be adapted to the realities of conflict-affected and high-risk areas. Our system is built from the ground up, taking into account the needs of artisanal miners, communities, and governments, ensuring that the solution is appropriate and realistic for upstream actors. Our experience demonstrates that upstream supply chain actors are willing to take the steps necessary to fulfill the traceability and due diligence expectations of the international market, but opportunity and market incentives are required for long-term sustainability.

We also recognize the capacity of upstream supply chain actors—often micro, small, and medium enterprises (MSMEs)—to implement international due diligence guidelines and improve their due diligence capacity over time.

Our solution, to be appropriate and sustainable, requires an approach that:

- encourages upstream actors to formalize;
- engages with all stakeholders and partners;
- identifies the incentives to sustain improved practices for miners and traders in the artisanal mining sector; and
- provides a cost-effective way to share the data along the supply chain.

#### How it Works

Our solution depends on input provided by upstream actors. This data is primarily accessed by mid and downstream actors. All data entries on the platform are digitally signed by the authors, with multiple automated and manual methods to verify its accuracy. The system enables participating actors to input and share validated data, digitally signed by the authors, with multiple automated and manual methods to verify its accuracy. This includes transactional data, such as the quantity and value of the commodity being sold, as well as due diligence and know-your-customer information for example relevant ownership and permitting information. Companies can also access monitoring and evaluation data directly from supply chain actors and the broader community to better understand the impact their sourcing practices are having on individuals and communities. Supply chain entities using the system can set specific permissions to:

- determine what data can be inputted and shared by each user;
- re-publish to Artificial Intelligence (AI) platforms; and
- integrate with SQL databases and publicly to a blockchain.

Monitoring and evaluation, traceability, and transactional data shared through the system follows every commodity as it passes through the supply chain. This enables consumer-facing companies to have an aggregate view of the data they need to determine the origin of the minerals in their product.

#### The Platform

Our system is built on Consensas, a multilingual, inexpensive, scalable technology platform to cryptographically preserve and manage information in the world's most complex supply chains. A unique blend of cryptography and structured data, Consensas is capable of sharing the power of trusted information between stakeholders. Through data harmonization, real-time insights and alerts, it significantly reduces the burden of regulatory compliance and reporting. The platform takes the best of blockchain, uniquely adapting it to work for smaller-scale actors, and in difficult and complex environments, such as conflict-affected and high-risk areas. The platform is designed to support the use of a public blockchain for proof of sequencing and data creation.

#### How Our System Benefits Midstream and Downstream Supply Chain Actors

It allows companies to know where their minerals come from.

It supports due diligence and risk monitoring, including actions taken to mitigate and address risks.

It provides concrete evidence for claims made to consumers.

It enhances and facilitates voluntary and regulatory reporting, such as:

- Section 1502 of the US Dodd-Frank Act;
- EU legislation that will come into force in 2021; and
- OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas.

#### How Our System Benefits Local Miners, Associations, Cooperatives, and their Communities

It increases access to international markets.

It provides an opportunity to improve working conditions and demonstrate this improvement to midstream and downstream companies.

It provides fair compensation for data and information.

It provides the means to invest into alternative sources of livelihoods.

#### **Data Ownership**

Relevant and verified data has value. Individuals and entities in the system control the flow of their own data, and the platform allows users to choose what data they share, with whom, and when.

#### Validation

All entries on the platform are digitally signed by the authors, with multiple automated and manual methods verifying its accuracy. This tracks both the data on the platform and the individual contributor's identity, location, and time. As data moves from one supply chain actor to the next, it is accepted and validated by the actor receiving it—increasing trust in its accuracy. The system can also be adapted to include third party verification by external actors, such as regulators, standards councils, auditors, and others if needed.

#### Blockchain

The platform is designed to support the use of a public blockchain for proof of sequencing and date of creation.

#### **Real-Time Insights**

Our aggregated real-time view of a supply chain offers clients critical reporting functionality and vital insights.

#### Cost

As an in-house solution, it is tailored to work for both large and small-scale sectors, including artisanal mining. We have developed a customizable, affordable, long-term approach for users, with minimal sustaining costs.

#### **Incentive-Based**

Our system incentivizes every actor in a supply chain to participate by assigning data ownership, autonomy, recognition, and sharing the value of data fairly amongst all supply chain actors.

#### Comprehensive

Our system collects transactional data, due diligence information, and monitoring and evaluation data to provide system users a thorough view of their supply chain's broader effects. This includes the full spectrum of development goals such as economic drivers and gender equity, as well as improvements to the individual actors' livelihoods and broader community impacts.

#### **Works Offline**

In environments without stable internet connectivity, Consensas' proprietary cryptographic Internet of Things (IoT) hardware solution stores, shares, manages, and validates data as securely as its online platform.

#### Flexible

Our system allows users to make changes to inputted data, while maintaining chain of custody by tracking changes and their authors. This allows for the correction of legitimate data entry errors, while maintaining a secure record of changes, including who made them and when, and rationale to ensure there is no manipulation of data.

#### Secure & Clean

The Consensas platform is cryptographicallysecure, with all data uploaded receiving some form of counter-party validation. This data is visible on the system in a 'fully structured' format, displaying its origin/elements, which makes it optimized for AI, blockchain and SQL databases.

#### Adaptable

All data uploaded is portable, offering clients the opportunity to transfer it to any existing or new system at any time. Clients determine each actors access and inputs.

#### Scalable

The system is built for small and large companies, allowing for a limitless number of users and data fields.

# Sustainable and Scalable

We believe that sustainable and scalable solutions require commodity-agnostic tools that adapt to different supply chain complexities and challenges. Siloed, single-commodity approaches are more expensive for all and decrease efficiency for companies tracking their materials and carrying out due diligence.

The Consensas platform is built to collect and harmonize data from various supply chains, allowing companies to acquire a complete and holistic picture of what is in their products. It is currently being implemented in the context of the artisanal gold supply chain in Democratic Republic of Congo (DRC). Because the platform is scalable and can accommodate numerous supply chains from multiple sites around the globe, it also makes analyzing and using the data more efficient, saving everyone time and money.



A miner participating in the Just Gold project in Democratic Republic of Congo sells traceable, legal, and, conflict-free gold to the participating trader. Transaction details, including identities of the miner and trader (pictured left), and the pit where the gold was mined are uploaded into the Just Gold traceability and due diligence system, powered by Consensas.

# Redistributing the Value of Data

To incentivize upstream supply chain actors to use a traceability and due diligence system, they must benefit from the system. We are exploring new models for unlocking the value of traceability, due diligence, and impact data for mid and downstream companies and redistributing it to upstream supply chain actors as an incentive to continue to use the system and to make improvements to their mining or businesses. Given that each company and supply chain is unique, we believe that there are different options for doing this equitably, including:

- 1. Retroactive Payments: Because the system tracks all actors in the supply chain, downstream companies can make retroactive payments to individuals for the provision of data.
- **2. Data Fee:** Companies may apply a data fee along the supply chain, which is paid to individuals for their provision of data.
- **3. Community Investments:** Companies may choose to use the system and become informed by monitoring and evaluation data to make targeted community investments addressing specific challenges.
- 4. Reducing Inefficiencies: In some contexts, data can be a driver for identifying supply chain inefficiencies that can lead to retaining more value in the upstream supply chain. For example, in the Just Gold project, assay data demonstrated that there was a significant portion of silver contained in the gold which was not being recognized in the upstream part of the supply chain. Identifying these inefficiencies and ensuring upstream actors are benefitting from addressing them can serve as additional incentives.

We can work with upstream and downstream supply chain actors to determine the most effective and appropriate methods for redistributing value along the supply chain.

#### **Case Study:**

#### Bringing Legal, Traceable, and Conflict-Free Artisanal Gold from Democratic Republic of Congo to International Markets

IMPACT's Just Gold project is the first to successfully bring traceable, legal, and conflict-free artisanal gold from Democratic Republic of Congo to the international market.

Through the project, IMPACT creates incentives for artisanal gold miners to channel their product to legal exporters—and eventually responsible consumers. Over 1,000 miners across six mine sites in Mambasa Territory in Ituri Province have sold their fully traceable gold to a verified exporter in northeastern Democratic Republic of Congo.

The Just Gold traceability and due diligence system provides the data for traceability, due diligence, and monitors the impact of the project at the community level. IMPACT designed this system in the field and has merged this system onto the Consensas platform. IMPACT is supporting the local mining cooperative in Mambasa to use and implement the traceability and due diligence system.

A Canadian-based jeweller sourcing gold from the Just Gold project accesses key data to determine the gold's origin, its conflict-free status, and its alignment with the company's commitment to ethical jewellery for their clients. This includes chain of custody and due diligence data.

Additionally, impact data collected along the supply chain by IMPACT, allows the jeweller to understand how the Just Gold project is affecting the local community. Together, by analyzing how sourcing practices are impacting both women and men, IMPACT can develop more targeted and innovative approaches to support these local actors and communities in equitable peace and development.



The Manager of the Just Gold project's Model Trading House (pictured right) reviews transaction history and production levels at mine site pits with a participating trader (left). This is one of the manual methods the data is verified for accuracy in the Just Gold traceability system, powered by Consensas.

# Examples of How a Jeweller Uses Data from the Just Gold Project

#### **Regulatory Reporting:**

The data in the system provides information on the project's participating mine sites, along with accompanying documents that demonstrate they have been validated by government authorities as conflict-free.

#### **Guarantee of Origin:**

The data in the system provides information of the identities of the more than 1,000 miners who have sold gold through the Just Gold project and the mine site pit where it was mined.

#### Transaction Record-Keeping:

The data in the system provides the record of each transaction between the miner and trader, trader and exporter, and exporter and jeweller.

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#### **Risk Monitoring:**

The data in the system provides information on any security incidences in and around the mining community, as well as along the transportation route. It also provides documentation from third party sources on the security situation in the area.

#### **Consumer Profiles:**

The data in the system shows that consumers buying gold from the Just Gold project are purchasing engagement rings and the majority regularly choose ethical products.

#### Supporting Women's Empowerment Projects:

The data in the system shows that almost all women miners in the project believe they have the same capabilities as their male colleagues, but only 70 percent believe they are paid equally for the same work, identifying possible needs of the community that can be addressed through targeted and innovative projects supporting equitable development.

Cover Photo: Artisanal gold from the Just Gold project in Democratic Republic of Congo is weighed during a transaction. The full details of the gold's weight, value, origin, and sale price are entered into the Just Gold traceability and due diligence system, powered by Consensas.

Photo Credits: Sven Torfinn/IMPACT

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IMPACT transforms how natural resources are managed in areas where security and human rights are at risk. We investigate and develop approaches for natural resources to improve security, development, and equality. We are an independent non-profit collaborating with local partners for lasting change. IMPACT is based in Canada, with offices in Democratic Republic of Congo and Uganda.

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### CONSENSAS

The Consensas platform uses a unique blend of cryptography and structured data to validate information in the world's most complex supply chains. It was designed to bring inexpensive solutions to share the power of information between stakeholders, which significantly reduces compliance burdens and inequality. Consensas believes that technology can rebalance supply chains, and that data is a resource that can create new value — not cost organizations additional premiums.

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