

The Joy of Accounting

...could scale carbon 100x and help save the planet

1. What caused 412 PPM CO₂^e
2. Also missing from the fight?

Companies?

Govt?

- Economic Value add =
- Energy add =
- CO2e add
- Economic Value add is **visible**.
Price tags, accounting systems,
tax

Green is a color not a fact.

- “Green” companies don’t mean much to consumers.
- Increasingly bogus claims, soft frameworks
- Paralyzes good actors & provides/ refuge to bad actors.

Even Cats are beating
the VCM...that may be
a good thing.



Cats

Voluntary Carbon

Emissions/yr 100 million mt

95 million mt

Economics/yr \$32/bn

\$1bn

1. How we do fix ? “green” & no consumer problems?
2. **Make CO₂^e visible at point of purchase** for companies, governments and consumers.
3. **Accounting & Attested Label heroes** to the rescue

Lisa De Marco

Lisa is a **global expert in climate and energy law**. She has over 25 years of experience in all aspects of climate change and clean energy. Lisa assists financial and energy companies and Indigenous business organizations on domestic and overseas renewable power project development, energy storage projects, sustainable and climate finance transactions, carbon capture and storage, **climate-related financial disclosure, corporate climate risk, environmental and social governance (ESG), green bonds and sustainable business strategy**. Lisa plays an active role for Fortune 500 companies in corporate ESG, climate change, and transition strategy, target setting and compliance. She also represents several governments and leading energy companies in a wide variety of natural gas, power, pipeline and energy storage matters before the Ontario and National Energy Boards. Lisa is a director of the boards of the Advanced Energy Centre at MaRS, Radicle Inc., the consultation group of the **Carney Task Force on Scaling Voluntary Carbon Markets**, and is the vice chair of the **International Emissions Trading Association**. Lisa is ranked by Chambers Global as one of the world's leading climate change lawyers and regularly attends the United Nations climate negotiations.

Attestations/labels
(getting safe buyer/sell
finish lines)

Katherine Foster

Katherine is the Community Director of the Open Earth Foundation (USA), the Social Alpha Foundation Fellow, a lead author of the UN Task Force Dialogue on Digital Currency and BigFintechs Impacts on Sustainable Development, an advisor to the UNFCC Global Innovation Hub and a member of the BIS Project Genesis and of the ESMA FISC Working Group. A former Diplomat specializing in International Trade, Climate Change and Human Security, she has been spearheading innovation at the nexus of technology, policy, climate change and sustainable development for over 25 years. Katherine was part of the team that established the first microfinance bank in Namibia as well as the Swiss Capacity Building Facility, a non-profit established in 2011 by FIDES, the Swiss Agency for Development and Cooperation, Zurich Insurance Company, Credit Suisse and additional partners, to assist financial institutions in significantly scaling up their outreach to BOP in developing countries.

She went on to serve in leadership roles with the EU Climate-KIC, the MIT Solve Startup BLOC, Fintech4Good and the Green Digital Finance Alliance (UNEP – Ant Financial NGO) including as Sherpa to the UN Secretary General Task Force on Digital Finance for the SDGs. Katherine has been an active contributor to international initiatives including the Blockchain Ethics Framework, the World Bank Blockchain Carbon Markets Pilot and the UNDP Accelerate 2030. Katherine is Canadian-Métis originally from Northern Ontario and Swiss. She holds degrees in geography from McGill, Western and the University of Edinburgh.

Stories from the supply
chain reality and
technology world



Make emissions visible

Nick Gogerty: MD

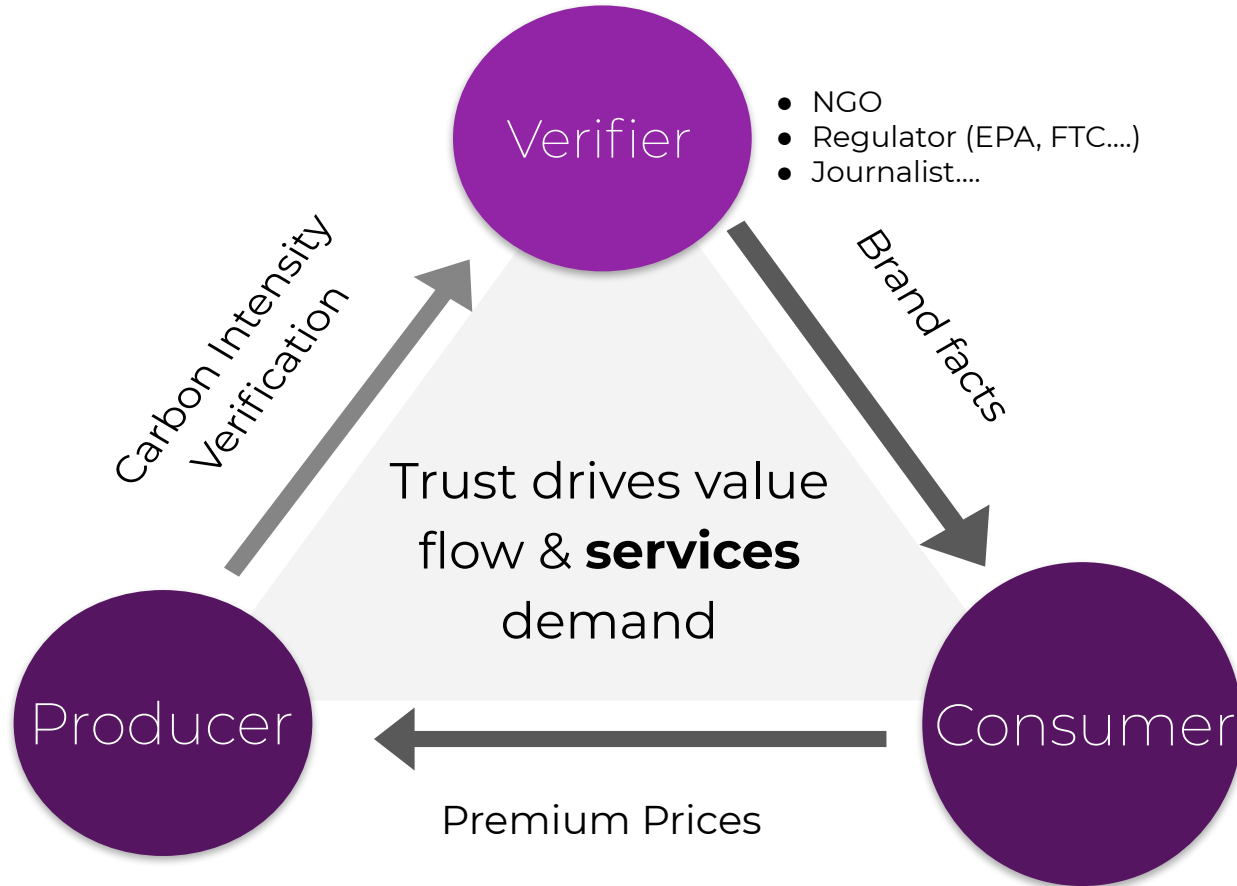


LQW CARBON
VENTURES



Carbon Finance Labs

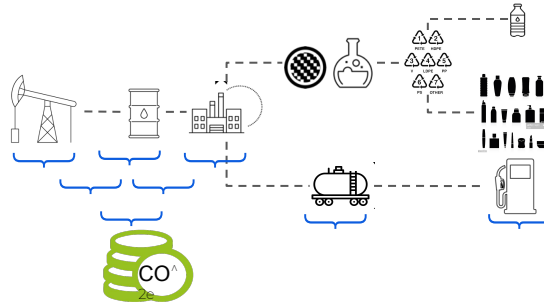
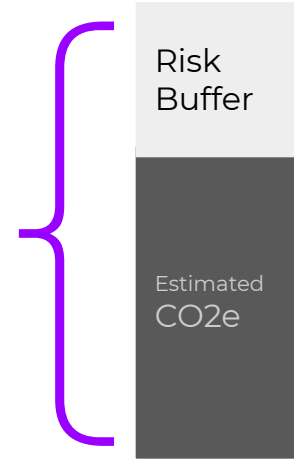
Brand trust triangle



Carbonsig defensible transparent **facts**

1. Who created it
2. When & where created
3. Where it travelled
4. Carbon intensity across supply chain

Bonus: Bundled/tied to a carbon offset




A negative CO2e ingot into a zero CO2e Can



CarbonSig generated at 8/23/21 12:34 UTC
Receipt confirmed 8/22/21 12:34 UTC
Lot# 45-thefoi-345
Confirm at www.carbonsig.com

Toycu, Inc.
ID# kh234yh423234
Utrecht, Netherlands
+31 6548-154-123

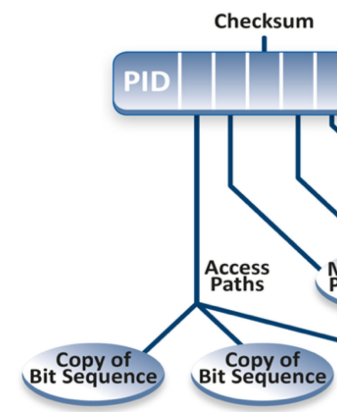


CarbonSig chain of custody report

500,000 kg CO2e offset Niokolo Koba REDD+
VCS, 2017 vintage
Retired Jan 21, 2021 by Occidental Ltd. Climate Action Reserve

Naphtha refining
5,345,335 kg
1,817,412 kg CO2e created
0.34 kg CO2e / kg
Naphtha from crude oil, light sweet, API 40
Occidental Ltd.
q1 2021 permian field 1 SW pump 512
Jan 20, 2021
0.35 kg CO2e / kg
Life Cycle Analysis, ISO 14644
Third-party Verified

1,500,000 kg CO2e offset
Haber-Bosch process
320,754 kg
658,060 kg CO2e added
2.05 kg CO2e / kg
Steam Cracking
5,345,336 kg
7,691,121 kg CO2e added
1.44 kg CO2e / kg

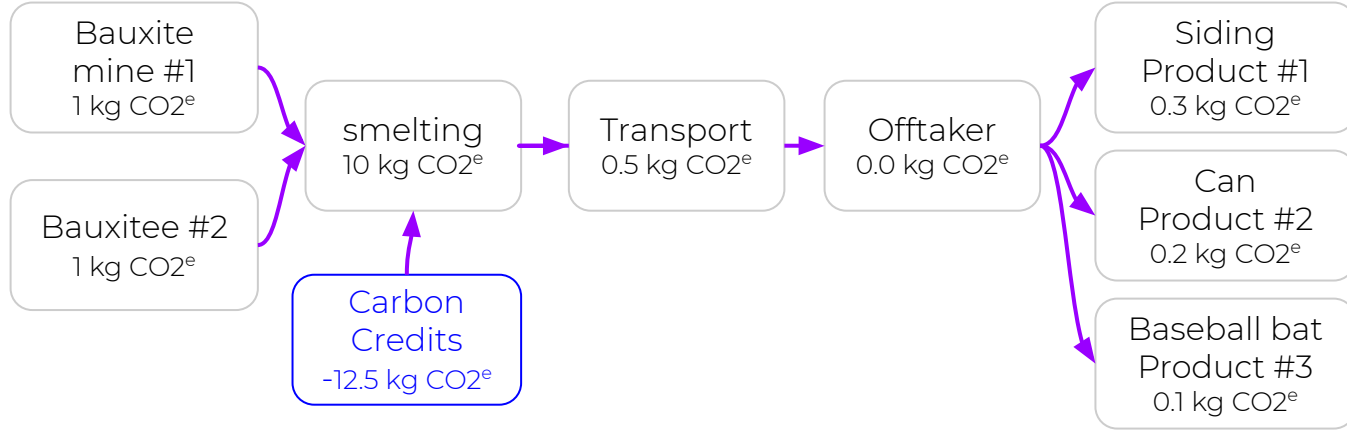


Report ID 45-thefoi-345. Carbon attestation document and methodology is available on CarbonSig, as provided by manufacturer. CarbonSig assumes no legal liability over the accuracy of claims made on its platform. Report details summary of transactions. For more information, visit www.carbonsig.com.

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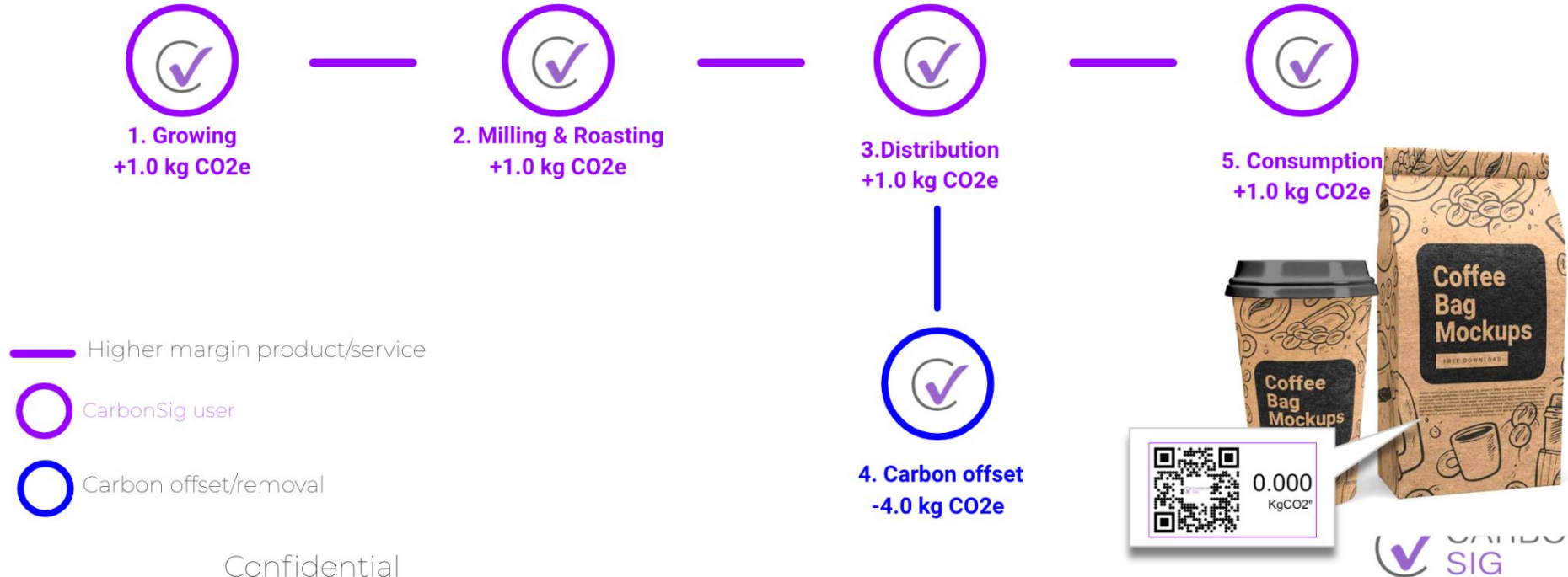
Environmental Accounting & transfer of attributes....

Oil producer sells Carbon Neutral crude.



CarbonSig example : Zero Carbon Coffee

- Any user can reduce using credits/removals
- Not all suppliers required.
- At any stage a CarbonSig report can be generated/verified



Carbon Add (carbon signature report)

Any product or service | any supply chain

Record: 10 tons of Ethelyne=200 T/CO₂e

Manage: +200 T/CO₂e Carbon Credits

Declare: 10 tons Neutral Ethylene=0 CO₂e

Transfer: Owned by newco...

...

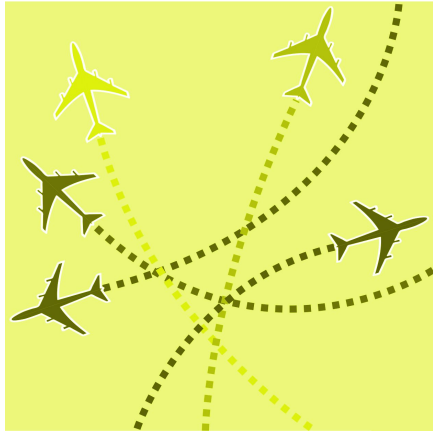
Transfer: Low Carbon Water Bottle.

CarbonSig generated at 8/23/21 12:34 UTC Receipt confirmed 8/22/21 12:34 UTC		Toycu, Inc. ID# kh234kh423234	
Lot# 45-tf6foi-345 Confirm at www.carbonsig.com		Utrecht, Netherlands +31 6548-154-123	
CarbonSig chain of custody report + Follow			
500,000 kg CO ₂ e offset	Niokolo Koba REDD+ VCS, 2017 vintage Retired Jan 21, 2021 by Occidental Ltd.	Climate Action Reserve	
Naphtha refining 5,345,335 kg 1,817,412 kg CO ₂ e created 0.34 kg CO ₂ e / kg	Naphtha from crude oil, light sweet, API 40 Occidental Ltd. q1 2021 permian field1 SW blended q1 2021 permian field1 SW pump 512 Jan 20, 2021 0.315 kg CO ₂ e / kg q1 2021 permian field1 SW pump 513 Jan 21, 2021 0.320 kg CO ₂ e / kg	Life Cycle Analysis, ISO 14444 ✓ Third-party Verified Life Cycle Analysis, ISO 14444 ✓ Third-party Verified	
	Naphtha from crude oil, medium sweet, API 25 Chesapeake Organization LLC 65x64 standard, eor pull, semi-16 Jan 21, 2021 0.35 kg CO ₂ e / kg	ISO 14440	
1,500,000 kg CO ₂ e offset	OMNIA N2O Abatement Project II GS, 2019 vintage Retired Jan 21, 2021 by Occidental Ltd.	Veera Gold Standard	
Haber-Bosch process 320,754 kg 658,060 kg CO ₂ e added 2.05 kg CO ₂ e / kg	Ammonia Occidental Chemicals Natgas 86% methane, steam 450C, 188atm, air flow 412 cfm, iron-011220, holding tank 4, 981 Jan 24, 2021 2.40 kg CO ₂ e / kg	LCA from Ammonia Manufacturers Association ✓ Third-party Verified	
Steam Cracking 5,345,336 kg 7,691,121 kg CO ₂ e added 1.44 kg CO ₂ e / kg	Propylene Occidental Chemicals Light naphtha 913r974, low severity 830C, furnace 1, fed- in unit 1 Jan 24, 2021 1.44 kg CO ₂ e / kg Ethylene Occidental Ltd. Light naphtha 913r974, high severity 880C, furnace 3, fed-in unit 2 Jan 20, 2021 1.44 kg CO ₂ e / kg	Measured emissions plus utility data Measured emissions plus utility data	
Report ID 45-tf6foi-345. Carbon attestation document and methodology is available on CarbonSig, as provided by manufacturer. CarbonSig assumes no legal liability over the accuracy of claims made on its platform. Report details summary of transactions. For more information, visit www.carbonsig.com .			

Services: transport, complex projects inputs etc.

Standard Jet A

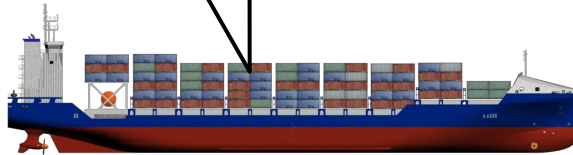
JFK>LHR =2.46 MtCO₂e
LHR>JFK=3.28 MtCO₂e



SAF created w/removals

JFK>LHR =0.0 MtCO₂e
LHR>JFK=0.0 MtCO₂e

Assign, track
manage CO₂e to the
container as value
add service. Include,
journey, ship type,
fuel type etc.



Any Product/service tuned to CO2e market needs

1.Raw material

2.Distribution Network

3.Processing

4.Carbon management

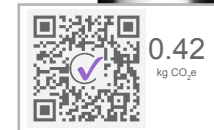
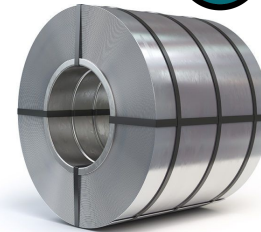
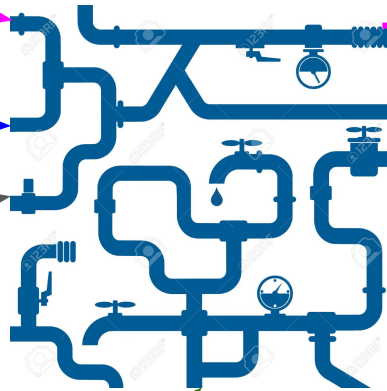
5.Low Carbon products...

1.6 kg
H₂

6.2 kg/CO₂e
H₂

14 kg/CO₂e
H₂

1.0 kg/CO₂e
H₂



Use Case



Product 1

Sample Assurance

Samples are key evidence in a quality dispute and are often tampered with. To prevent this, an embedded seal is added in the field by surveyors to secure and prove a sample's authenticity & integrity.



Product 2

Vessel Assurance

Downstream tagging of fuel as evidence of quality, authenticity and on board fuel management practices.

Verified, trusted evidence to be used in insurance claims, quality disputes and compliance reporting.



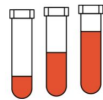
Product 3

CarbonTrace

Origin tagging of certified feedstocks and sustainable fuel blends. Digital tracing and reporting on chain of custody and emissions profiles. Tokenised carbon credits to access government and market incentives.



Molecular Tracers
Non-invasive synthetic DNA tagging added to feedstocks, fuels and lubricants.



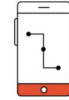
Tamper Evident Seals
Secure and **discrete** molecular tags to bunker samples.



Detect & Measure
Verify authenticity in minutes with lab detection unit.



Blockchain Technology
Link to bunkering operations and pair with a digital record on the blockchain.

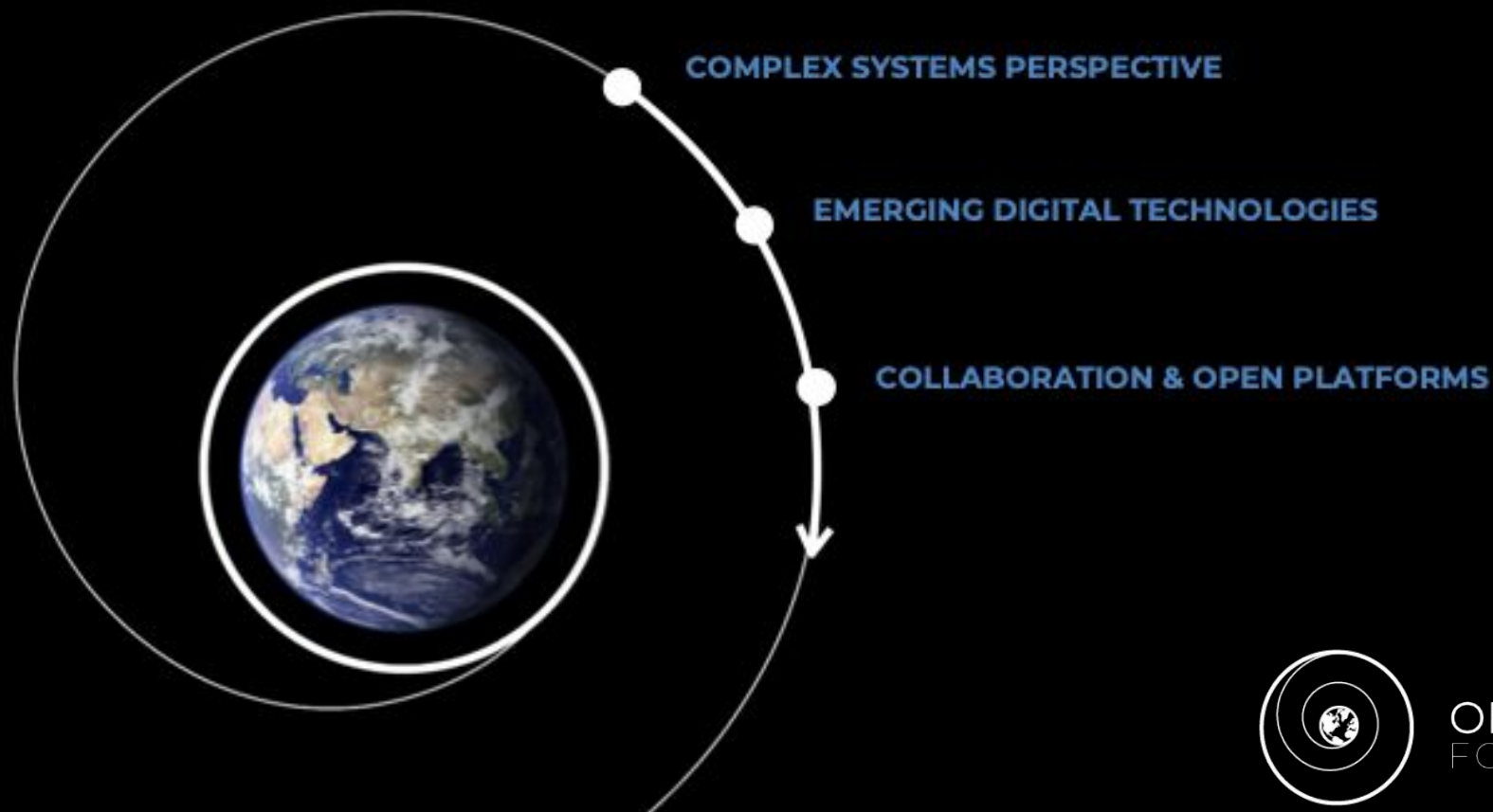


Scan & Sign
Mobile App for in field data collection & authentication.



Report & Analyse
Extract operational data & generate chain of custody reports.

Our work is driven by three core inputs:



OPENEARTH
FOUNDATION

Open Earth acts as the umbrella institution, holding the legal foundation, the lab that drives our systems research and deployment approach, and the project subsidiaries

INSTITUTIONAL UNITS

- FOUNDATION
- NETWORK
- LAB



OPENEARTH
FOUNDATION

VERTICALS

*Intervention
sectors*

CLIMATE
ACCOUNTING

CLIMATE
FINANCE

OTHERS (2022+)
(EG. BIODIVERSITY,
EDUCATION)

PLATFORM PROJECTS

*Open Digital
Infrastructure*



OPENCLIMATE



OPENFINANCE

PILOT INITIATIVES

*Multi-stakeholder
implementations*

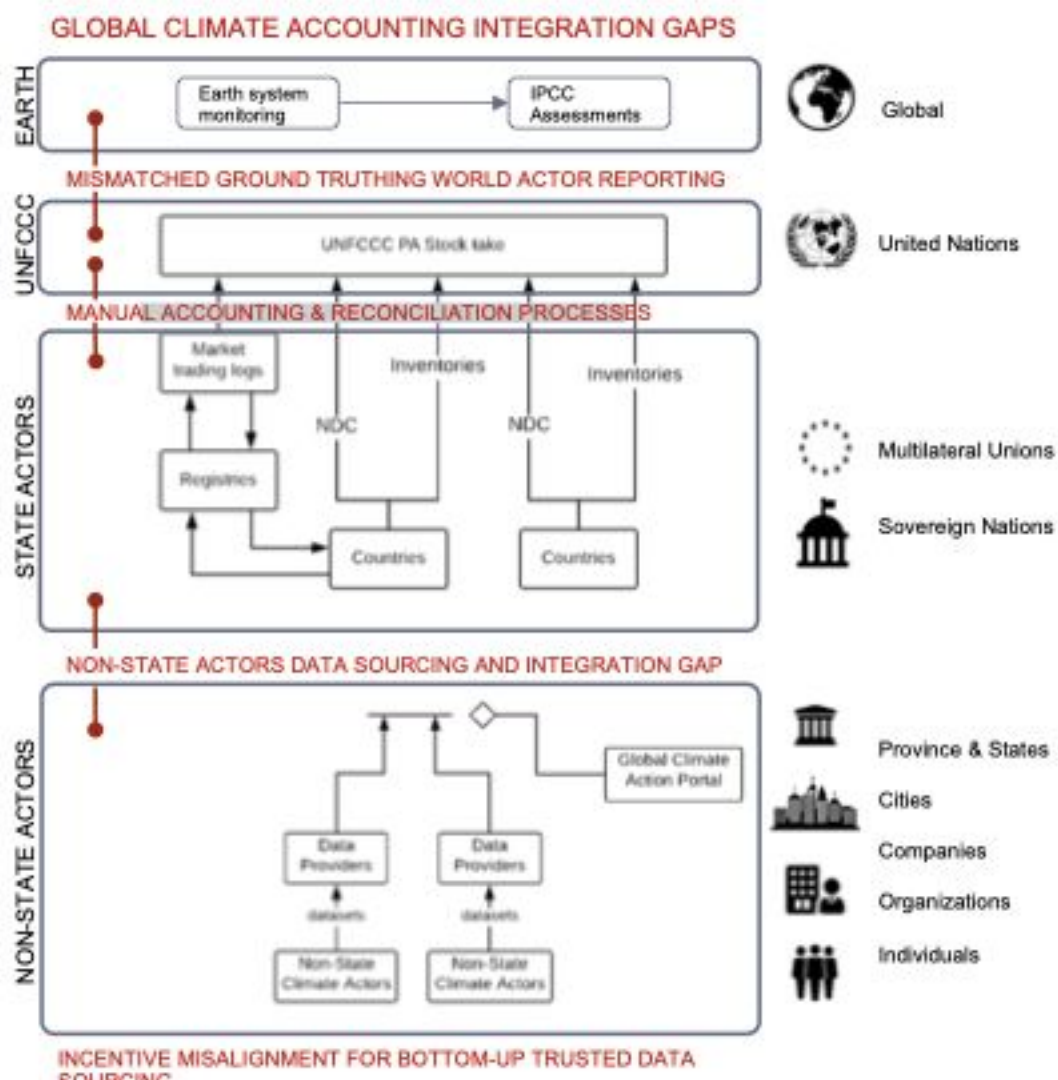
NORTH
AMERICAN
ENERGY
CERTIFICATION
SYSTEM

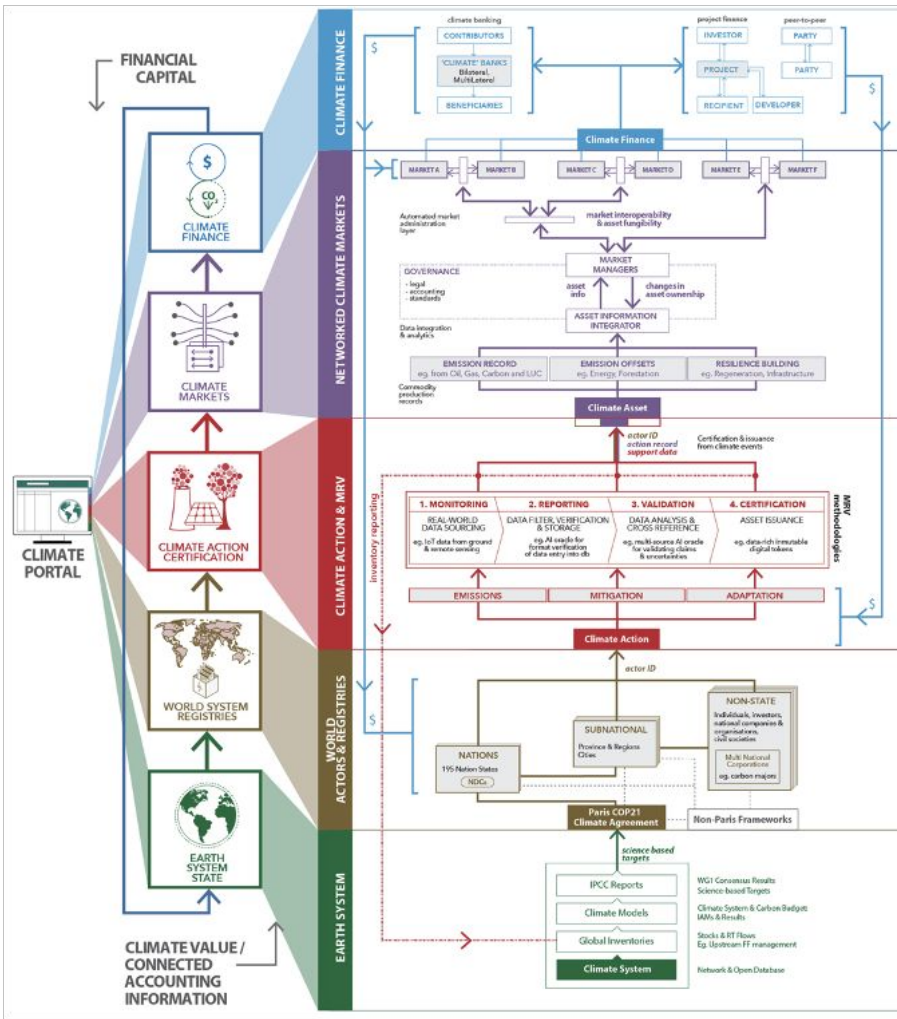
GREEN
NEW DEAL
COMMUNITY
SOLAR + BONDS

Nested Climate Accounting

Paris Agreement
first global climate accounting stocktake 2023

fragmented reporting infrastructure
data consensus will take 3 years
cost over \$1B





DigitalMinesTrust



Ministry of
Energy, Mines and
Low Carbon Innovation

Mines Digital Trust Marketplace

Responsible Sourcing and Digital Traceability

<https://vimeo.com/641317495>