

Climate Action and Accounting SIG Proposal

This proposal has been accepted and the [Climate Action and Accounting SIG](#) has been approved. Please visit the group's wiki to learn more about how to join the discussion and get involved.

Distributed ledgers to deliver transparency and accountability under the Paris Agreement and accelerate urgent action

Introduction

Climate change is recognized globally as both a crisis and an opportunity requiring transformational change to attain sustainable societies and economies. Urgent action at a global scale is crucially important to achieve the goals of the Paris Agreement (i.e. UN global climate accord) and avoid irreversible ecosystem damage at a planetary scale. Concerted action is often fraught with mistrust and lack of transparency among the scope of actors (countries, subnational governments, companies, individuals) due to uncertainty of distributed responsibilities and clashing incentives at the short-term level. Whilst the Paris Agreement is a globally encompassing framework to prevent warming above 1.5°C (relative to pre-industrial levels), it still lacks a clear mechanism enabling actors to 'speak the same language' when recording climate-relevant data and verified actions. Distributed ledger technology (DLT) and other emerging digital solutions have the potential to provide trusted record-keeping processes, data consensus and rules automation — crucially needed components in order to align actors, accelerate mitigation and adaptation action, and mobilize the trillions of dollars of finance required annually.

Hyperledger's ecosystem and DLTs are central to the creation of a global and open climate accounting system that helps integrate all actors and actions under the same planetary goal. The Hyperledger frameworks and the Linux Foundation's know-how and team supporting them are essential for the development and function of an open source and decentralized climate accountability network that both operationalizes transparency (i.e. Article 13 of the Paris Accord) whilst enhancing actor's personal privacy, security, and control.

The proposed Climate Action & Accounting (CA2) Special Interest Group (SIG) will foster and engage a multi-stakeholder network to exchange ideas, needs, and resources in order to develop and consolidate open source DLT solutions for a common climate accounting mechanism and frameworks. *Climate action* is a broadly encompassing term that involves all climate-relevant actions (e.g. policies, programs, technologies, goods, services...) taken by actors (e.g. states and non-state actors such as businesses, cities, individuals...) — from emission generating activities, to the broad set of actions encompassed within climate mitigation and adaptation and its associated finance mechanisms. *Climate accounting*, on the other hands, is referred to here as the encompassing term that involves all processes of recording climate-relevant information /data; from the physical state of the planet to the list of all climate actors, their broad set of climate actions and agreements in respect to the shared account of the climate challenge. Whilst climate action occurs in the real world, climate accounting is (or should be) recorded in the digital world. This SIG will help build the relationship between both and consolidate technological tools to do so.

Goals of this proposed Special Interest Group are to:

Foster a collaborative network of climate, DLT other emerging technology organizations (i.e. universities, NGOs, government, startups, corporations, multilateral development banks, etc.) that can create a center of gravity around the role of DLT and open source software to address challenges in the global climate action, policy and digital accounting space. A focus point of the SIG would be to turn this network into action under a common open source project that defines shared protocols, standards, and platform tools for a globally integrated climate accounting system to be operationalized. This open climate project can act as a shared initiative where participants can contribute value to and share explorations in the use DLT alongside other emerging technologies such as IoT (Internet of Things), big data, and machine learning to address the challenge of keeping a transparent climate accounting system towards the climate targets set in the 2015 Paris Agreement.

The community will take initiative to specifically address:

- Compilation of completed, ongoing, and proposed future activities related to blockchain for climate action & accounting
- Directory of organizations and initiatives involved with blockchain and the climate space (map of organization location, contact person, description, website, etc.)
- Consolidate the architecture of an integrated system, involving multiple blockchain mechanisms connected through shared protocols, allowing contractual automation in the link between finance and climate value flow based on the agreed physical parameter of the Earth system
- Identify Hyperledger tools and frameworks to develop and maintain a single record-keeping ledger with global consensus (i.e. a 'ledger of ledger' where all parties agree)
- Propose and define shared protocols and standards to allow interoperability across the climate accounting system and integrated platforms
- Compilation of best practices, lessons learned, and recommendations to stakeholders (policymakers, technology developers, etc.)
- Supporting events (e.g. at blockchain and climate conferences such as COP) and related activities for collaboration among members and stakeholders.
- Propose, discuss and define a longer-term strategic vision of an open innovation consortium that can help steward, fund, and maintain an open source climate action and accounting project and system

Why should this group be launched?

Global climate accounting occurs in a diverse set of digital tools and registry platforms that are individually centralized and collectively dispersed and unlinked. This is often due to the great diversity and proliferation of climate actions and climate accounting as well as the lack of trust between actors, resisting to share data that exposes them to scrutiny. Hence, a common framework and toolsets to seamlessly integrate climate action & accounting is a crucial component for a successful Paris Agreement and SDG13 (Climate Action), as well as emerging initiatives such as the FSB TCFD (Task Force for Climate-Related Disclosure). Leveraging blockchain by the participating network (countries, companies, and individuals) will be the key technology in the pursuit of helping maintain a decentralized "ledger of ledgers" and common platform.

Engaging and connecting the wider Hyperledger community with the growing communities that have developed in the climate-blockchain intersections (e.g. Climate Chain Coalition, Climate Ledger Initiative, etc.) will help identify potential challenges and advance opportunities to support Hyperledger-related solutions towards integrated climate action and accounting mechanism.

The common climate accounting platform proposes a radical collaborative economy that can encompass already existing platforms ranging from those managed by the United Nations (e.g. UNFCCC Global Climate Action) to country registries as well as emerging blockchain climate DApps (decentralized applications), which themselves often introduce peer-based collaborative economy practices. This comprises a social network of climate registries and services governed by an open innovation framework.

At a high level, Hyperledger’s DLTs are well-suited to provide general transparency alongside individual data privacy, prevention of double counting in the digital certification and trading of climate actions, and a platform for contractual automation of rules and mechanism with financial nature; ranging from Paris Agreement stocktaking to carbon pricing and rewards for mitigation outcomes.

In practice, the core climate action and accounting infrastructure will consider Hyperledger Sawtooth as a common broad-use ledger environment, Indy for DID implementation, Besu and Burrow for interoperability, and Fabric for contracts and applications. It will also encourage communication and collaboration with Hyperledger Grid, which already embarked on a domain-specific (supply chains) framework.

In summary, this group is required because:

This is a first-of-a-kind SIG, with a growing interest and global necessity for an open source and collectively-owned transparent climate accounting system. We are all planetary stakeholders needing to harness emerging technologies such as blockchain and a robust open source community management network such as Hyperledger in order to navigate a fragmented and trust-eroded climate space, turning it into a common slate of truth and involving all climate actors if we are to meet the requirements of the Paris Agreement. The project is based on principles of radical inclusivity and equality at the planetary level. It is motivated by the belief that bottom-up civil action and collective intelligence are the most powerful innovations to address the climate challenge.

Our shared climate future — consistent with a more resilient Earth system — requires a higher level of participation, collaboration, and interoperability among climate stakeholders; from established government and private actors, to new climate action innovators and, ultimately, individual citizens. Digital technology tools that seamlessly integrate all elements in a transparent and participatory climate accounting system cannot be developed in a silo.

Scope

The scope of the SIG is defined by the terms *climate action* and *climate accounting* defined in the introduction as encompassing and complementary concepts and illustrated below. The SIG will be organized around 5 climate domains outlined in the attached diagram: Earth system state, World system registries, Climate action certification, Networked climate markets, Climate finance.



Scope not within Charter:

Whilst this special interest group will consider the role of supply chains in climate accounting, these will be considered generally but not in-depth so as to not overlap with more supply chain specific groups at Hyperledger. Furthermore, this interest group involves all matters of climate change but does not encompass other aspects of sustainability (e.g. biodiversity, non-greenhouse gas pollutants, socioeconomic inequalities, etc.).

Potential Work Products

The initial work products may include:

- Compilation of activities related to blockchain for climate action and climate accounting
- Directory of organizations and initiatives involved with blockchain for climate actions
- Documentation relevant to the architecture of an integrated climate action and climate accounting system
- Open source code repositories utilizing Hyperledger frameworks like Sawtooth and Indy

- Convening of events like design sprint workshops and collaborative hackathons to further code and framework development

Collaborators

This SIG will collaborate with other Hyperledger groups, Linux Foundation Open Source Networking, Linux Foundation staff, and the appointed project maintainers. It will coordinate directly with Climate Chain Coalition members and stakeholders.

The SIG is open to anyone using blockchain, open source software, and Hyperledger frameworks as an ongoing effort to create a climate accounting system. It will liaise with different groups working on the same domain space but using a different software stack, such as Ethereum, Cosmos, Stellar, Bitcoin, Multichain, etc. in order to work on interoperability challenges. Furthermore, we have established strong working relationships with major policy networks of city, region, and company actors including the World Bank, CDP (formerly known as Carbon Disclosure Project), the UN system – especially the UNFCCC, INATBA (International Association of Trusted Blockchain Applications). We will leverage these connections to continue to build a strong community of support for the project.

About the Climate Chain Coalition:

The UN Climate Change Secretariat recognizes the potential of [digital solutions for Climate Action](#), and in 2017 helped launch the [Climate Chain Coalition](#) (CCC) as an open global multi-stakeholder initiative to support collaboration among members and stakeholders to advance the use of blockchain (distributed ledger technology) and related digital solutions (e.g. IoT, big data) to help **mobilize climate finance** and support climate policy including **enhancing MRV (measurement, reporting, and verification) to track and to scale up climate actions** for mitigation and adaptation (e.g. technologies, projects, programs, markets), and to build trust among stakeholders. Demonstrating the global interest in blockchain for Climate Action, the CCC continues to grow at a rate of 2 new organizations per week and now has approximately 180 members across 45 countries.

Interested Parties

The following individuals have already expressed an interest in joining this group, and we hope will become contributors over the first year:

- Martin E. Wainstein | Yale Open Innovation Lab
- Tom Baumann | [Climate Chain Coalition](#)
- David Thompson | The Spatial Web Foundation, [Verses.io](#)
- Juan Manuel Gomez | XM
- Angel Hsu | Data Driven Labs
- Evan Caron | [Swytch.io](#)
- Lisa Granquist, PhD | [Adaptation Ledger Ltd](#)
- Simona Pop | Bounties Network
- Eileen Doohan | [ClimateHacks.org](#)
- Tom McGrath | [VITALcleantech.com](#)
- John Jordan | <https://github.com/hyperledger/aries-cloudagent-python> (Core Maintainers) | Province of British Columbia
- Tan Lim Soon Fu | EPC Blockchain ([BESC](#))
- Francisco Benedito | [ClimateTrade](#)
- Bobbi Muscara | Ledger Academy
- Marion Ruddell | TEO TheEnergyOrigin
- Zach Danker-Feldman | [Xooa](#)
- Matthew Moroney | [Raise Green](#), [New Haven Community Solar](#)
- Tim Lloyd | Sensorica
- Kam Phung | [Blockchain for Climate Foundation](#)
- Joseph Pallant | [Blockchain for Climate Foundation](#)
- Matt Schmitt | Cargill Tech Ventures
- Aliya Das Gupta | iov42
- Jaime Cuesta | [Alastria](#)
- Kamlesh Nagware, VP Blockchain | Snapper Future Tech (<https://www.snapperfuturetech.com/>)
- Alberto Gómez Toribio | Bankia (<https://bankia.com>)
- Jesús Herencia | Shareyourworld
- Mohammad Aatish Khan | [NatureDots](#)
- Snehal Verma | [NatureDots](#)
- Harris Niavis | Yale Institute of Network Science (YINS)
- Jesse Uzzell | [Climate Futures](#)
- Jan Hendrik Scheufen | [Monax](#)
- Arun S M | LFID: arsulagai
- **Note: This group has been created and you can add your name to the [group's Member Directory](#) if you would like.**

Proposed Co-Chairs

Martin E. Wainstein and Tom Baumann are proposed to serve as co-chairs.

Martin is the founder and lead researcher of the Yale Open Innovation Lab (openlab.yale.edu), co-investigator to research the design of a Blockchain for Climate Action Tracking (B-CAT) framework (recipient of a National Science Foundation grant), and manager and lead scientist of the climate finance project of the Digital Currency Initiative at the MIT Media Lab.

Tom is the founder and co-chair of the [Climate Chain Coalition](#), co-chair of the [INATBA](#) Climate Action WG (International Association of Trusted Blockchain Applications), former international chair (2014-2019) of ISO's climate change standards committee, former chair (2009-2014) of the IEEE PES climate change technology committee, researcher at the [Blockchain Research Institute](#), as well as co-founder of several start-ups including [Xpansiv](#), [Adaptation Ledger](#), [ClimateCHECK](#), [GHG Management Institute](#), [Collaborase](#), and [NovaSphere](#).