Open-Source Climate (OS-C)
Overview
Tapping the Massive Power of Open Source to Build a Public Utility of Data and Analytics
September 11th, 2022
Problem: investors lack data coverage, quality, interoperability required for scaling climate impact

Data and existing tools’ coverage of asset classes beyond listed large-cap equities is poor

Situation in countries outside OECD even worse

Quality, comparability, interoperability, and trust are often poor

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<th>Private Equity</th>
<th>Real Assets</th>
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OS-C proposes concrete measures to address climate risks and opportunities

**Problem**

<table>
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<th>Investors</th>
<th>Companies</th>
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<td>Overexposed to Climate Risks / Underexposed to Climate Solutions</td>
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| Society | Governments |

**Specific issues**

1. **Gap of $5+ trillion annually** to achieve Paris Climate Accord goals
2. Until government regulation / incentives enter into force, **most corporations will not transition fast enough** on their own
3. **Accelerated large scale capital reallocation** by financial institutions is needed
4. **GFANZ, corporates, NGOs, and the public urgently need trustworthy data and transparent analytic tools to drive change**

**Actions**

1. Build holistic data and analytics solution essential to meet Paris Goals
2. Build Co-op to leverage many stakeholders‘ intellectual property, know-how, and effort
Solution: OS-C is uniquely able to breakthrough by...

- building a world-class shared platform ...
- through community collaboration ...
- that is truly open source!*

Employs cutting edge technology architecture, IT backbone, and “data as code” approaches

A “public utility” of data and tools that can interact easily with private data and tools

Translates science & evolving accounting standards and methodologies into code

Builds trust through publicly transparent governance, open meetings, open dialogue

Combines know-how and aligns interests among stakeholders – regulators, investors, banks, NGOs, academia

Linux Foundation governance structure and licensing enable sharing of effort, cost, and intellectual property.

Data as code, accurate data provenance, interoperability

More accurate and forward-looking climate and ESG metrics as public good

* Note: not “Openwashed” – most initiatives in the ESG finance space claiming to be “open source” are “open code” or “open access” which lack the transparency and open collaboration characteristics essential for trust.
OS-C operating model leverages open source principles

COMMUNITY INPUT

- Business leaders set goals
- Data providers offer data and determine access
- Develop and deploy models and tools
- Monitoring and Management incl. review and audit before making updates

PLATFORM based on Red Hat’s Operate First

“Trust open communities with running and managing applications and infrastructure”

OPEN DATA SCIENCE PLATFORM

- Total open source visibility and participation in the configuration and deployment managed by OS-Climate

SHARED ADVANTAGES

- Maximal reliability and transparency
- Increased scalability
- Public record of all configurations and community discussions
- Share costs, intellectual property, and effort
OS-C: 3 main building blocks for a game-changing solution

**OPEN SOURCE COMMUNITY**
- Data & Analytics Provider
- High Emitting Industries
- Academia
- Think Tank, NGOs
- Asset Managers
- Asset Owners
- IT Companies

**GLOBAL DATA COMMONS**
- Climate factor data
- Platform Infrastructure
- Company data

**ANALYTICAL TOOLS**
- Portfolio Alignment Tools (e.g. ITR)
- Physical Risk Tools
- Transition Scenario Analysis

Example on slide 7
**IMPACT: Closing the Data Gap** >> faster financial institution exit from laggards and reallocation into leaders + more effective investor and public engagement + clearer risk and incentive pricing >>> informs corporate strategy and planning >>> drives investment in resilience and Net Zero >>> Accelerated reduction of Gigatons CO2E
Measure ROI by accelerated emissions reductions

Public Good
- Free, easy-to-use point of access to public data required for climate-aligned finance + advocacy.
- Federation services, connecting wide range of academic, Govt, NGO sources to financial decisionmaking.
- High Trust – independent scientific review as part of governance.

Serve small-to-medium sized orgs & Global South

Joint Benefit
- Tools built by private sector independently but verified as science based & free for public uses (e.g., engagement, policy).
- Open collaboration space uniquely able to help the climate-finance community speed up convergence on, and implementation of, methods and standards.
- Transparently developed comprehensive roadmaps + model methodologies.

Private Partnership
- Tools designed for institutional requirements for meeting Net Zero finance. Investment, and risk management (physical, transition, alignment, etc).
- Ability to leverage Data Commons with proprietary and licensed data
- Technical FTEs committed by members to jointly build solutions.

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Measure ROI by speed and scale of net-zero aligned decisions and projected GHG mitigation & resilience impacts

OS-C’s Public v. Private Benefit
Project create tangible results: ITR Portfolio Alignment Tool (Allianz lead)

ITR-Objective

ITR tools compare company emissions with sector specific pathways and finally put a temperature to each investee company:
- along TCFD recommendations
- guided by science
- full transparency in each step
- Company data are key --> data commons

Operating model

Output

- Tool will be released in May 2022 for 4 initial sectors, covering Scope 1 & 2 emissions.
- Release cycle will cover additional sectors and scope 3 emissions.
- A transparent and open source model facilitates the wider application of the tool and methodology improvement over time.
Projects create tangible results: Physical risk and resilience tool (BNP Parisbas lead)
Energy model including production technologies mix allow to take into account specific materials resources usage limitation.

Macro-economic model take into account natural resources usage limitation.

Energy model fully coupled with macro-economic model in both directions.

Energy model including production technologies mix allow to take into account accurately natural resources usage limitation.

Energy model including production technologies mix allow to take into account accurately energy production emission.

Energy model take into account regulations and subventions.
Our Members

**Premium Members**

- BNP PARIBAS
- Goldman Sachs

**General Members**

- Allianz
- amazon
- BNY MELLON
- EY
- Federated Hermes International
- LSEG
- Microsoft
- NET-ZERO ASSET OWNER ALLIANCE
- ORTEC FINANCE
- Red Hat
- S&P Global

**Associate Members**

- CLIMATE POLICY INITIATIVE
- CLEIF
- OpenEarth
- WORLD RESOURCES INSTITUTE

**Data and Model Partners**

- JUPITER
- URGENTEM!
- riskthinking.AI
- OS-C
OS-C is platform of interconnected components and workstreams

- Portfolio Alignment, Physical Risk & Transition Analysis
  - Extreme Events
  - Corporate Emissions
  - Climate Models
  - Vulnerability models
  - Targets
  - Energy System Model
  - Portfolio Assets
  - Progress Metrics
  - Economic Models

Data commons functionality
- Data availability (hazard, asset, financial)
- Data security, quality & accuracy
- Data comparability
- Data exports

Data commons data types (e.g. counterparty/ corporates)
- Entity Matching
- Assets
- Emissions, Targets, Progress
- Other

Data sources (Public/Proprietary/Metadata): Federated, Uploaded, & Derived

Interfaces
- Infrastructure
- Platform & Tooling
- Data Management Platform
- Data Science & Analytics Platform
Business model: non-profit 501(c)(6) business association under the Linux Foundation (largest organizer of open-source tech initiatives globally); platform management and development funded by annual member fees plus philanthropic grants.

➔ Governing Board (fee-paying members + Academia, IGO, NGO) decides strategy, priorities, & budget.
   ◆ Premier Membership: $100K/year; General Membership $30K/year; Associate Membership (Academia, IGO, NGO): $0K/year
   ◆ Meets every 3rd Wednesday of the month

➔ Technical Advisory Council (TAC) sets technical vision, facilitates collaboration among the Technical Projects, and recommends budget and technical decisions to Board.
   ◆ Comprised of TSC chairpersons and Premier Members' technical delegates.
   ◆ Meets 2nd and 4th Monday of the month

➔ Technical Steering Committees (TSCs) is responsible for technical oversight of each Project.
   ◆ Data Commons Charter: https://docs.google.com/document/d/1yLL3Fkbwe_EC1E0T8H7mAT1DvSnA5dQnl4jvn5/edit?usp=sharing
   ◆ Physical Risk & Resilience Charter: https://docs.google.com/document/d/1TiH4wKL2sQIdUsykkqOEg-juST681nQC/edit?usp=sharing&ouid=113309013911865667965&rtpof=true&sd=true
   ◆ Portfolio Alignment Charter: https://docs.google.com/document/d/155dzYOYDA8buL04NhMvylO5SUh5nK/edit?usp=sharing&ouid=113309013911865667965&rtpof=true&sd=true
   ◆ Transition Analysis Charter: https://docs.google.com/document/d/1oApdAxwM8_TeHFGB8Gjp-JOE6U21/edit?usp=sharing&ouid=113309013911865667965&rtpof=true&sd=true
Governing Board
- Rim Tehraoui Chair (BNPP)
- Remco Fischer (UNEP)
- Thierry Chevalier (Airbus)
- Tim Whitehead (Goldman Sachs)
- Udo Riese (Allianz)
- Truman Semans (LF/OS-Climate)

Technical Advisory Committee
- Vincent Caldeira (Red Hat)
- Abhishek Narang (Goldman Sachs)
- Matthieu Meaux (Airbus)
- Rui Dias Morais (BNPP)

Core Team
- Truman Semans (CEO)
- Michael Tiemann (Project Lead)
- Heather Ackenhusen (Principal Technical Program Manager)
- Claire Massey (Sr Program Manager)
- Stephanie Daley (EA)
- Emily Ruf (Event Mgr)
- Ryan Day (Systems Eng)
- Eric Ball (Release Eng)

Workstreams
- Physical Risk
  - 57 team members
  - Lead: Matt Sandoe (BNPP)
- Portfolio Alignment
  - 64 team members
  - Lead: Leyla Javadova (Allianz)
- Transition Scenario & Risk Analysis
  - 35 team members
  - Lead: Thierry Chevalier (Airbus)
- Data Commons
  - 49 team members
  - Leads: Thomas Kirchherr (IDS) and Vincent Caldeira (Red Hat)
- Data Extraction
  - 39 team members
  - Lead: Lea Deleris (BNPP)
- Entity Matching
  - 24 team members
  - Lead: Rui Dias Morais (BNPP)
- Developers
  - 52 team members
  - Lead: Erik Erlandson (Red Hat)
- Community Management
  - 9 team members
Premier Members
- BNP Paribas
- Goldman Sachs

General Members
- Red Hat
- LSEG
- S&P Global
- Amazon
- BNY Mellon
- EY
- Microsoft
- Allianz
- Ortec Finance
- Federated Hermes
- The Net-Zero Asset Owner Alliance

Associate Members
- Polytechnique University
- CPI (Climate Policy Initiative)
- Open Earth
- World Benchmarking Alliance
- GLEIF

Data and Model Partners
- Jupiter Intelligence
- Urgentem
- World Resources Institute
- RMI
- riskthinking.AI
- U-Reg

OS-C
Members & Data Partners
Research & Academic Council’s Role

- An independent body whose governance role is set forth below and in the applicable charter for each Technical Project.
- Ensures that OS-Climate’s data and tools continue to be science-based and to meet the highest standards of scholarship in the fields relevant for climate-aligned business and finance.
- Reviews key modeling methodological choices and assumptions to ensure that these align with current, peer reviewed scientific studies and scholarship.
- Helps Technical Projects identify and attract excellent scholars and experts to advise on, and contribute to, the Projects’ detailed development work on data and tools.
- Advises the Governing Board on strategically important developments in the academic and research community, including relevant topics of debate, research projects, and initiatives.