



OPEN STANDARD · OCRF V1.0

Climate financial risk has no Linux. We built it.



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Climate Risk Commons puts the same enterprise-grade physical climate-risk platform the world's largest banks use into your hands, free for non-commercial work.

Not only standardized data, but the platform to upload open datasets, run experiments, build new models, and design new damage functions. Built for the extreme tail rather than the average case.

50+

climate hazards modelled

241B

geospatially aligned locations

193

countries

All

IPCC emissions scenarios

15

time horizons to 2100

Institutions must report numbers **they cannot defend.**



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Measuring physical climate risk has shifted from a voluntary exercise to a supervised obligation. IFRS S1 and S2, the CSRD, the EU Taxonomy, TCFD and TNFD have made climate and nature risk a required part of corporate and financial reporting, and prudential supervisors from the EBA to BaFin and FINMA now expect institutions to identify, measure, manage, and monitor physical climate-risk drivers.

The harder test is ownership, not reporting. Auditors and supervisors increasingly expect you to understand and own the data and models behind a tool, rather than accept a vendor's black box. A closed, proprietary model cannot meet that bar by design.

Independent reviews of the field, including UNEP FI's Climate Risk Landscape work, keep identifying the same compounding problems: provider methodologies that differ substantially and remain largely opaque, so results cannot be benchmarked.

You cannot defend a methodology you are not permitted to see. The same asset, scored by two providers, can yield materially different risk scores. Relying on any one closed vendor produces a false sense of precision, exactly when supervisors are asking you to understand model uncertainty rather than look past it.

Why now: CMIP7. The climate model intercomparison data that virtually every physical-risk system is built on has just been upgraded. CMIP7 replaces CMIP6, whose data stopped at 2014. Climate Risk Commons is among the first production systems to ship on CMIP7, so you start on the current standard rather than last decade's.

Where the closed model breaks, and how the open standard cures it.

FAILURE 01

Numbers you can't defend

Methodology sits inside a vendor black box, closed to the very regulators, auditors, and boards now asking how the figures were produced.

FAILURE 02

Results that don't compare

Every vendor encodes assets, hazards, and scenarios differently, so similar portfolios diverge and supervisors cannot aggregate across the system.

FAILURE 03

A costly door, both ways

Evaluation takes months and six figures, and proprietary formats make exit expensive, pricing smaller players out before they even begin.

FAILURE 04

Science that keeps restarting

Without a shared foundation, researchers rebuild the same infrastructure rather than advancing stochastic and multi-hazard methods.

THE STRUCTURAL CURE

THE CLOSED MODEL IS	THE OPEN STANDARD IS
Black-box methodology you are not permitted to inspect	Inspectable methodology, so you own your models
Assets, hazards, and scenarios encoded differently by every vendor	One shared schema, so results compare across teams and firms
Single-vendor point estimates that manufacture false precision	A stochastic, full-distribution engine that makes uncertainty legible
Cost and expertise walls that shut out smaller institutions and emerging markets	Open, no-cost access for them and the researchers studying them

An open standard, anchored by two pieces.

Climate Risk Commons is an open technical standard for physical climate-risk analysis. The **Open Climate Risk Framework (OCRf)** defines the shared contracts, asset schema, reference pipeline, APIs, SDKs, and tooling that let hazards, assets, and impact functions interoperate. The reference pipeline, **Ecofusion**, runs the entire specification end-to-end on a laptop or a cluster using open reference data. Every component is licensed under Apache 2.0, with terms you can hand to your legal office. Through **CDTexpress**, you reach the full Climate Digital Twin behind it.

This is Climate 2.0: stochastic, multi-hazard, coherent across hazards and countries, and built for the extreme tail rather than the average case.

EIGHT COMPONENTS OF MEMBERSHIP

- **OCRf spec and asset schema.** How assets and exposure are encoded, so analyses share a common vocabulary.
- **Ecofusion reference pipeline.** An end-to-end DataFusion engine that runs on a laptop or a cluster.
- **Impact-function library.** Validated functions for common asset-hazard pairs.
- **SDK and API clients.** Permissive Python and R clients as the on-ramp to the standard.
- **Sample notebooks.** Portfolio analysis, sensitivity testing, and regulatory submissions.
- **Conformance test suite.** What an implementation must pass to claim conformance, so outputs remain comparable.
- **Documentation.** Workflows, uncertainty explainers, and regulatory mapping.
- **Multi-hazard stress testing.** An asset's exposure to several correlated hazards at once.

WHAT YOU CAN BUILD

See your real exposure

Load your asset or loan-book addresses; the twin geolocates them and returns flood, heat, and wildfire exposure for the assets you actually hold, not a headline figure.

Stand up a CMIP7 stress test

Run a stochastic, multi-pathway test across thousands of scenarios, in a structure a supervisor can read and an auditor can follow.

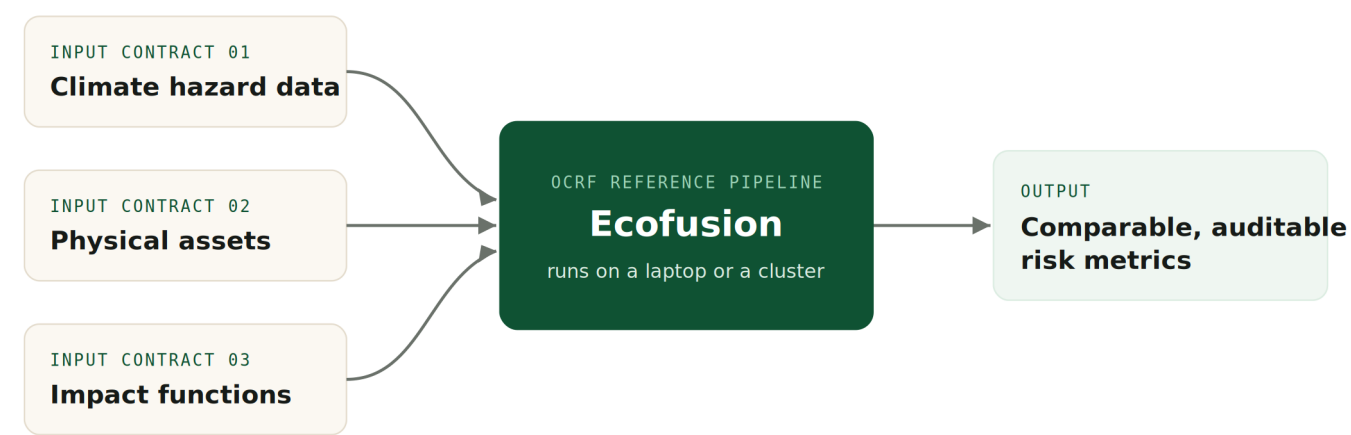
Bring your own data

Load your own datasets, models, and damage functions and still produce a result that compares cleanly with everyone else's.

Screen a city or development portfolio

Development banks, ministries, and city networks screen assets for priority physical risks and share the method with anyone who needs to use it.

Three open contracts, one comparable result.



Anyone can run the standard end to end on open reference data. Swap in production-grade inputs when a decision depends on it.

WHAT YOU DO NOT GET

MEMBERSHIP IS NOT	MEMBERSHIP IS
RiskThinking.AI's proprietary high-fidelity data, reserved for paying customers; the commercial revenue it earns sustains the open platform	The full machinery for calculating physical climate risk, with an environment for open datasets you can download directly to power it
A demonstration or teaching edition	The same engine that powers the world's largest financial institutions, applied to open reference data or to whatever you bring yourself
A dataset play; no single dataset, however good, delivers replication	Comparability: two teams on the same schema, conformance suite, and engine can replicate one another's work and compare findings directly

The Commons is a not-for-profit, founded and funded by RiskThinking.AI, using the same standards as the commercial platform. That shared foundation keeps open research and commercial practice interoperable rather than letting them drift apart.

The architecture is open. The signal remains commercial.

You can build a serious, end-to-end risk system on the open release. The commercial layer is additive, not a gate: a 7M+ asset database with twelve years of curation, 2,000+ pathway scenarios downscaled to 10km and recalibrated annually, a patented multi-hazard correlation engine, and production infrastructure including enterprise integrations, on-premises deployment, SOC-2, and VELO.

Built to pass your security review. There is no opaque third-party binary to fear, because your information-security team can read exactly what runs before it touches your environment. Transparency is the default, precisely what CISOs and regulators have spent years asking closed vendors to provide.



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A MOVEMENT, NOT A RELEASE

Thriving open-source ecosystems are communities, not codebases. Climate Risk Commons is a not-for-profit, founded and funded by RiskThinking.AI: the first maintainer of the standard, not its owner. As adoption grows, a neutral foundation follows, so what you build on remains in place in five years.

Commercial vendors cluster around large, listed, global portfolios. The underserved long tail, agriculture and supply chains, real estate and unlisted assets, single river basins, specific hazards and geographies, is exactly where researchers work. Researchers are the people who pressure-test a standard, validate it, and extend it into the underserved corners, giving it a legitimacy no single vendor's marketing can buy.

- 1 **Groundwork.** Resolve the patent-rights path, select the licence, prepare the repository, finalize spec v1, and onboard pilot users.
- 2 **Ecosystem ignition.** Public release of Ecofusion, OCRF, and the schema; the open tier goes live; design partners join.
- 3 **Standard expansion.** Community contributions, academic partners, deeper regulatory engagement, and the transition to a neutral foundation.
- 4 **Scale and sustain.** Premium data, support, and advanced capabilities sustain the open core.

Expect rough edges. Specs, APIs, and data schemas may change during the preview, sometimes with little notice. Availability is a plan, not a promise; the exact order and timing of drops may shift.

Questions we hear from partners.

01

What is the Climate Risk Commons?

An open initiative to give the climate physical-risk field a shared technical foundation. Today, climate-risk analysis is fragmented across data vendors, asset taxonomies, hazard models, impact functions, and reporting workflows: outputs are hard to compare, assumptions are hard to audit, and providers are hard to integrate. The Commons addresses this by publishing an open standard, a reference pipeline, open data, and tooling that anyone can inspect, run, and build on. It is founded and stewarded by RiskThinking.AI, with governance moving to a neutral, non-profit foundation so the standard outlives any single company's commercial decisions.

02

What's the difference between the Commons and OCRF?

The Climate Risk Commons is the initiative and the ecosystem: the community of partners, the open assets, and the governance that stewards them. The Open Climate Risk Framework (OCRF) is the core technical specification at its heart, defining common contracts for the three inputs to physical-risk analysis: climate hazard data, physical assets, and impact functions. **A simple way to say it:** the Commons is the community and the home; OCRF is the standard the community builds around.

03

What's included in the Commons?

The open assets, free to inspect, run, and build on: the OCRF specification with input contracts and the output model; Ecofusion, an open reference pipeline implementing OCRF end to end; open reference data to run and validate without a commercial relationship; a starter library of open impact (damage) functions; output APIs and SDKs plus tooling and documentation; and open governance with spec versioning, a published contribution process, and a public roadmap. Production-grade results at scale typically draw on commercial data and functions, from RiskThinking.AI or other conforming providers.

04

Why use OCRF?

- **Comparability.** When hazards, assets, and impact functions conform to the same contracts, results from different vendors, models, and internal teams can be placed side by side and meaningfully compared.
- **Auditability.** Every assumption is inspectable. For teams answering to boards, regulators, and auditors, tracing an output through an open pipeline beats black-box scores.
- **No lock-in.** Open contracts let you swap providers, mix data sources, or bring your own functions without rebuilding your workflow. Your methodology attaches to the standard, not to any single vendor.
- **Lower cost to start.** The spec, Ecofusion, reference data, and starter functions are free to run. Validate against your own portfolio, then decide which commercial inputs to bring in.

The pitch in one line: OCRF turns climate physical-risk analysis from incompatible vendor black boxes into an open architecture you can inspect, compare, and own.

What should the ecosystem build?

Conforming data products published against the OCRF input contracts, including from providers who compete with RiskThinking.AI; sector-, peril-, and region-specific impact functions, open or commercial; integrations into risk platforms, portfolio systems, GIS tools, reporting workflows, and cloud data platforms; alternative implementations, validation and conformance tooling, and benchmarking suites; research that tests and extends the methods encoded in the spec; and applications for underwriting, lending, asset management, supply chain, infrastructure planning, and regulatory reporting.

What does building in the ecosystem look like?

1. **Orient.** Read the OCRF spec and the three input contracts. Clone Ecofusion and run it end to end on the reference data: a day or two, and you have a working mental model of the whole architecture.
2. **Pick your surface.** Data providers publish against an input contract, modelers contribute or sell impact functions, tool builders consume outputs through the APIs, implementers build specialized pipelines.
3. **Build against the contracts.** The reference pipeline and open data are your test harness: if your component works with Ecofusion on reference data, it works with the ecosystem.
4. **Validate conformance.** Conformance makes your product plug-compatible with everything else in the ecosystem, and it's the claim you put in front of customers.
5. **Contribute back where it makes sense.** Fixes, tooling, docs, and open impact functions flow through the published contribution process.
6. **Ship and distribute.** The standard is your distribution: every OCRF adopter is a prospective user of every conforming component.

How do academics, researchers, and developers benefit?

Researchers and academics: reproducibility by default, since methods published against OCRF re-run by anyone on open data in an open pipeline; a path from paper to practice as contributed methods get adopted by practitioners; shared infrastructure that removes months of setup; and influence on how v1 encodes hazards, exposure, and vulnerability.

Developers and implementers: a stable foundation of open contracts and versioned specs; distribution through the standard, since every adopter is a prospective user; a zero-friction start, with pipeline, sample data, SDKs, and docs free to run; and community visibility with a direct line to the team and a voice in the roadmap.

What does RiskThinking.AI keep as proprietary IP?

RiskThinking.AI contributes the standard, the reference pipeline, and open reference data, and retains, licensed commercially: bias-corrected and downscaled climate hazard data including derivative hazards; physical-asset discovery data; proprietary impact functions beyond the open starter set; an enterprise edition of the pipeline running a step ahead of the open release; and onboarding, technical support with SLAs, and premium VELO capabilities. The commercial gateway is a data purchase. These offerings sit outside the foundation and compete on merit alongside anyone else who builds against the spec.

Why is RiskThinking.AI open-sourcing this?

Because a standard is worth more than an island. A shared, inspectable architecture grows the whole market for climate physical-risk analysis, and RiskThinking.AI chooses to compete on data quality and analytics rather than on lock-in. Open adoption also lets prospects prove value with zero friction before any commercial conversation, which suits a trust-driven market with slow procurement.

Who governs the Commons? Can I trust its neutrality?

The open assets, the spec, Ecofusion, open reference data, the open impact-function library, and governance itself, are stewarded through a neutral, non-profit foundation. Governance is lightweight but real: clear spec versioning, a published contribution process, reference implementations, and a public roadmap. RiskThinking.AI is the founding steward and holds no privileged position in the spec; competing providers are explicitly welcome to conform and contribute.

Who should join, and what do partners get?

Five kinds of partners: founding institutions, with a seat shaping governance and the v1 standard; data providers, gaining distribution through a common contract; developers and implementers, building on a stable foundation; researchers, gaining reproducible methods and real-world adoption; and adopters, financial institutions, corporates, and public agencies wanting comparable, auditable risk outputs. Early partners get direct influence on the v1 specification, early access to the reference pipeline and sample data, visibility as founding participants, and a direct channel to the stewardship team.

INSTITUTIONS ALREADY ON BOARD

The Fields Institute • University of Toronto • Architecture • University of Toronto • Mathematical Finance • Tel Aviv University •
 Durham University • Finance and Management Science • The Cyprus Academy of Sciences, Letters and Arts •
 Pacific Institute for Climate Solutions • University of Victoria • Technical University of Munich • CAMBIR •
 University of Western Ontario • All Science Faculties • London School of Economics • doctoral research • University of Zurich •
 Queen's University • Smith School of Business • Institute for Sustainable Finance • Central Bank of Brazil •
 Universidade Federal do Rio Grande do Norte (UFRN) • Stockholm Environment Institute • SEI Latin America • Twintree.Org •
 University of British Columbia • Sauder School of Business • University of Duisburg-Essen • Jewish Climate Trust

"If this data only serves the institutions that can already afford it, we have not solved the climate-risk problem. We have just priced some people out of knowing it."

DR. RON DEMBO • CEO AND FOUNDER, RISKTHINKING.AI

How to join

Membership is free for non-commercial research. Individual researchers: apply directly, show proof of your institution, and provide a sentence or two on why you intend to use it. Faculties and universities: a short letter of intent enrolls all your bona fide students, researchers, and faculty at once.

Contact academic@riskthinking.ai • **Open source** opensource@riskthinking.ai



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2026