

THE TRANSLATION GAP

The missing translation layer

Climate risk is not being ignored by financial markets. It arrives in the wrong analytical language, so its very real current and future costs are not visible.

THE QUESTION

With all the data that disclosure now gives us, and the certainty that comes with it, why is climate risk still failing to translate into flows of finance at the speed and scale required?

THE ANSWER

Because the answer was never disclosure alone. Disclosure tells you what exists. It does not tell a credit committee what to put in the model, or a finance ministry what to put in the budget.

What is missing is the analytical infrastructure that turns disclosed climate and nature risk into valuation metrics. **Building it is the next phase of climate finance, and it is what the Rosetta Initiative exists to convene.**

We have never had more data. We have never had less of it in usable form.

Six IPCC assessment reports. The TCFD framework adopted by regulators in more than forty jurisdictions. Climate disclosures from over twenty thousand companies. ESG ratings covering the majority of global listed equity. And the people who actually allocate the world's capital, the finance ministers approving national budgets, the credit committees pricing twenty year infrastructure loans, the asset managers running pension portfolios, are on a day to day basis making decisions as if that data does not exist. This is not ignorance. The data has never been translated into the form they need in order to act on it.

WHAT CAPITAL DECISIONS ACTUALLY RUN ON	WHAT CLIMATE RISK ARRIVES AS
Forecasts, not scenarios alone	Scenario narratives
Forward price and cost curves, where they exist	Degrees of warming
Mark to model, for the thirty to forty per cent of institutional capital in long duration illiquid assets	Relative ESG scores and rankings
The valuation toolkit: discounted cash flow and cost of capital, valuation multiples, and credit's probability of default, loss given default and exposure at default	Disclosure outputs

None of this is wrong. It is in the wrong analytical box. Even the most sophisticated ESG integration cannot produce a forward price out of inputs that were never designed to be one.

Three risk types. Three methodologies. One place to start.

We start with physical risk because its methodology is the most mature and the proof of concept fastest to build: the first leg, not the whole journey. The framework carries transition and nature from the outset.

Physical risk **WE START HERE**

A stochastic hazard problem, and the one the insurance industry already solved between 1992 and 2003. Catastrophe models, average annual loss, probable maximum loss and exceedance probability curves already translate hazard science into monetised distributions over time.

Transition risk

Not stochastic. A structured forecasting problem about policy, technology cost curves and demand, where the right method is expert elicitation rather than catastrophe modelling. Insurance has no natural advantage here and should be a consumer of this work, not its producer.

Nature and biodiversity risk

An emerging hybrid. Ecosystem collapse models like hazard; land use policy and credit market formation behave like transition. Today's platforms price at the discount rate level rather than as forward loss curves, so they complement the insurance method rather than replace it.

The costs are real. Someone is already paying them.

A cost that is invisible to financial analysis is not a cost that is absent. It is a cost that has been absorbed somewhere else, by someone who usually does not recognise what they are paying for.

The EU agriculture study on page four puts a number on exactly this. **€28.3 billion a year** of weather-driven losses across the twenty seven Member States, of which only twenty to thirty per cent is insured. The remaining seventy to eighty per cent does not disappear.

WHO PAYS

Farmers

As lost production and eroded margins, with fewer good years in which to rebuild reserves and a steadily stretched access to credit. They experience a bad harvest.

WHO PAYS

Consumers

As the loss passes through into food prices, spread thinly across every household and attributed to inflation, supply chains or the weather. They experience a higher bill.

WHO PAYS

Governments

As ad hoc post-disaster compensation, drawn from budgets that had been allocated to something else. They experience an unbudgeted relief payment.

None of the three is told they are paying a climate bill, and none is told the bill is rising. Each cost is recorded as something other than what it is, so it never aggregates, never appears as a line anyone owns, and never gets compared against the cost of avoiding it. In EU agriculture that same bill goes from €28.3 billion a year today to €40 billion a year by 2050.

The pattern is not confined to agriculture. When State Farm and Allstate withdrew from Californian residential business, when Australian home insurance premiums rose by twenty eight to fifty per cent, and as up to four million UK households face potential uninsurability against flood by 2030, the household experiences an insurance problem. It is a climate cost, arriving in the only form the market currently has available to express it.

This is what pricing changes. Not whether the cost is incurred, but whether the people incurring it can see it, name it, budget for it, and decide whether to spend money avoiding it.

So why can conventional analysis not see it?

Mark to market

A price set by observable transactions between buyers and sellers. Listed equity, government bonds, exchange traded commodities. Mainstream analysis leans on it wherever it can.

Mark to model, as practised

Where no quote exists, a discounted cash flow or option model calibrated to comparable transactions. It is still a proxy for a market price, inferred rather than observed.

Mark to model, from physics

Hazard, exposure and vulnerability combined to build a price with no quote and no comparable required. This is what catastrophe modelling does, and there is nothing else like it in finance.

This is the insight. You cannot take your flood risk to market and have supply and demand return a price. There is no comparable transaction and there never will be at asset level. So most of the very real cost of climate is invisible to conventional analysis, not because anyone hides it, and certainly not because it is not being incurred, but because the only two valuation routes the market trusts cannot reach it. Catastrophe modelling is the third route, and at present it is the only one.

And why the discount rate is not the problem

£5.73

value today of a £100 cost in 2056, discounted at 10 per cent

£1.51

the same cost at the 15 per cent hurdle rate common in emerging markets

Whatever the science says about 2050, once converted into a 2026 net present value it disappears into the rounding error. That is not denial. It is arithmetic, and it is why investors who accept the science still find it rational to defer.

The answer is not to argue with mainstream discounting, and it is not to drag a distant number back to today. **It is that the expected annual loss is a present-period cost.** It is being incurred this year, at this year's level of risk, and a cost you are paying now is not discounted away. What the forward view adds is the gradient: €28.3 billion rising to €40 billion by 2050 is an escalator of about 1.4 per cent a year, applying to every year of a fifteen year hold. That is the part of a cash flow discounting is built to capture, not erase.



A common protocol, not another standard.

Not another dataset, not another disclosure regime, and not a competitor to the initiatives already building pieces of this architecture. Rosetta does not build the translation layer itself. **It builds the agreement that lets it be built.** Rival handset makers agreed how to call each other, then carried on competing. What they agreed was the connectivity.

WHY THIS MOBILISES MONEY, AND DOES NOT MERELY MEASURE RISK

The other side of the balance sheet

If the failure to invest builds up risk that is currently unpriced, then the act of investing builds up **value** that is currently unpriced. Mitigation reduces a premium not yet quoted. Resilience reduces a probable maximum loss not yet disclosed. Nature-based adaptation reduces a sovereign risk premium not yet calculated.

This is where the climate finance gap actually closes: not by lowering the discount rate and not by relocating a distant number into the present, but by pricing a cost already being incurred and revealing the value of avoiding it. Both land in the near term, as next year's premium and this quarter's revaluation, and on the other side as the premium that falls and the cover that stays available because resilience was built.

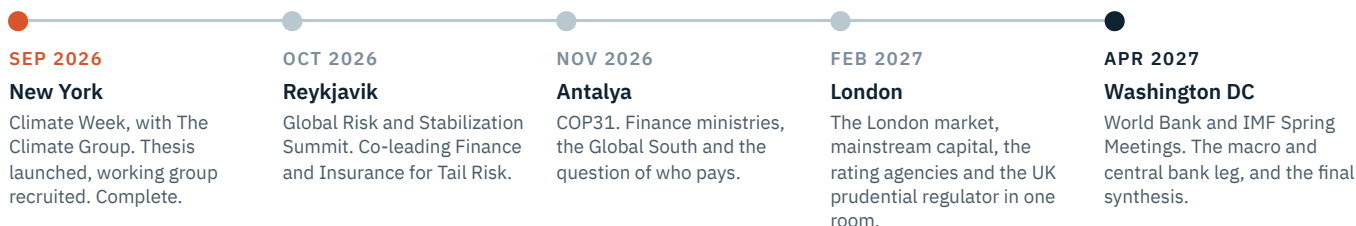
WHAT IT DELIVERS

A published Translation Layer Action Framework, early May 2027.

The first instrument is for physical risk: a named, forward-looking metric set taking measures the industry already trusts, **average annual loss** and the **one in one hundred** and **one in twenty year probable maximum loss**, expressed as **forward curves at defined return periods, eight to fifteen years out**. Mapped into the credit, valuation, macro and regulatory models where capital decisions are made, with equity and 1.5°C guardrails built in, carrying forward the metric set the 2014 one in one hundred initiative began.

Alongside it: a standing advisory group, a first-mover coalition willing to pilot the method, and scoped proof of concept pilots including a sovereign or city pilot linking physical risk pricing to cost of capital.

FIVE CONVENINGS, THEN A FRAMEWORK



Chatham House rule throughout, convening reinsurance and catastrophe modelling, banks and asset managers, rating agencies, prudential regulators, development finance, climate science, actuaries, philanthropy and Global South voices. The hard questions are core content, not caveats: who moves first without being punished, how a shared curve makes repricing orderly rather than disorderly, how resilience reads as a credit rather than a discount, and who pays.

FOUR WAYS TO TAKE PART

Take a seat

Join one of the four remaining convenings. Places are limited and curated by stakeholder group.

Contribute a number

Name the one number inside your institution that would have to change. It becomes the specification.

Make an introduction

Underwriters, catastrophe modellers and actuaries above all.

Own a workstream

Several strands need an owner, from the sovereign pilot onwards.



The forward curve already exists. It was built for EU agriculture.

In 2025 the European Commission and the European Investment Bank published a sovereign-scale, forward-looking price for physical climate risk across a whole sector in twenty seven countries. Insurance catastrophe modelling, climate conditioned, run to 2050, expressed in euros.

Insurance and Risk Management Tools for Agriculture in the EU, fi-compass study for DG AGRI and the EIB, with Howden Climate Risk and Resilience, Risklayer and the Karlsruhe Institute of Technology. Authors include Ana Gonzalez Pelaez, James Daniell and Rowan Douglas CBE.

€28.3^{bn}

Annual average loss today, about 6 per cent of EU crop and livestock production

€57.5^{bn}

A catastrophic year today: the 1 in 50 year probable maximum loss

€40^{bn}

Annual average loss by 2050 on a middle emissions pathway, €46.7bn on business as usual

20^{to}30%

The share that is insured. The rest falls on farmers, consumers and governments

EUR BILLION	PRESENT DAY	2050 SSP2-4.5	CHANGE	2050 SSP5-8.5	CHANGE
ANNUAL AVERAGE LOSS					
Crops	17.4	24.8	+42%	28.9	+66%
Livestock	10.9	15.3	+40%	17.8	+63%
Total	28.3	40.1	+42%	46.7	+65%
1 IN 50 YEAR PROBABLE MAXIMUM LOSS, 2 PER CENT ANNUAL PROBABILITY					
Crops	35.1	51.0	+45%	57.0	+62%
Total with livestock	57.5	foreseeably above 90 by 2050			

Drought drives 54 per cent of current crop losses, excess rain 21, frost 16 and hail 9: about 80 per cent between them. Annual average losses can be summed across perils and Member States; probable maximum losses cannot, because not every peril or country peaks in the same year. A Member State loses four to five times its average in a catastrophe year but at EU level only about twice, and that gap is the priced argument for an EU multi-sovereign risk pool.

HOW IT WAS BUILT

1. The framework

A standard catastrophe risk modelling framework, used by underwriters and regulators since the early 1990s. Hazard, exposure and vulnerability plus a financial module. Climate models carry only the hazard.

3. Baselines and perils

Olympic average yield baselines on rolling five and ten year windows, then peril-specific probabilistic modelling with beta distributions fitted per hazard, producing empirical-hybrid PML curves per country.

2. The data, and the hard part

Forty years of pre-2024 losses from insurer claims, ministry reports, cooperatives, disaster archives and CATDAT, with EUROSTAT and FADN. Twenty seven countries report to different standards, so estimates were reconciled by expert judgement against yields and prices at the time.

4. Simulation and climate conditioning

Ten thousand years simulated at current conditions, then climate conditioned using CMIP6 runs under SSP2-4.5 and SSP5-8.5, roughly 2°C and 4°C by 2100. Annual average loss in money is the pure price of risk: the technical rate before costs and profit.

WHAT IT PROVES

- **The method travels.** Cat modelling, built for hurricanes, works on a sector and a sovereign.
- **Patchy data is not a stopper.** Twenty seven reporting regimes reconciled into one baseline.
- **The output is decision ready.** AAL is a pure premium; PML sets a capital requirement.
- **It made the protection gap arguable,** and produced a financeable proposal rather than another study.

WHAT IT DOES NOT YET DO

- **Two points, not a continuous curve.** Present day and 2050. A true forward curve prices each year between.
- **Exposure is held constant.** The 2050 numbers assume today's crops and technology, so adaptation is not netted off.
- **Livestock to 2050 is partly extrapolated.** The figure above €90bn is foreseeable rather than modelled.
- **One sector, one continent.** A proof of concept, not the standard.

The methodology is not the obstacle. It has already been done once, at the scale of a continent.

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