# Codify Sustainability-Linked Sovereign Lending, Then Give It Scale

## Standard indicators, verification and pricing, and a reward bigger than an interest margin

Sustainability-linked debt pays governments for national climate results, but each deal is handmade and small. Codify it, pay the reward from outside, and make guarantee capacity the prize.

Stephen J. Stretton · writing in a personal capacity

Climate Fiscal Policy Brief No. 4.3 · October 2026

# A handful of governments have tied their borrowing costs to climate results since 2022

| Instrument | Size | Indicators | Step |
|---|---|---|---|
| **Chile bond, 2022** | $2bn, 20 years | Emissions 95 $MtCO_2e$ by 2030; 60% renewables by 2032 | +12.5 bp per miss |
| **Uruguay bond, 2022** | $2.2bn by 2023 | Emissions intensity; native forest area | ±15 bp per indicator |
| **Uruguay World Bank loan, 2023** | $350m | Methane per kg of beef vs 1990 | −50 to −100 bp a year |
| **Thailand bond, 2024** | Bt30bn ($874m) | Emissions; zero-emission vehicles | ±2.5 bp |
| **Slovenia bond, 2025** | €1bn | Emissions vs 2005 | ±50 bp |

Only Uruguay's loan pays the reward from outside: a World Bank fund for global public goods. In the bonds, bondholders pay.

Source: Issuer documents and releases (Uruguay MEF 2023; SEC prospectus 2023; Slovenia 2025; IFR 2024; Cleary Gottlieb 2022). Working paper 4.3, Table 1.

# The rewards are tiny next to what climate policy costs

**$12.5m**

the most Uruguay's $350m loan can save, 3.6% of principal; about $8m in present value

**$77m**

a 100 bp step-down on a $1bn loan for ten years

**$772m**

cost of a stylized reform retiring 2 GW of coal ten years early

Even waiving all interest on $1bn at 6% is worth only $463m. A rebate cannot exceed the interest bill.

Source: Uruguay MEF (2023); author's calculations, 5% discount rate. Working paper 4.3, Section 6.

# Four things keep sustainability-linked debt small

**Every deal is bespoke.** Each issuer invents its own indicators, baselines and step; the market standards say how to disclose them, not what they should be.

**Targets are easy.** Corporate issuers miss them only 14–39% of the time. A reward paid whatever happens buys nothing.

**Rewards arrive late.** Uruguay's 2025 methane result is verified in 2028; the last reward is applied in 2037.

**Steps are arbitrary.** The market norm is 25 bp per target, with no link to what the policy costs.

Source: Feldhütter, Halskov and Krebbers (2024); Stewart and Ul Haq (2023); Climate Bonds Initiative (2024); Uruguay MEF (2023).

# A bond whose coupon moves with results gives the government commitment, not money

**Investors price the expected step at issue.** Bond prices track the size of the penalty, with no mispricing.

**So the government pays for its own reward,** plus a premium for the uncertainty. It still gains from meeting the target once the bond is sold: a commitment device.

**That cannot pay for mitigation,** whose benefits mostly go abroad. Uruguay's bond can cut its coupon by up to about $40m, but bondholders priced that in.

**Pay the reward from outside.** An intermediary lends on a fixed coupon and refunds interest for verified results; it bears the risk across many countries.

Source: Lefournier (2023); Feldhütter et al. (2024); Estevão, Stretton and Zimmermann (2024). Working paper 4.3, Proposition 2.

# Codify the loan: write it once, use it many times

**Indicators:** outturns national statistics already report: emissions, methane per kg of beef, forest area, clean power share, carbon price.

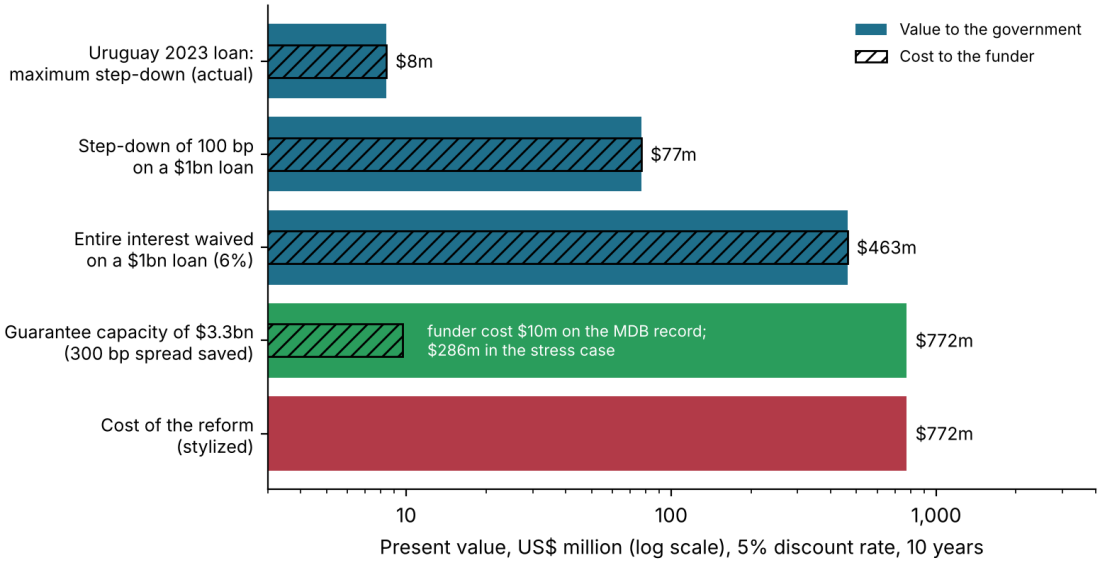
**Baselines:** the country's own Paris pledge plus a published margin, with a peer-based floor.

**Verification:** a named verifier checks the national inventory, as UNDP does for Uruguay.

**Price:** a published reward per unit of outperformance, stated per tonne of $CO_2$, so a funder can compare indicators and countries.

Source: Working paper 4.3, Section 4 and Appendix A; World Bank Group Evolution Roadmap (2022) calls for standardized buy-downs.

# Interest-rate rewards are an order of magnitude too small; guarantee capacity is not




**A 100 bp step on $1bn:** $77m, under $1 per tonne avoided. Matching the reform needs a $10bn loan.

**$3.3bn of guarantee capacity,** saving 300 bp, is worth $772m: the reform's cost.

**Its cost to the funder** is the expected loss, not the face value.

Present value at 5% over ten years, US$ million, log scale. Hatched: cost to the funder.

Source: Author's calculations; working paper 4.3, Figure 1.

# Each dollar of guarantor cost buys 80 dollars of incentive on the banks' record, 2.7 on market-like losses

| Case for $3.3bn of capacity | Funder's expected cost | Buffer held | Incentive per $ |
|---|---|---|---|
| **Development banks' record (0.77% called a year, 4.9% lost)** | $10m | $16m | 80 |
| **Middle (3% called, 10% lost)** | $77m | $83m | 10 |
| **Market-like stress (3% called, 37% lost)** | $286m | $310m | 2.7 |
| **Rebate or cash** | $772m | — | 1 |

The record reflects preferred-creditor status a new guarantor may not inherit. Hold the stress buffer at launch: at a 2% carry the multiple on the record falls to about 13. At a 200 bp saving: 53 and 1.8.

Source: GEMs (2025); Cruces and Trebesch (2013); author's calculations. Working paper 4.3, Table 3; cases shared with papers 4.1 and 4.2.

# The leverage is real only where the guarantee is honored and used

**Preferred-creditor treatment:** the base case needs the guarantor's claims honored like development bank loans, through a counter-indemnity.

**Debt distress:** at high call rates the multiple falls toward one; give account credits instead.

**Pipeline:** capacity is worth nothing to a country with no green borrowing to guarantee.

**Exposure:** the government's liability becomes smaller, contingent and contracted, not zero.

**Additionality:** a reward offset by less concessional finance elsewhere pays nothing.

Source: Working paper 4.3, Section 8; Brief 3.1.

# What to do

## What the analysis shows

**Codified:** the instrument can be repeated cheaply.

**Market steps:** buy commitment, not money.

**Interest bound:** a rebate cannot pay for a major reform.

**Guarantees:** 80 times the incentive per dollar on the record, 2.7 under stress.

## Actions

**Development banks:** publish an indicator menu, baselines, verification rules and a price per tonne.

**Advanced economies:** back a fixed-coupon intermediary that refunds interest for verified results.

**Donors:** make guarantee capacity the prize and fund its buffer (Briefs 4.1, 4.2).