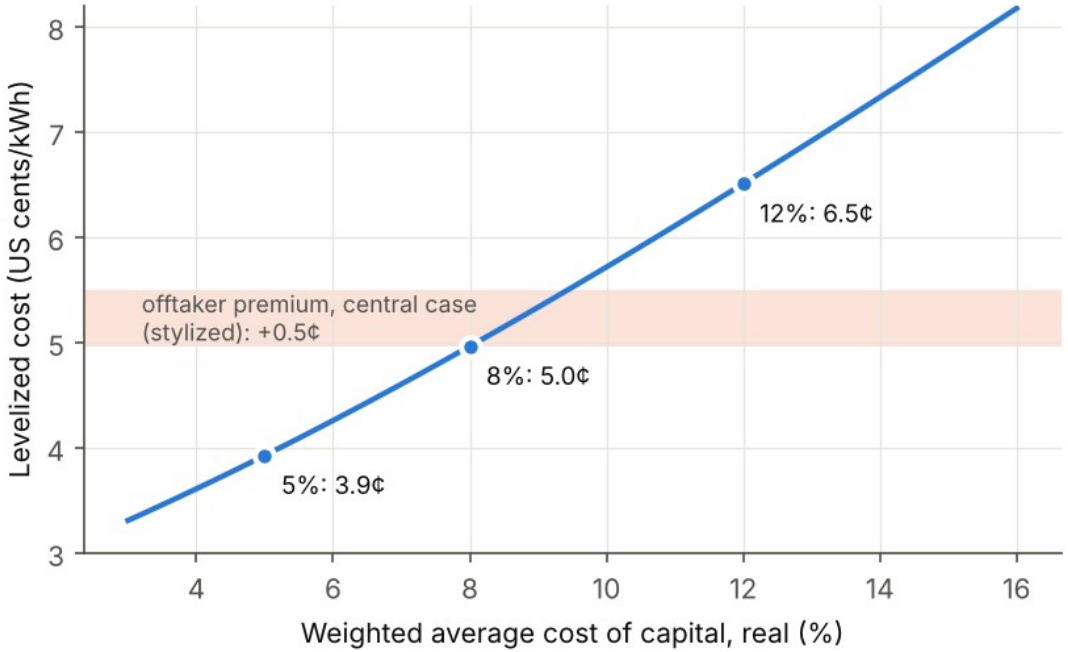
Make Clean Power an Asset Class

Standardized de-risking for developing countries: section 3 in ten slides

Clean power is cheap to build and dear to finance. Remove payment risk at its source with a payment intermediary, then turn projects into a few standard securities. The state's exposure becomes smaller, contingent and contracted.

Stephen J. Stretton · writing in a personal capacity

A solar plant has no fuel bill, so the price of its power is the price of money



+80%: the same plant's power costs 6.5 rather than 3.6 US cents/kWh at a 12% rather than 4% cost of capital.

Well over twice: the cost of capital for utility-scale solar in emerging and developing economies, against advanced economies.

Not engineering: panels and inverters are bought at world prices; the risk around the plant differs.

Source: Paper 3.1 (stylized plant: $800/kW, 20% capacity factor, 25 years); IEA (2024).

The cost of capital is a stack of separate risks, each with a cheapest holder

Risk	Cheapest holder and instrument	Paper
Payment (offtaker)	A payment intermediary with a guarantee waterfall	3.1
Construction	Banks and development lenders, against a contingent contract	3.2
Operating	Bond investors, through pooled synthetic sovereign bonds	3.2
Residual portfolio loss	A first-loss layer held by a regional fund	3.2, 4.2
Currency	Domestic savers, through a local-currency senior tranche	3.1, 3.2
Sovereign and policy	Nobody: priced and conditioned on reform, not transferred	3.1, 4

Source: Section 3 overview, Table 1.

Put a creditworthy payment intermediary between generators and distribution companies

The premium: a weak state buyer adds about 11% to the solar tariff, 1.4 points to the cost of capital (stylized).

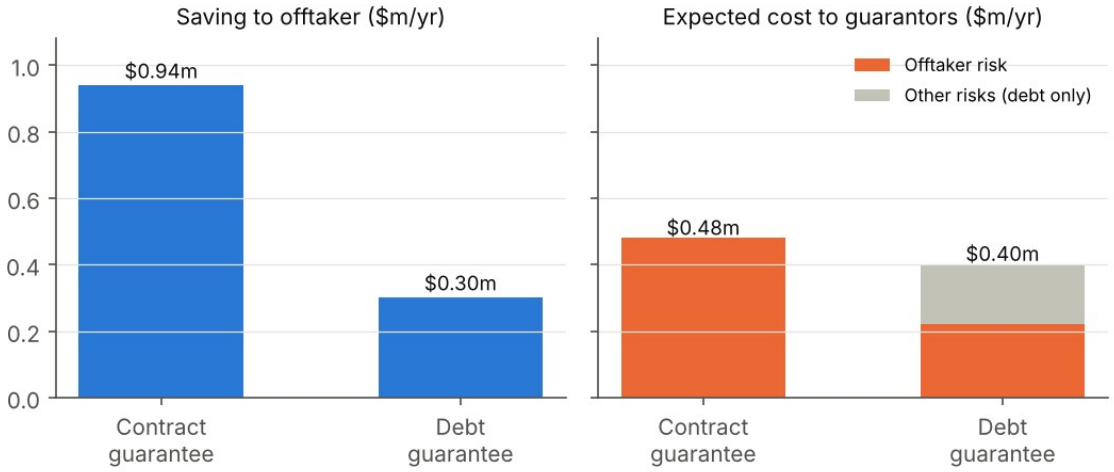
One standard contract: the facility buys from every generator and pays in full and on time, whatever the buyer does.

A waterfall agreed in advance: buyer, its state owner, the national government, a multilateral agency, a donor account.

India's Solar Energy Corporation shows the design works; its buyers' arrears show it moves risk, it does not remove it.

Source: Paper 3.1; ICRA (2025).

Guarantee the contract, not the debt



Contract guarantee: saves $0.94m a year for $0.48m of expected public cost, about $2 per dollar.

Debt guarantee: removes under a third of the premium; the guarantor risks the whole loan.

A real gain only if the facility collects better or makes default rarer; otherwise risk moves to the state.

Source: Paper 3.1, Table 2 and Figure 3 (stylized 100 MW plant).

Split each project at commissioning, and give each phase to the investor who prices it cheapest

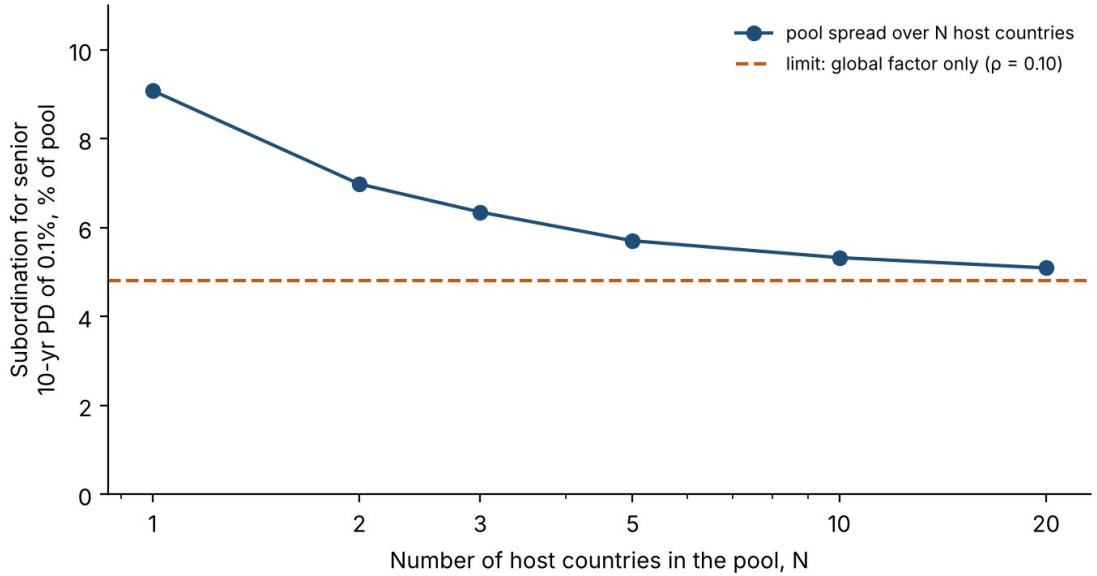
Construction (about two years): banks and development lenders, against a contingent contract from the intermediary.

Operation (25 years): the plant's senior debt, 80% of its cost, is refinanced into a pool on one standard contract.

The long phase decides the tariff: a point off the operating cost of capital is worth nine to eleven times a point off construction.

Source: Paper 3.2, Proposition 1.

Pooling across countries makes the senior bond near-AAA on a thin cushion



Large pool: 5–8% of first loss makes the senior bond near-AAA.

One country: 9.1%; ten: 5.3%, about 40% less, because pooling removes the single-country factor.

Real deals start thicker: about 30% below the top class (Bayfront 2018).

Source: Paper 3.2, Proposition 2 and Section 6.

Refinancing the senior debt cuts the price of solar power by about a fifth

How the plant is financed	Cost of capital	US c/kWh	Change
Single-stage at 10%	10.0%	6.2	–
Two-stage, debt into a project bond at 8%	8.8%	5.8	−7%
Two-stage, debt into the pool at 5.65%	6.9%	5.0	−19%
Pool with a 30% cushion, as in real deals	7.7%	5.3	−14%

Two-year build at 12%; in two-stage cases 80% of the plant's cost is senior debt and 20% equity at 12%.

Source: Paper 3.2, Tables 4 and 6 (stylized).

The pieces compose, and section 4 rewards the governments that adopt them

In order: the intermediary makes contracts bankable; construction is financed at a market rate; operating plants are pooled and refinanced; guarantee conditions improve the utilities.

Each piece is weaker alone: a payment guarantee without a cushion leaves the bond rated on the host.

Grids have no contract: tiered bond guarantees, conditional on reform.

Section 4: guarantee capacity earned there can stand in 3.1's waterfall or behind 3.2's bonds.

Source: Section 3 overview; papers 3.1, 3.2, 4.1, 4.2.

What to do

What section 3 shows

Payment risk: about 11% of the tariff; a contract guarantee removes it at about $2 saved per dollar of expected cost.

Two stages and pools: about a fifth off the price of solar power.

The state's exposure: smaller, contingent and contracted, not gone.

Actions

Finance ministries: build or join a payment intermediary with a waterfall signed before the next tender; record the guarantee.

Regulators: a path to cost-recovery tariffs and better collection.

Development banks: regional pools under one contract; construction loans against contingent contracts; guarantee the facility, not the loans.