

Why the Sun is Cheaper in Abu Dhabi

The UAE and the Geography of Climate Finance

Sabina Craciun Panicker



Institutional capability can travel through contracts.

The benefit depends on procurement, the obligations retained by the host, and the electricity service sustained.

Research question

Al Dhafra’s contracted tariff reached **1.32 US¢/kWh** at financial close.¹ What makes low-cost solar finance possible; and under what conditions can its advantages reach other electricity systems?

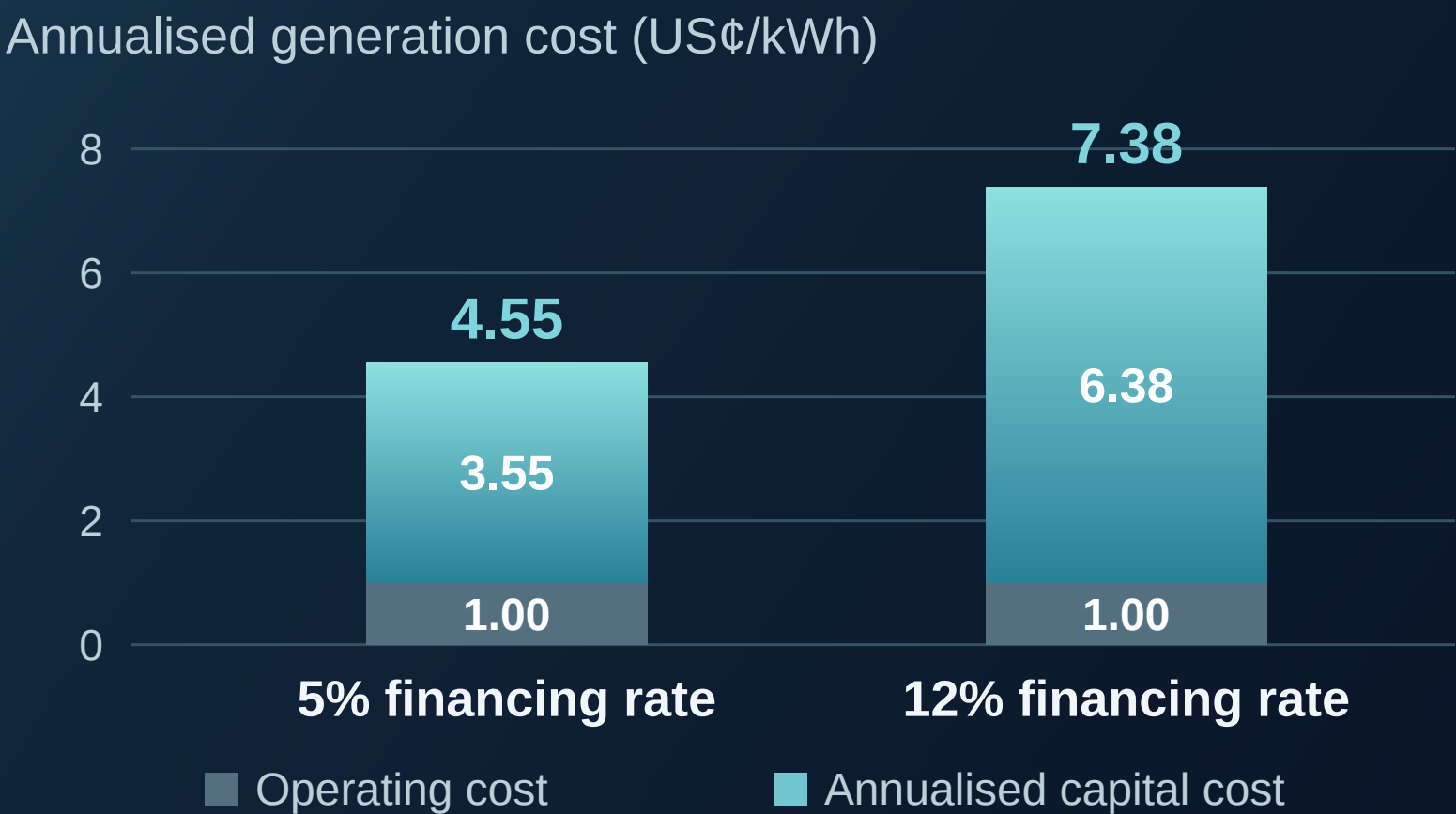
The paper separates access from institutional replication, and generation tariffs from household affordability.

Approach

Comparative documentary analysis of selected project records and public financing disclosures: Al Dhafra, the Pacific Partnership Fund, Nur Navoi, and the IRENA/ADFD facility.

Trace who supplies capital, promises payment and retains risk. A separate calculation isolates financing costs.

Financing changes the price of solar



+62.2%

Annualized generation cost when the real financing rate rises from 5% to 12%, with the same equipment and output.

Fig. 1 | Original financing sensitivity calculation. US\$100m initial cost; US\$2m annual operating cost; 200m kWh/year; 25-year life. Capital recovery factor: $r / [1 - (1 + r)^{-25}]$. Constant real costs and output; no tax, degradation or residual value. Illustrative rates, not country estimates or Al Dhafra tariff forecasts.²

Scope of inference

The cases identify contractual mechanisms. They do not estimate a causal “Emirati discount”, a national financing premium, or changes in household bills.

Different systems, different financing relationships

Case / instrument	Capability supplied	Obligation retained by the host
Pacific islands Grants · US\$50m fund	Project preparation, construction and operating training.	Maintain assets and determine how fuel savings benefit users.
Uzbekistan Auction + project finance	Developer expertise, equity, multilateral lending and payment support.	Purchase electricity under a long-term contract; manage public liabilities.
IRENA / ADFD Concessional loans	Appraisal expertise and lending terms adapted to recipient constraints.	Repay the loan and provide the required sovereign guarantee.

Fig. 2 | Original comparison of institutional access and retained obligations. Synthesis of the paper’s case evidence.^{3–6}

Nur Navoi: how the contract connects institutions

100 MW · 2.679 US¢/kWh · 25-year supply agreement⁴
Masdar won Uzbekistan’s first solar auction in 2019; the project was completed in 2021.⁵

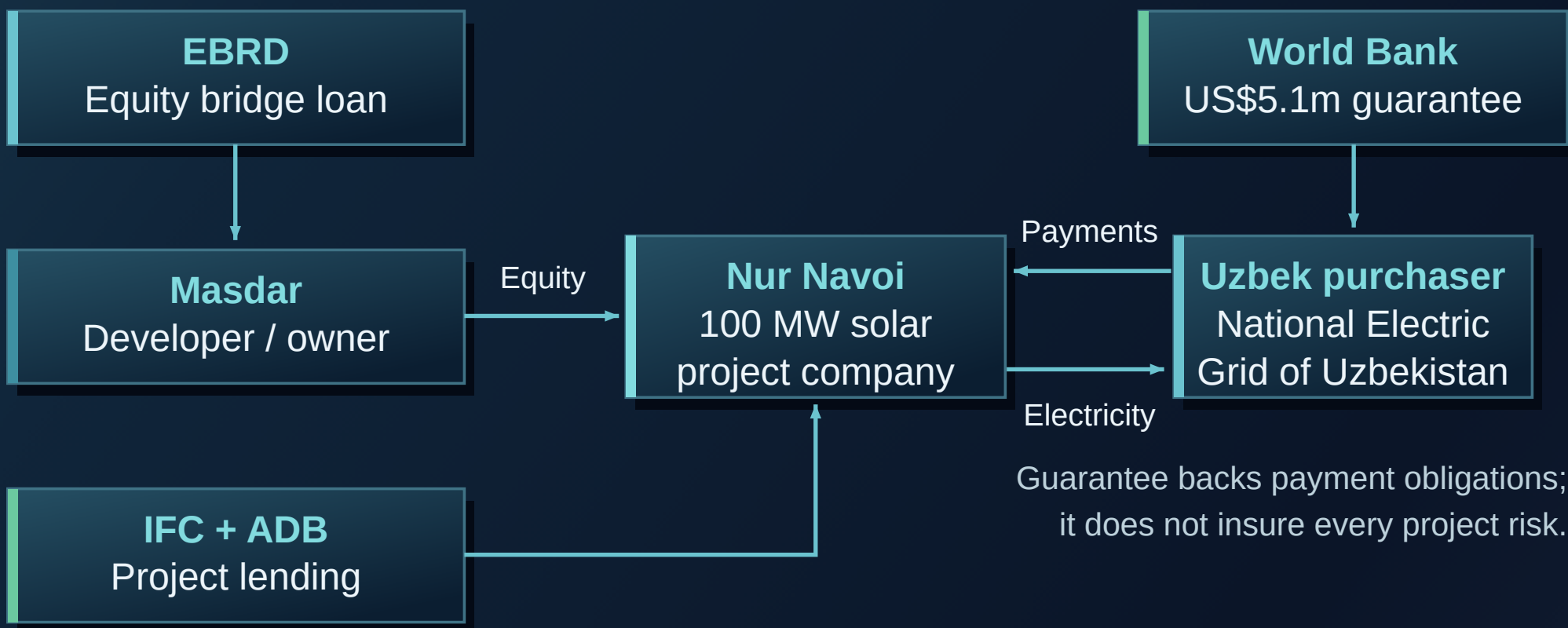


Fig. 3 | Selected financing and purchasing relationships. Original schematic from the World Bank’s 2020 disclosure.⁴ Arrows indicate relationships, not the scale of capital. The equity bridge loan to Masdar is distinct from project lending.

Procurement is the transmission mechanism

Competitive tendering gives the purchaser a route to capture a developer’s financing advantage. Cheaper corporate capital alone does not establish how much reaches the electricity tariff.

A low tariff is only part of the bargain: currency exposure and payment guarantees can leave liabilities with the receiving state.

Findings

- Access does not require replication.**
A government can procure an experienced developer or appraisal service without reproducing Abu Dhabi’s institutional history.
- Adaptation matters.**
The IRENA/ADFD facility reduced lending rates from 2–6% to 1–2% and extended maturity from 15 to 20 years. A sovereign guarantee still remained a condition.⁶
- Outcomes must be traced beyond finance.**
The Pacific programme delivered 6.5 MW across 11 island nations and reported annual diesel displacement of 3.2m litres. These figures do not establish lower household bills.³

Read the instrument behind the headline

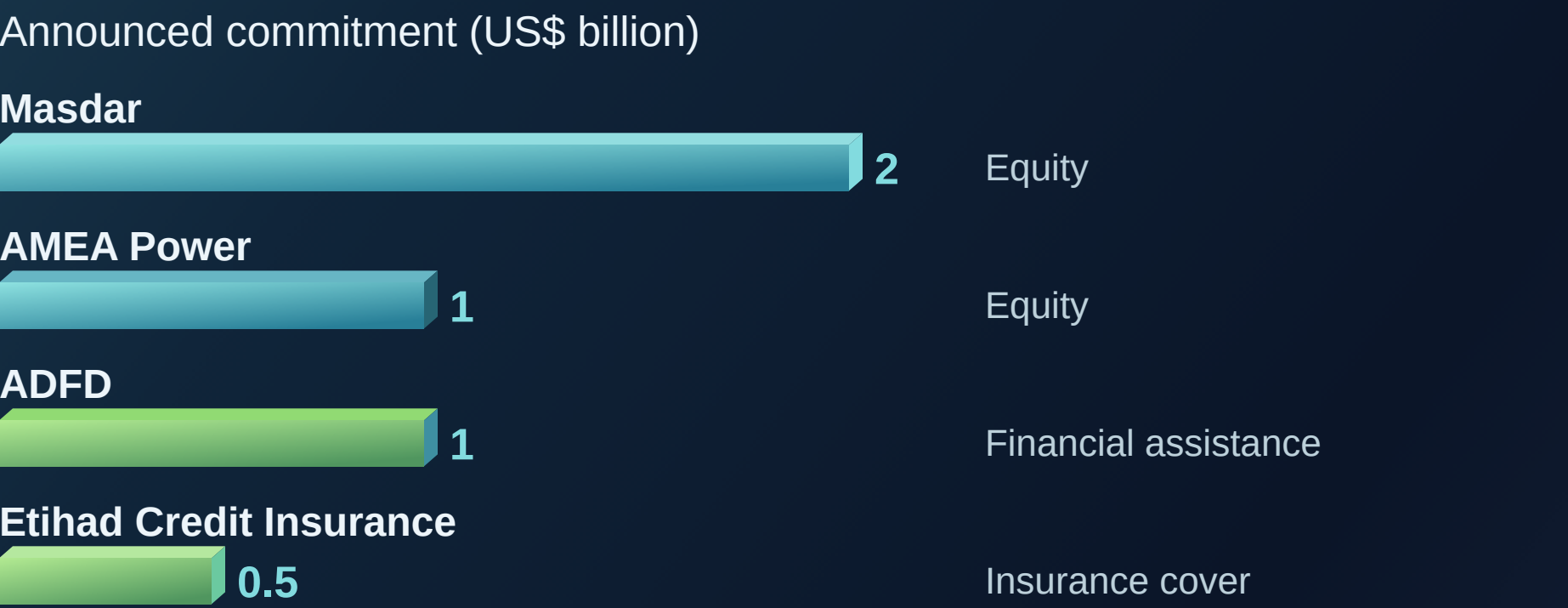


Fig. 4 | Components of the US\$4.5bn Africa initiative. Announced in September 2023.⁷ Shared currency units conceal different contractual claims; these amounts are not evidence of cash disbursed.

Conclusion and implications

The UAE’s international contribution rests in its ability to match financing relationships to recipient needs. **Evaluate success by the obstacle removed, the liability retained, and the service sustained.**

Follow-up research should trace tenders, financing terms, public liabilities and operating savings. Evaluate additional electricity delivery and durable service, rather than announcement size alone.⁸

Selected references · Full bibliography in the research paper.

1. Masdar (2023), Al Dhafra inauguration; Dhafrah PV2, project record.
2. Hirth & Steckel (2016). Environmental Research Letters 11, 114010.

3. Masdar (2014; 2016), UAE Pacific Partnership Fund.

4. World Bank (2020), Pioneering solar power plant in Uzbekistan.

5. IFC (2019), Uzbekistan solar auction; Masdar, Nur Navoi project record.

6. IRENA (2020), IRENA/ADFD Project Facility: Lessons from the Selection Process.

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8. OECD (2025), DAC Blended Finance Guidance, Principles 1, 2 and 4.