VENICE CONFERENCE ON GLOBAL GOVERNANCE OF CLIMATE CHANGE AND SUSTAINABILITY · PSSG 6

From Resource Potential to Bankable Power

Risk allocation, derisking instruments and the cost of capital in Morocco, Egypt and Tunisia

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THE PROBLEM

The gap between solar potential and bankable power

RESOURCE POTENTIAL

- Strong solar resource
- Clean-energy ambitions
- Energy security and industrial demand

BANKABILITY GAP

FINANCING REALITY

- High upfront capital requirement
- Uncertain revenue and repayment conditions
- Country, currency, offtaker and grid risks

The constraint is whether capital can accept the project's risks on workable terms.

THE ANALYTICAL LENS

What makes a solar project bankable?



Project risks → **Risk allocation through contracts and institutions** → **Cost and availability of capital** → **Financial close** → **Reliable electricity delivery**

- Offtaker and revenue
- Currency and capital transfer
- **Grid connection and curtailment**
- Country, contracts and regulation
- Financing terms and project preparation

GRID RISK IS REVENUE RISK

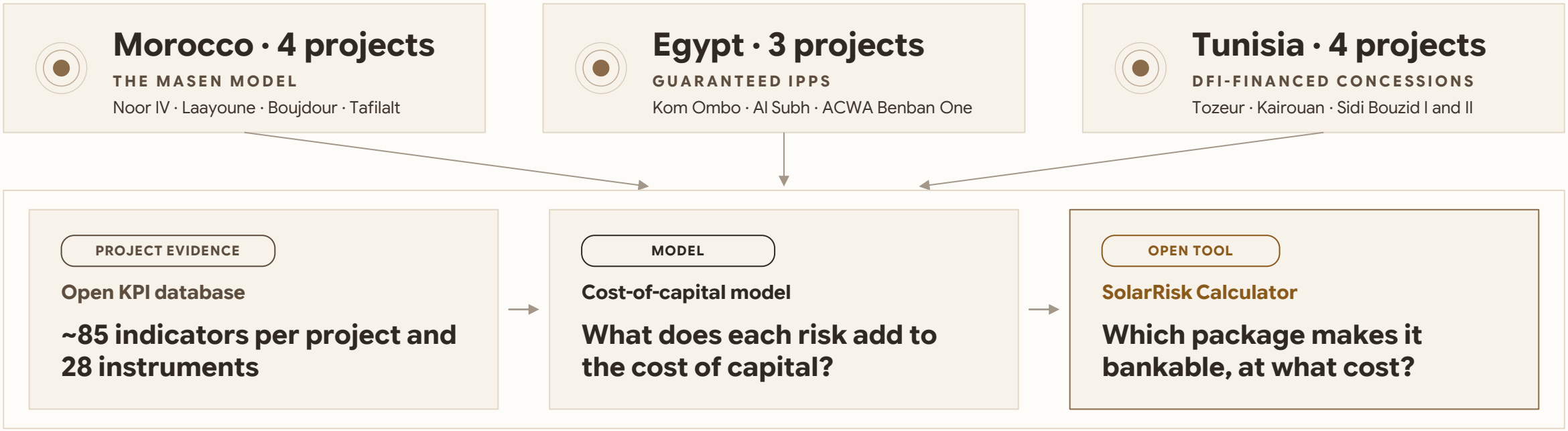
Grid access and curtailment are revenue risks. If a plant cannot connect, dispatch power or receive compensation, forecast cash flows weaken.

A solar project reaches financial close when contracts, institutions and financing allocate its risks to parties able to carry them.

HOW WE TEST IT

Eleven projects, one open database, one model

Every utility-scale PV project in the three countries with public financing data: 979 MWp and USD 942m.



The cases show patterns and the model shows mechanisms; neither is a causal estimate for the region.

COUNTRY BENCHMARKS

Different national contexts, shared financing friction

Financing friction

Morocco

LOWER-RISK BENCHMARK

3.2%

country risk premium · Fitch BB+

- One notch below investment grade, stable outlook
- Inflation ~2%; public debt ~67% of GDP
- Dirham moved ~5% a year against the USD

Egypt

INTERMEDIATE CASE

9.7%

country risk premium · Fitch B

- Floating pound since March 2024; ~22% volatility
- Inflation ~14.5% (2026); public debt ~84% of GDP
- Target ~42% renewable generation by 2030

Tunisia

HIGHER FINANCING FRICTION

9.7%

country risk premium · Fitch B-

- Weakest rating of the three
- STEG sole offtaker; public debt ~84% of GDP
- Renewables only ~6% of generation (2025)

Cost of equity: 11.1% in Morocco, 17.5% in Egypt and Tunisia.

Source: Damodaran, January 2026; Fitch, 2026; IMF, 2026; Ember, 2026. Euro risk-free rate 3.6%.

THREE COUNTRY CASES

Same technology, three ways to carry the risk

Morocco

THE STATE CARRIES THE RISK

4 projects · 292 MWp · USD 330m

- Masen tenders, buys the power, lends and co-invests
- Dirham debt matched to dirham tariffs

0.13	87%	5.4 US¢	~6 mo
private USD per public USD	public / DFI finance	average tariff	award to close

STILL NOT PUBLIC

KfW pricing, curtailment terms, project WACC

Egypt

SOVEREIGN-GUARANTEED IPPS

3 projects · 327 MWp · USD 324m

- Ministry of Finance guarantee in all 3 projects
- Dollar-linked tariffs; banks lend alongside DFIs

1.82	41%	6.4 US¢	≤4 yrs
private USD per public USD	public / DFI finance	average tariff	award to close

STILL NOT PUBLIC

Debt pricing, guarantee terms, curtailment formula

Tunisia

DFIS CARRY THE RISK

4 projects · 360 MWp · USD 289m

- DFI and concessional debt; MIGA cover for equity
- Dinar tariffs against euro debt; no payment guarantee disclosed

0.46	69%	3.1 US¢	1.5–4.7 yrs
private USD per public USD	public / DFI finance	average tariff	award to close

STILL NOT PUBLIC

Payment security, indexation, debt pricing

Where each country placed the risk decided how much private capital followed.

Country averages of disclosed values for the selected projects, not national figures. Award to close uses financial close or the closest evidenced milestone. Detail by country in the backup slides.

Do financing structures cover the risks investors find most material?

	Morocco		Egypt		Tunisia	
	Materiality	Coverage in deal	Materiality	Coverage in deal	Materiality	Coverage in deal
Financing terms	Medium	Covered	High	Covered	High	Covered
Project preparation and contractual certainty	Low	Covered	Medium	Covered	High	Covered
Offtaker / payment security	Medium	Covered by the state	High	Covered · MoF guarantee 3/3	High	Not disclosed · MIGA equity
Currency and capital transfer	Low	Dirham debt and tariff	High	USD tariff · Transfer MIGA 2/3	High	Transfer MIGA · FX terms not disclosed
Grid connection and curtailment	Medium	Partly covered	Medium	Partly covered	Medium	Partly covered

Materiality: country-risk evidence · Coverage: eleven projects

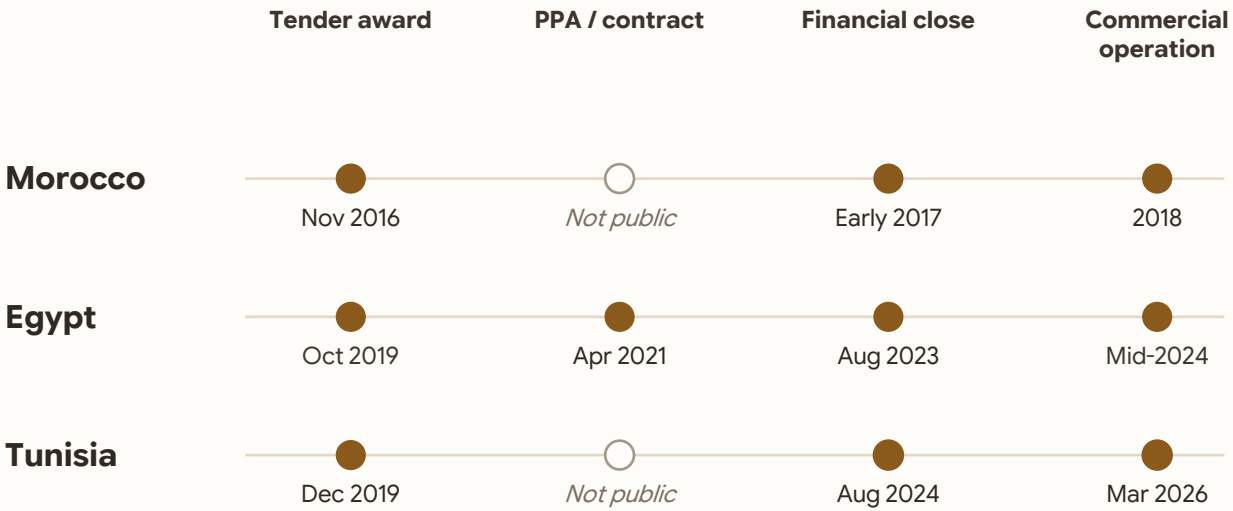
Covered · Partly covered · Uncovered · Undisclosed

CENTRAL FINDING

Development finance covers debt terms and preparation in all eleven projects. Offtaker and currency risk are covered where the state absorbs (Morocco) or guarantees them (Egypt); in Tunisia the disclosed instruments insure equity, while payment and currency terms are not disclosed.

Time-to-close deal terms raise hidden financing costs

TIME TO CLOSE



Rows: Noor Ouarzazate IV, Kom Ombo, Tozeur. Filled = dated in public sources; hollow = not disclosed.

INTERPRETATION

Award to close: months for Noor PV I and Benban Round 2; ~4 years for Kom Ombo and Tunisia's first round; 18 months for Sidi Bouzid II.

DEAL-TERM DISCLOSURE

	MA	EG	TN
Loan tenor	2 of 4	3 of 3	2 of 4
Interest rate or margin	0 of 4	0 of 3	0 of 4
Cost of equity or WACC	0 of 4	0 of 3	0 of 4
Tariff indexation	0 of 4	2 of 3	1 of 4
Offtaker or payment guarantee	0 of 4	3 of 3	0 of 4
Political risk insurance	0 of 4	2 of 3	4 of 4
Curtailment compensation	0 of 4	1 of 3	3 of 4

All Some None

None of the eleven projects publishes its cost of debt or WACC, so public support cannot be shown to reach the risks that constrain investment.

Governments and investors do not prioritize the same risks

Private investors Public officials

FINANCING AVAILABILITY

Rated a high risk

60% vs **39%**



142 stakeholders in seven countries, incl. Morocco, Egypt and Tunisia

GRID ACCESS

Rank among all risks

1st vs **7th**



The top private concern; grid and curtailment terms are rarely public in the eleven deals

TUNISIA

Financing availability: very high concern

80% vs **0 of 4**



Investors cite the standard PPA: no sovereign guarantee, weak termination terms

Projects can attract developers yet stall before close when payment, contract or grid terms do not satisfy lenders.

Source: RES4Africa & PwC (2021), pp. 5–8 and 22. Perceptions surveyed in 2020–21, not the terms of specific deals; small public samples. The Tunisian PPA comment refers to the authorization regime.

ESG risks also shape bankability

E — ENVIRONMENTAL

Land, nature and climate

- **Climate benefits**

  Unlocks climate finance, if the power is delivered and displaces fossil generation

- **Land and biodiversity**

  Disputes or habitat impacts delay permits, raise costs or stall lender approval

S — SOCIAL

People and communities

- **Community participation**

  Unresolved grievances fuel opposition and delay

- **Labor conditions**

  Unsafe work or contractor misconduct triggers lender reviews

- **Energy affordability**

  Tariffs decide whether utilities, consumers or the state pay

G — GOVERNANCE

Rules and legitimacy

- **Consent and legal legitimacy**

  Unresolved land rights or territorial disputes deter lenders

- **Transparency and governance**

  Opaque procurement raises legal and reputational exposure

Early local engagement reduces opposition, permitting delays and reputational risk.

A framework of risks and safeguards, not an assessment of the eleven projects' performance. Source: authors' framework informed by IFC Performance Standards (2012) and the Equator Principles (2020) (paper, Exhibit 3).

THE SOLARRISK CALCULATOR

An open tool that prices each risk and recommends a package



Select or define a project

Price each risk in the debt rate and WACC

Stress test the cash flows

Find the least-cost package

Recommend instruments and providers

- 11 reference projects or a new one
- Country, offtaker, currency, tariff
- **Inputs from the open database**
- Devaluation, output and rate shocks
- Five derisking levers

FREE AND OPEN · SOLARRISKCALCULATOR.NETLIFY.APP

Compares no support, the least-cost package and the user's own mix on debt rate, WACC, DSCR, tariff needed and public cost, then maps the binding risks to 28 instruments and exports a PDF report.

The calculator turns disclosed risks into a comparable cost of capital, before a tender rather than after it.

RECOMMENDATIONS

Three priorities to make the next projects bankable, faster

01

Test bankability before tender

Test tariffs and contracts with lenders before award, and settle payment, currency, grid and termination terms in the tender.

EVIDENCE FROM THE ELEVEN PROJECTS

months vs ~4 yrs

to close: repeat rounds vs first rounds

02

Target the binding risks

Concessional debt for cost and tenor, guarantees for sovereign and offtaker risk, FX cover for currency mismatch.

EVIDENCE FROM THE ELEVEN PROJECTS

1.82 vs 0.13

private USD per public USD: Egypt vs Morocco

03

Disclose terms, use tools

Publish tenor, pricing, indexation and curtailment terms, and benchmark new projects with open tools such as the calculator.

EVIDENCE FROM THE ELEVEN PROJECTS

0 of 11

projects publish their cost of debt or WACC

The challenge is not more public finance, but the right risks, allocated to those best able to bear them.

Thank you.

BACKUP SLIDES

Annex

CASE 1 · MOROCCO

Morocco: the state absorbed the binding risks

4 projects · 292 MWp · USD 330m · country averages of disclosed values

Projects	Noor Ouarzazate IV (72 MWp), Noor Laayoune (80 MW), Noor Boujdour (20 MW): ACWA Power 75% / Masen 25% · Noor Tafilalt (120 MW), ONEE-owned
Financing and public / DFI actors	KfW 22-year loan onlent by Masen (88% of Noor IV cost) · state-guaranteed Masen green bond for Laayoune and Boujdour · IBRD and CTF for Tafilalt
Main binding risks	Debt service at 85% debt · offtaker and currency exposure, carried by the public side rather than the project
Main protections / instruments	One agency tenders, buys, lends and co-invests · state guarantee on debt · dirham debt against dirham tariffs (4.8 to 6.6 US¢/kWh)
Grid and revenue allocation	Grid and curtailment risk with Masen and ONEE · curtailment compensation undisclosed · Tafilalt reports 100.9% of expected output
Financial close and delivery	Noor PV I: award Nov 2016, close 2017, operation 2018 for all three plants · Tafilalt operating since 2021
Remaining evidence gap	KfW pricing · Masen onlending terms · indexation · curtailment terms · project WACC and returns

DEBT SHARE

85%

PUBLIC / DFI SHARE

87%

PRIVATE USD PER PUBLIC USD

0.13

AVERAGE TARIFF

5.4 US¢

in dirham, 23-year PPA

AWARD TO CLOSE

~6 months

Noor PV I

CASE 2 · EGYPT

Egypt: guaranteed IPPs mobilise the most private capital

3 projects · 327 MWp · USD 324m · country averages of disclosed values

Projects	Kom Ombo (200 MWac, ACWA Power) · Al Subh (59.4 MWp, Acciona / ENARA) and ACWA Benban One (67.5 MWp), Benban FiT Round 2 · offtaker EETC
Financing and public / DFI actors	Kom Ombo: EBRD, OPEC Fund, AfDB, Arab Bank + GCF and SEFA concessional (24%) · Benban: IFC USD 653m programme, EBRD and ICBC, MIGA USD 210m
Main binding risks	EETC payment risk · pound devaluation and convertibility over 25 years · B sovereign rating
Main protections / instruments	Ministry of Finance guarantee of EETC (3 of 3) · USD tariff (Kom Ombo, 2.47 US¢) or 70% USD-indexed FiT (8.4 US¢) · MIGA and offshore arbitration
Grid and revenue allocation	25-year take-or-pay PPA at Kom Ombo · shared Benban grid infrastructure · curtailment compensation disclosed for 1 of 3
Financial close and delivery	Round 2 plants closed within months of their PPAs · Kom Ombo: award 2019, close Aug 2023, operation mid-2024
Remaining evidence gap	Debt pricing · guarantee terms · curtailment compensation · WACC (equity IRR 9.9% and DSCR 1.2x at Kom Ombo only)

DEBT SHARE

76%

PUBLIC / DFI SHARE

41%

PRIVATE USD PER PUBLIC USD

1.82

AVERAGE TARIFF

6.4 US¢

USD-linked, 25-year PPA

AWARD TO CLOSE

Up to 4 yrs

Round 2 to Kom Ombo

CASE 3 · TUNISIA

Tunisia: DFI concessions, with gaps on payment and currency

4 projects · 360 MWp · USD 289m · country averages of disclosed values

Projects	Tozeur and Sidi Bouzid I (60 MWp each, Scatec / Aeolus) · Kairouan (120 MWp, AMEA Power) · Sidi Bouzid II (120 MWp, under construction) · offtaker STEG
Financing and public / DFI actors	EBRD and Proparco with CTF/GEF tranche · IFC, AfDB, CTF and SEFA at Kairouan (30% concessional) · EIB and EBRD under EU EFSD+ guarantees (Sidi Bouzid II)
Main binding risks	Young concession regime · STEG offtaker risk · dinar tariffs against euro debt in 3 of 4 · B- rating
Main protections / instruments	MIGA cover for equity (4 of 4) · DFI and concessional debt · EU guarantees and EUR 5.5m grid grant · no payment guarantee or FX hedge disclosed
Grid and revenue allocation	STEG responsible for grid connection · EU grant funds the Sidi Bouzid II line · curtailment terms disclosed for 3 of 4
Financial close and delivery	Round 1 (award Dec 2019): 3.8 to 4.7 years to close · Sidi Bouzid II, same sponsors and lenders: 18 months (June 2026)
Remaining evidence gap	Payment security · tariff indexation · debt pricing · project WACC and returns

DEBT SHARE
67%

PUBLIC / DFI SHARE
69%

PRIVATE USD PER PUBLIC USD
0.46

AVERAGE TARIFF
3.1 US¢
mostly dinar, 24-year PPA

AWARD TO CLOSE
1.5–4.7 yrs
round 2 to round 1

WHAT THE CASES SHOW

Every project closed; who carried the risk made the difference

Private capital mobilised →

Morocco

THE STATE CARRIES THE RISK

0.13

private USD per public USD

- Masen tenders, buys, lends and co-invests
- Dirham debt matched to dirham tariffs
- 87% public / DFI finance; ~6 months to close

Egypt

SOVEREIGN-GUARANTEED IPPS

1.82

private USD per public USD

- Ministry of Finance guarantee in all 3 projects
- Dollar-linked tariffs; banks lend alongside DFIs
- 41% public / DFI finance; months to 4 years

Tunisia

DFIS CARRY THE RISK

0.46

private USD per public USD

- DFI and concessional debt; MIGA cover
- Payment and currency terms not public
- 69% public / DFI finance; 1.5 to 4.7 years

Every project was bankable; the models differ in who carries the risk and how much private capital follows.

The three financing models across eleven projects

Indicator	Morocco (4 projects)	Egypt (3 projects)	Tunisia (4 projects)
Financing model	State-led: Masen lender, buyer, co-owner	Guaranteed IPPs: DFI syndicates	DFI concessions + MIGA
Capacity; investment	292 MWp; USD 330m	327 MWp; USD 324m	360 MWp; USD 289m
Cost per MWp; debt share	USD 1.22m; 85%	USD 1.11m; 76%	USD 0.81m; 67%
Public / DFI share; concessional	87%; 27%	41%; 8%	69%; 14%
Private USD per USD 1 public	0.13	1.82	0.46
Tariff; PPA term	5.4 US¢ (MAD); 23 years	6.4 US¢ (USD / indexed); 25 years	3.1 US¢ (mostly TND); 24 years
Offtaker security	State buyer; state guarantee on debt	MoF guarantee (3 of 3)	Not disclosed (0 of 4)
Political risk insurance	None reported (0 of 4)	MIGA (2 of 3)	MIGA, equity (4 of 4)
Award to close	~6 months (Noor PV I)	Months (Round 2) to 4 years	3.8 to 4.7 years; 1.5 (round 2)
Distinct instruments used	9	15	15

Simple averages of disclosed values; euro costs converted at 1.0824 USD/EUR. Source: SolarRisk database, Benchmark and Derisking Instruments sheets.

MODEL VS PRACTICE

What the reference deals used, and what the model selects

INSTRUMENT	OBSERVED · in the eleven deals	MODEL'S CHOICE · for 9 of the 11 projects	WHAT IT SUGGESTS
Concessional debt CTF/GEF, SEFA, GCF, KfW climate funds	6 of 11	9 of 9	Used in every modelled package, generally at larger shares than the real deals.
State guarantee Ministry of Finance (Egypt); state-backed debt (Morocco)	7 of 11	6 of 9	Consistent with Morocco and Egypt, where sovereign and offtaker risk are priced highest.
Political risk insurance MIGA cover for equity or lenders	6 of 11	Not a model lever	All four Tunisian projects and two Benban plants; it insures against political events rather than lowering debt cost.
Grants EU grant for the Sidi Bouzid II grid line	1 of 11	3 of 9	Reserved for projects whose tariff leaves no headroom: Kom Ombo and Tunisia.

Concessional debt and guarantees form the core of both the real deals and the model.