



Africans
Who Invest

BUILDING WEALTH, CAREERS AND COMPANIES

INTERVIEW GUIDE 11

Infrastructure and Project Finance

How infrastructure assets are financed and valued, with a worked project finance model and the risk allocation that makes deals bankable.

How to use this guide

Infrastructure absorbs more private capital in Africa than any other theme, and project finance is rarely taught to students. This guide covers the structures, the metrics and a worked example.

Most questions have two layers. **What to say** is a short answer you could give in an interview. The notes underneath explain why it is right, so you can handle the follow-up.

Do not memorise answers word for word. Learn the logic, then practise saying it out loud.

01	Why infrastructure matters for African finance	04
02	Revenue models and risk allocation	06
03	The project finance model	09
04	Sector snapshots	12
05	Model mechanics in detail	14
06	Renewables and the energy transition	17
07	Concessions, PPPs and contracts	19
08	Blended finance, guarantees and standards	21
09	Valuation, exits and quick-fire	23
10	Test yourself	25
11	Answers	26

A note on conventions

Worked examples use a 25% tax rate unless the question states otherwise. Where U.S. GAAP and IFRS differ in a way interviewers ask about, the guide says so. Most African markets report under IFRS; U.S. firms will expect U.S. GAAP. Say which you are assuming.

Why infrastructure matters for African finance

Power plants, roads, ports, towers and data centres absorb more capital in Africa than any other private investment theme. Project finance is the discipline that funds them, and almost nobody teaches it to students.

1.1 What is infrastructure investing, and how does it differ from private equity?

What to say

Infrastructure funds buy or build long-lived physical assets that provide essential services: energy, transport, water, digital networks. Compared with buyouts, the assets have more predictable, often contracted or regulated cash flows, longer holding periods, lower return targets, and much higher leverage that is repaid over decades rather than years. The analysis focuses on cash flow stability and contract structure rather than operational transformation.

Category	Examples	Risk and return
Core	Regulated utilities, operating toll roads and airports with long track records	Lowest; returns often high single digits to low teens
Core-plus / value-add	Assets with some growth or operational upside: telecom towers, renewables platforms, ports	Moderate; low to mid teens
Greenfield / development	Building new assets, taking construction and demand risk	Highest; mid to high teens, more in frontier markets

1.2 What is project finance?

What to say

Financing a single asset or project through a dedicated company, a special purpose vehicle, where lenders are repaid only from the project's own cash flows and have limited or no recourse to the sponsors' other assets. Because the lenders' only protection is the project, the structure relies on long-term contracts that lock in revenue and pass risks to the parties best able to bear them.

Typical gearing is 60% to 80% debt, tenors of 12 to 20 years, and a return on the sponsor's equity that depends heavily on how much debt the project can support.

1.3 Who are the parties in a project?

Party	Role
Sponsors	Equity investors who develop and own the project company: developers, infrastructure funds, utilities, DFIs
Offtaker	The buyer of the output under a long-term contract, such as a national utility buying power
Lenders	Commercial banks, DFIs, export credit agencies, infrastructure debt funds
EPC contractor	Builds the asset under a fixed-price, date-certain engineering, procurement and construction contract
O&M contractor	Operates and maintains the asset once built
Host government	Grants the concession or licence, and may provide guarantees, land and tax terms
Advisers and insurers	Technical, legal, insurance and model auditors who confirm the project works as documented

Revenue models and risk allocation

2.1 How do infrastructure assets earn revenue?

Model	How it works	Key risk
Availability payment	The government or offtaker pays a fixed amount as long as the asset is available, regardless of usage. Common for hospitals, schools, some roads	Counterparty credit and performance deductions
Take-or-pay / power purchase agreement	The offtaker pays for contracted capacity whether or not it uses it, plus a charge for energy delivered	Offtaker credit; curtailment; currency of the tariff
Regulated	A regulator sets allowed revenue based on the asset base and a permitted return	Regulatory reset risk
Merchant / demand-based	Revenue depends on usage or market prices: toll roads, ports, merchant power	Volume and price risk
Contracted commercial	Long-term leases to corporate customers: towers, data centres, pipelines	Tenant credit and renewal

2.2 What are the main project risks, and who takes them?

Risk	Typical mitigation
Construction (cost, delay)	Fixed-price, date-certain EPC contract with liquidated damages; contingency; completion guarantees from sponsors
Operating performance	O&M contract with performance guarantees; independent engineer's review
Revenue / demand	Take-or-pay or availability contract; traffic studies for merchant assets
Offtaker credit	Sovereign guarantee or letter of support; escrow accounts; partial risk guarantees from DFIs
Currency	Tariff indexed to or paid in hard currency; hedging; local-currency debt where available
Political and regulatory	Political risk insurance (for example MIGA); stabilisation clauses; DFI participation as a deterrent
Interest rate	Fixed-rate debt or swaps
Fuel or input supply	Long-term supply agreements; pass-through of fuel cost in the tariff

The principle: each risk goes to the party best placed to control or price it. A project where the sponsor keeps risks it cannot manage is a project lenders will not finance.

2.3 What is a PPP?

What to say

A public-private partnership: a long-term contract in which a private party finances, builds and operates a public asset and is paid by the government, by users, or both, with the asset usually returning to the state at the end of the concession. It moves construction and operating risk to the private sector and spreads the cost over the asset's life.

In African markets

Independent power producers are the most common project-financed assets on the continent, usually selling to a state utility under a dollar-indexed power purchase agreement backed by a government guarantee. The weakest link is often the utility's ability to pay, which is why DFI guarantees, escrow accounts and political risk cover appear in almost every deal. Toll roads and ports are harder to finance because demand risk is real and hard to hedge.

The project finance model

The model answers one question: how much debt can this project carry while keeping lenders comfortable, and what return does that leave for equity?

THE METRICS

Coverage ratios

CFADS. Cash flow available for debt service: revenue less operating costs, maintenance capex and taxes, before any debt payments.

DSCR. Debt service coverage ratio = $\text{CFADS} \div (\text{interest} + \text{scheduled principal})$ for a period. Lenders typically require a minimum of about 1.20x to 1.40x for contracted assets and higher for merchant risk.

LLCR. Loan life coverage ratio = $\text{present value of CFADS over the loan life} \div \text{outstanding debt}$. A whole-life view of repayment capacity.

Gearing. $\text{Debt} \div \text{total project cost}$. Higher gearing raises equity returns but lowers coverage.

3.1 Worked example: a 100 MW solar plant.

Total cost \$100m, financed 75% with a \$75m loan at 8% repaid over 15 years in equal annual instalments, and 25% with \$25m of sponsor equity. The plant runs at a 20% capacity factor and sells all output at \$80 per MWh under a 20-year PPA. Operating costs are \$2.5m a year. Ignore tax and degradation for simplicity.

Annual figures	Calculation	\$m
Output	$100 \text{ MW} \times 20\% \times 8,760 \text{ hours}$	175,200 MWh
Revenue	$175,200 \times \$80$	14.0
Less: operating costs		(2.5)
CFADS		11.5
Annual debt service (annuity, 8%, 15 years)	$\$75\text{m} \times 0.08 \div (1 - 1.08^{-15})$	8.8
DSCR	$11.5 \div 8.8$	1.31x
Cash to equity during the loan	$11.5 - 8.8$	2.7 a year
Cash to equity in years 16 to 20	no debt service	11.5 a year

Reading it. A 1.31x DSCR is acceptable for a contracted solar asset. Equity receives \$2.7m a year on \$25m for 15 years, then \$11.5m a year for five years; that stream gives an equity IRR of roughly 13%, before tax and before any terminal value. If the tariff fell to \$70, CFADS would be \$9.8m and DSCR 1.11x, below most lenders' minimum, so the loan would need to shrink and the equity return would fall.

3.2 What is debt sculpting?

What to say

Setting the repayment schedule so that debt service follows the project's cash flow profile, keeping DSCR roughly constant at the target level in every period rather than using equal instalments. It maximises the debt the project can raise for a given minimum DSCR. In practice, debt size is often solved for a target DSCR, which makes the model circular and requires iteration or a macro.

3.3 What reserve accounts do lenders require?

What to say

A debt service reserve account holding typically six months of debt service, so a temporary shortfall does not cause a default, and a maintenance reserve account funding major periodic maintenance. Cash flows through a waterfall: operating costs, then taxes, then debt service, then reserve top-ups, and only then distributions to equity, which are often blocked if DSCR falls below a lock-up level.

3.4 How do you value an operating infrastructure asset?

What to say

Primarily a discounted cash flow of the equity distributions over the remaining concession or asset life, at a discount rate reflecting the contract quality and country. Contracted assets with strong counterparties trade at low discount rates and high EV/EBITDA multiples; merchant or frontier-market assets need much higher returns. Comparable transactions provide a cross-check.

3.5 Why is a DFI's participation valuable beyond the money?

What to say

Governments are reluctant to default on or expropriate projects backed by institutions they need for future funding, so DFI involvement lowers political risk. DFIs also bring long tenors that commercial banks will not provide, guarantees that make the offtaker's obligations bankable, and a stamp of approval on environmental and social standards that other investors rely on.

Sector snapshots

Sector	What drives value	What to ask
Renewable power	Tariff, capacity factor, PPA tenor and offtaker credit; falling equipment costs	Currency of the tariff? Curtailment terms? Grid connection risk?
Thermal / gas power	Capacity payments, fuel supply and pass-through, dispatch	Who bears fuel price and supply risk? Transition risk over the asset life?
Telecom towers	Tenancy ratio (tenants per tower), long leases with escalators, operator credit	How concentrated are tenants? Power costs and diesel exposure?
Data centres	Contracted capacity, power availability, connectivity, tenant credit	Cost and reliability of power? Hyperscaler demand in the market?
Toll roads	Traffic volumes and growth, tariff indexation, concession length	How reliable is the traffic study? Political tolerance for tolls?
Ports and logistics	Volumes tied to trade, concession terms, competing ports	Hinterland connectivity? Concentration in a few commodities?
Water and sanitation	Availability payments or regulated tariffs, collection rates	Who bears collection risk? Affordability and political sensitivity?

4.1 Why have telecom towers attracted so much capital in Africa?

What to say

They combine infrastructure economics with growth. Mobile operators sell their towers to independent companies and lease space back on long contracts with inflation escalators, so revenue is contracted and predictable. Adding a second or third tenant to an existing tower costs little and roughly doubles the margin, so returns improve as tenancy ratios rise. The risks are operator credit, currency, and the cost of powering towers off-grid.

4.2 How does the energy transition affect infrastructure investing?

What to say

It creates enormous demand for new assets, from renewables and storage to transmission and electric mobility, and puts existing fossil-fuel assets at risk of shortened lives. In Africa, the argument is often framed differently: the priority is access to reliable power at all, so gas remains part of most plans alongside solar and hydro. Investors need a view on which assets will still be paid for in 2045.

Model mechanics in detail

Project finance models look different from LBO models: monthly or semi-annual periods, a construction phase, and debt sized by coverage rather than by multiple.

5.1 How does the construction period work?

What to say

Costs are drawn down over the build according to a construction schedule, funded pro rata from equity and debt, often with equity first. There is no revenue, so interest during construction is capitalised into the project cost and funded by the loan itself, and a separate interest-during-construction facility is sized for it. Commercial operation date marks the switch to the operating phase, when repayment begins.

Example. An 18-month build with a \$75m loan drawn evenly at 8%: interest during construction is roughly $\$75\text{m} \times 8\% \times 0.75$ years on the average balance, about \$4.5m, which is added to the funding requirement.

5.2 Show me how debt is sized from a target DSCR.

Using the solar project from Section 03: CFADS is \$11.5m a year, the target minimum DSCR is 1.30x, the rate is 8% and the tenor is 15 years.

Step	Calculation	Result
Maximum annual debt service	$\$11.5\text{m} \div 1.30$	\$8.85m
Annuity factor at 8% for 15 years	$(1 - 1.08^{-15}) \div 0.08$	8.56
Debt capacity	$\\$8.85\text{m} \times 8.56$	\$75.7m

That is why the project was financed with \$75m: the debt was not chosen as a percentage of cost, it was solved from the coverage the lenders required. If the tariff or the resource assumption falls, debt capacity falls with it and the sponsor must contribute more equity.

This creates a circularity in the model: debt size depends on CFADS, and CFADS depends on nothing from the debt, but interest during construction depends on debt size, which changes project cost, which changes the funding requirement. Solve with iteration or a short macro, and keep a switch to break the loop.

5.3 What does the cash flow waterfall look like?

Order	Payment
1	Operating and maintenance costs, fuel, insurance
2	Taxes
3	Senior debt interest
4	Senior debt scheduled principal
5	Debt service reserve account top-up to the required level
6	Maintenance reserve account top-up
7	Mandatory prepayment or cash sweep, if triggered
8	Subordinated or shareholder loan interest and principal
9	Distributions to equity, subject to the distribution lock-up test

Distributions are typically blocked if DSCR falls below a lock-up level, often around 1.10x to 1.15x, or if a reserve is underfunded. Equity therefore receives nothing in a bad year even if the project is technically solvent, which is the main reason infrastructure equity IRRs are lower than the headline spread suggests.

5.4 What is a mini-perm, and why use one?

What to say

A loan with a short maturity, five to seven years, on an asset with a 20-year life, on the expectation that it will be refinanced once construction and ramp-up risk have passed. A hard mini-perm matures and must be repaid; a soft mini-perm stays outstanding but with rising margins and a cash sweep that make refinancing attractive. It transfers refinancing risk to the sponsor in exchange for cheaper or more available debt today.

5.5 How do sponsors improve equity returns in infrastructure?

- **Refinancing** once the asset is operating: lower spread, longer tenor, higher gearing, often with a distribution to equity.
- **Debt sculpting** to squeeze the maximum debt from a given coverage requirement.
- **Operating improvements:** availability, efficiency, cost of maintenance contracts.
- **Portfolio effects:** pooling several projects allows cross-collateralised financing and cheaper capital.
- **Selling into a lower-return buyer base:** pension funds and insurers accept lower returns for operating, contracted assets, which is the exit for most development equity.

Renewables and the energy transition

6.1 What are P50 and P90, and why do lenders care?

What to say

Resource assessments give a probability distribution of energy output. P50 is the central estimate, exceeded half the time; P90 is the level exceeded in nine years out of ten. Equity underwrites returns on P50; lenders size debt and test coverage on P90 or a one-year P99, because they need the project to service debt in a poor resource year.

Example. If P50 output is 175,200 MWh and the P90 is 8% lower, at 161,200 MWh, revenue at \$80 per MWh falls from \$14.0m to \$12.9m and CFADS from \$11.5m to \$10.4m, cutting DSCR from 1.31x to 1.18x on the same debt.

6.2 What else drives a renewables model?

Driver	What to check
Capacity factor	Site-specific and technology-specific; solar in the Sahel differs from solar in Europe. Confirm it against measured data, not a brochure
Degradation	Panels lose output each year, commonly around 0.5%; wind turbines lose availability with age
Curtailement	If the grid cannot take the power, is the offtaker still obliged to pay? Deemed-energy provisions are the single most valuable clause in a weak-grid market
Tariff structure	Fixed, escalating with inflation, or indexed to a hard currency; and whether it steps down after a period
Grid connection	Who builds it, who pays, and what happens if it is late

Merchant tail	Cash flows after the PPA expires. Lenders usually give little or no credit for them; buyers may pay for them
Storage	Batteries change the revenue model from energy to capacity and flexibility, with degradation and replacement capex to model

6.3 What is a corporate PPA?

What to say

A power purchase agreement with a corporate buyer, such as a mine, brewery or data centre, rather than a utility. It can be physical, where the power is delivered directly or through the grid, or virtual, where the parties settle the difference between the agreed price and the market price. In markets with a weak state utility, a creditworthy corporate offtaker can be a better counterparty than the grid, which is why mining companies have become important buyers of African renewables.

6.4 How do you evaluate a development-stage pipeline?

What to say

Value it by stage and probability, not as a portfolio of finished projects. A project with land, a grid connection, permits and a signed PPA is worth a large multiple of one with a memorandum of understanding. Ask what percentage of the developer's historical pipeline reached financial close, how long it took, and what it cost per megawatt of development spend. A developer's real asset is its permitting and grid-access capability, not its megawatt count.

Concessions, PPPs and contracts

Structure	What it means	Where you see it
BOT	Build, operate, transfer: the private party builds and runs the asset for a concession period, then hands it to the state	Power plants, toll roads
BOOT	Build, own, operate, transfer: ownership sits with the private party during the term	Water treatment, ports
DBFO / PFI-style	Design, build, finance, operate, usually paid by availability payments from government	Hospitals, schools, prisons, some roads
Affermage / lease	The private operator runs public assets for a fee, with the state keeping investment responsibility	Water utilities in francophone West Africa
Management contract	Operations only, no capital at risk	Airports, utilities in reform programmes

7.1 What are the contracts that make a project bankable?

- **Concession or implementation agreement** with the government: the right to build and operate, land rights, tax treatment, and what happens on termination.
- **Offtake agreement**: the PPA or availability contract, with tenor, tariff, indexation, deemed payments and termination compensation.
- **EPC contract**: fixed price, date certain, liquidated damages for delay and underperformance, retention and warranties.
- **O&M and long-term service agreements**: availability guarantees and cost certainty.
- **Fuel or resource supply agreement**, where relevant, with cost pass-through matching the tariff.
- **Direct agreements**: give lenders the right to step in and replace the sponsor or operator rather than lose the project.

7.2 What are termination payments, and why do they matter so much?

What to say

The compensation payable if the concession ends early. If the government terminates for convenience or defaults, the payment usually covers outstanding debt plus some or all of the equity's expected return; if the private party defaults, it may cover only debt, or less. Lenders read this clause before almost anything else, because in a political dispute it is their recovery.

7.3 What are the common reasons African PPPs fail to reach financial close?

- An offtaker that is not creditworthy and a government unwilling to guarantee it.
- Tariffs that are politically unaffordable at a level that supports the investment.
- Currency mismatch with no hedge available at the required tenor.
- Land acquisition and resettlement delays.
- Grid or transport connections outside the sponsor's control.
- Procurement processes that are renegotiated or cancelled after award.
- Environmental and social requirements identified too late to be designed in.

The interview version of this: most projects die from contractual and counterparty problems, not engineering ones.

Blended finance, guarantees and standards

The structures that make African infrastructure financeable are the part of the market least covered in standard interview material, and the part most likely to impress an Africa-focused interviewer.

8.1 What is blended finance?

What to say

Combining concessional capital from donors or development institutions with commercial capital, so that the commercial investor receives a risk-adjusted return it can accept. The concessional money takes a first-loss or junior position, accepts a lower return, provides a guarantee, or funds technical assistance and development costs. The aim is to mobilise private capital into projects that would not otherwise clear a commercial hurdle.

8.2 What forms of credit enhancement are used?

Instrument	What it covers
Partial risk guarantee	Government non-performance under the concession or PPA
Partial credit guarantee	A portion of debt service, improving tenor and rating
Political risk insurance	Expropriation, war and civil disturbance, breach of contract, and currency inconvertibility and transfer restriction
First-loss tranche	A junior slice funded by a donor or DFI that absorbs initial losses
Liquidity facility	A standby line that covers late payments by an offtaker without triggering default

Currency hedging facilities	Specialist providers offering long-dated hedges in currencies where banks will not quote
-----------------------------	--

Providers include the multilateral and bilateral institutions and specialist insurers active in the market. Names, mandates and capacity change, so confirm who is active in a given country before citing them in an interview.

8.3 What environmental and social standards apply, and why do they affect returns?

What to say

Most commercial lenders in emerging markets apply a common framework based on the IFC's performance standards, adopted by banks through the Equator Principles. They cover environmental impact, labour, community health and safety, land acquisition and resettlement, biodiversity and stakeholder engagement. They matter commercially because compliance costs money and time upfront, non-compliance can stop a project entirely, and an asset built to those standards sells to a wider pool of buyers at exit.

8.4 How do impact and returns interact in practice?

What to say

In infrastructure they usually align: a power plant that raises generation capacity earns its return by selling electricity people need. The tension appears in tariff affordability, in serving the poorest customers, and in the pace of the energy transition. The honest answer treats impact as a constraint and a source of access, including cheaper capital and government support, rather than a discount investors are asked to accept.

Valuation, exits and quick-fire

9.1 How is an infrastructure asset valued in a sale?

What to say

Primarily a dividend discount or equity cash flow DCF over the remaining contract life, at a discount rate set by the asset's risk and the country. Cross-checks include EV/EBITDA, a multiple of the regulated asset base for regulated utilities, cost per megawatt or per tower for comparable assets, and recent transaction multiples. Buyers also price the refinancing they expect to do after purchase.

9.2 Who buys these assets?

What to say

Operating, contracted assets are bought by infrastructure funds, pension funds and insurers looking for long-dated inflation-linked cash flows; strategic utilities and industrial operators; and listed vehicles such as yieldcos. In Africa, DFIs and regional platforms are also active buyers, and several platforms have been built specifically to aggregate operating assets for eventual sale to institutional capital.

9.3 Quick-fire bank.

Question	Answer
Why is infrastructure debt cheaper than LBO debt at the same leverage?	Cash flows are contracted and long-dated, collateral is hard and specific, and lenders control the cash through a waterfall and reserves.
Why do infrastructure funds accept lower IRRs?	Lower risk, longer duration and yield during the hold. Much of the return is cash distributions rather than a terminal exit.

What is availability-based revenue?	Payment for the asset being ready to use, independent of usage.
What breaks a toll road model?	Optimistic traffic forecasts. Demand risk is the hardest risk to hedge and the most commonly overestimated.
Why are towers considered infrastructure rather than telecoms?	Contracted, inflation-linked lease revenue from multiple tenants, with low maintenance capex and no consumer exposure.
What is the difference between DSCR and LLCR?	DSCR is period-by-period coverage; LLCR compares the present value of all remaining CFADS with debt outstanding.
What is a lock-up?	A restriction on distributions to equity when coverage falls below a set level.
Why capitalise interest during construction?	There is no revenue to pay it, so it is funded by the loan and added to project cost.
What is a deemed energy payment?	Payment for power the plant could have produced but was prevented from delivering, usually by grid curtailment.
What is the biggest risk in an African IPP?	Offtaker payment risk, and the currency in which the tariff is paid. Both are structural, not operational.
Why do lenders want a direct agreement?	So they can replace a failing sponsor or operator and keep the project running rather than enforce against an asset nobody wants.
What does "non-recourse" not protect the sponsor from?	Completion guarantees, equity commitment letters and any specific sponsor undertakings, which are recourse obligations.

Test yourself

#	Question
1	CFADS is \$40m and annual debt service is \$32m. What is the DSCR?
2	A project costs \$200m and is 70% geared. How much equity do sponsors invest?
3	A 50 MW wind farm runs at a 35% capacity factor. What is annual output in MWh?
4	Lenders require a minimum DSCR of 1.30x. CFADS is \$26m. What is the maximum annual debt service?
5	Why is an availability payment less risky than a toll?
6	A tower company has 1,000 towers and 1,800 tenants. What is its tenancy ratio, and why does it matter?
7	A PPA tariff is in local currency while the debt is in dollars. Name two ways to manage the risk.
8	What does "non-recourse" mean for the sponsor?

ANSWERS

Answers

#	Answer
1	1.25x.
2	\$60m.
3	$50 \times 0.35 \times 8,760 = 153,300$ MWh.
4	$\$26\text{m} \div 1.30 = \$20\text{m}.$
5	Payment depends on the asset being available, which the operator controls, not on how many people use it, which it does not. The remaining risk is the payer's credit.
6	1.8x. Each extra tenant adds revenue at very little extra cost, so margin and returns rise with the ratio.
7	Index the tariff to the dollar or another hard currency; borrow in local currency; hedge with forwards or a cross-currency swap; use a DFI guarantee or liquidity facility for convertibility risk.
8	Lenders can claim only against the project company and its assets and contracts. If the project fails, the sponsor loses its equity but its other businesses are not on the hook.

Knowledge. Networks. Capital.

Africans Who Invest equips people across Africa and the diaspora with the knowledge, networks and capital to build wealth, careers and companies.

Also in this series: 01 Accounting and the Three Statements · 02 Valuation and Corporate Finance · 03 M&A and Accretion/Dilution · 04 LBOs and Private Equity · 05 The PE Case Interview · 06 Recruiting, Your Story and Behavioural Questions · 07 Growth Equity and Venture Capital · 08 Credit and Private Credit · 09 The Excel Modelling Test · 10 Public Markets and the Stock Pitch · 12 Investment Management and Asset Allocation.

This guide is for educational purposes only and is not investment, legal, accounting or tax advice. Rules and market conventions change; check current practice before relying on any specific figure. © 2026 Africans Who Invest. Free to share with attribution; not for resale.

