



INVESTOR REQUIREMENTS
FOR RENEWABLE ENERGY
PROJECT FINANCE

CONTENTS

- what are the sources of equity capital?
- who are the Investors?
- what are their characteristics?
- under what constraints do they operate?
- the funding of existing v. new assets : privatisations
- corporate structure of a project
- the role of mezzanine finance
- the role of a secondary market for investors
- what specifically do Investors require in a project?

SOURCES OF EQUITY

Equity :

- Current profits from operations
- Retained profits
- New equity subscription
- In-kind contributions; development fees

Quasi Equity & Debt

- Preference shares
- Subordinated or mezzanine debt
- Debt / equity swaps.

SOURCES OF EQUITY

Equity :

- Equipment suppliers
- Operators & utilities
- Developers / entrepreneurs
- Private investment funds
- Development banks / institutions
- Private companies
- IPO's
- Bonds

SUMMARY OF PROJECT FINANCE
FINANCE STRUCTURE

At Risk:

Equity
(e.g. 20%)

- Mezzanine equity & subordinated debt

No Risk:

Debt
(e.g. 80%)

-
- Grants and subventions

MEASURES USED BY INVESTORS

1 : Payback Period :

X

Investment = 'v'

Aggregate net revenues = 'v' in "y" years.

2: Net Present Value [NPV] :

[X]

Sum of project cash-flows period by period,
discounted back to today's value at a discount rate
representing the opportunity cost of capital.

[NB. Need to quote discount rate and period]

MEASURES USED BY INVESTORS

3 : Internal Rate of Return [IRR] :

IRR = the discount rate at which the NPV of the
project cash-flows period by period equals zero.

Which IRR to use?

(a) Project IRR : Revenues v. [Capex + M&O costs] [?]

(b) Economic IRR : as for Project IRR, but including economic
costs & benefits.

[NB. include inflation or not?]

[yes?]

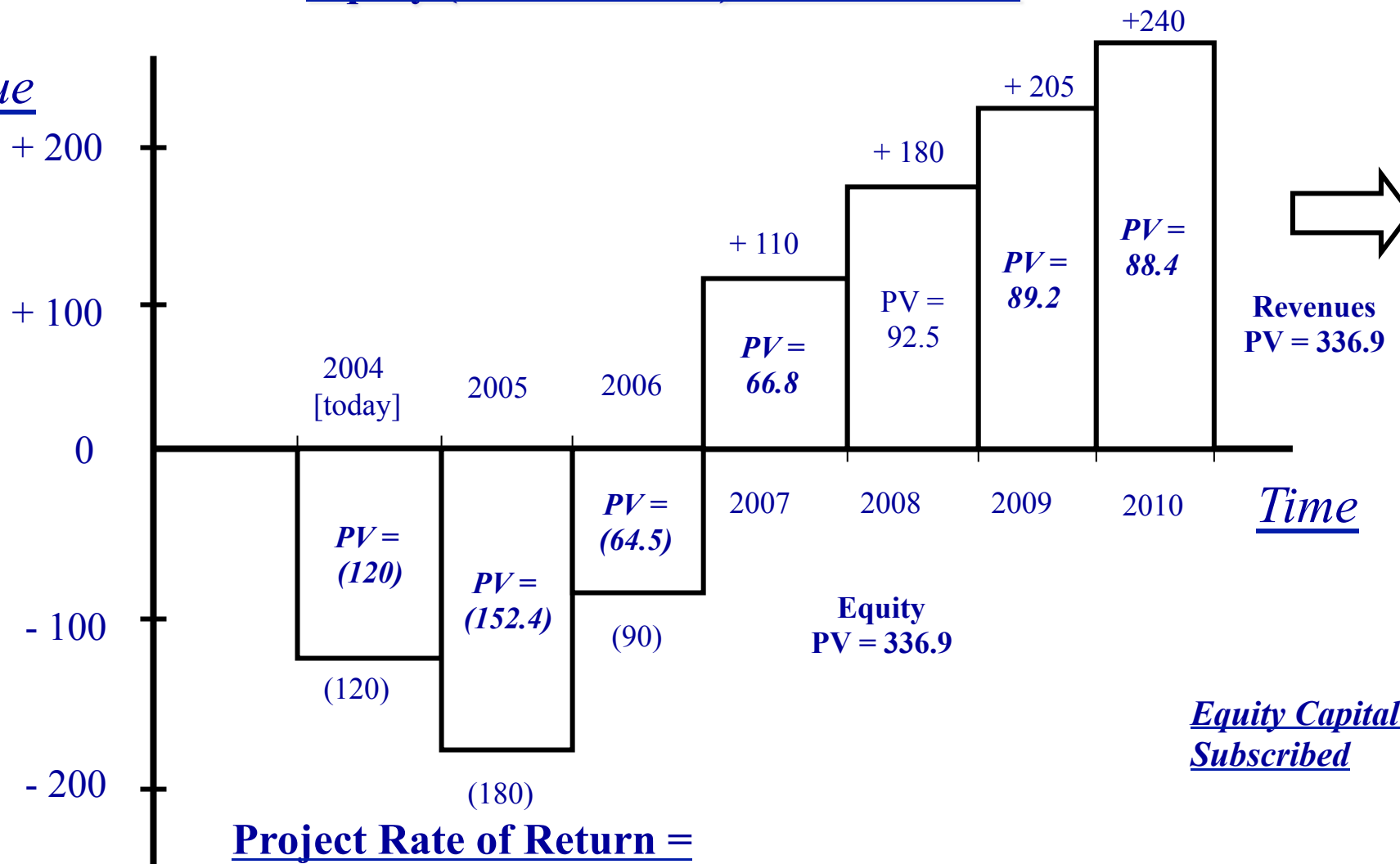
(c) Equity IRR : Shareholder equity v. dividends
[NB. treatment of retained surplus/profits.]

YES

Equity (Shareholders') Rate of Return

Dividends

Value



Project Rate of Return =

discount rate at which PV net revenues equals PV costs

[i.e. Net Present Value (NPV) of cash-flow = 0] = 18.105%

NPV v. IRR

Period	Project A	Project B
0	-\$24,000	- \$24,000
1	\$0	\$10,000
2	\$6,000	\$10,000
3	\$12,000	\$10,000
4	\$30,000	\$10,000
NPV [@ 10%]	\$10,460	\$7,700
IRR	22%	24%

SUMMARY OF PROJECT FINANCE FINANCE STRUCTURE

At Risk:

Equity
(e.g. 20%)

- *IRR / Equity IRR*
- *Investment Period*

- Mezzanine equity & subordinated debt

No Risk:

Debt
(e.g. 80%)

-
- Grants and subventions

EQUITY FINANCE

ISSUES FACING INVESTORS:

- rate of return over different periods; *5, 10, 20 years?*
- dividend policy and availability; *Lender constraints?*
- currency convertibility and transfer; *Insurance / IFI support?*
- inherent project risks; *NB. allocation of risks*
- availability of equity in the construction period; *source?*
- exit strategy; secondary market; *Lender / Govt. constraints?*
- partners and the sharing of risk; *consortia approach*
- availability of investment insurance; *important in emerging markets.*
- taxation of SPV and economic/political stability; *insurance available?*
- corporate loans : mezzanine/subordinated debt: *Lender constraints?*
Transparency?

OTHER SOURCES OF EQUITY

Quasi - Equity & Debt

- Preference shares
- Subordinated or mezzanine debt

Reason:

- *Limit shareholders exposure and liability*
- *Limit impact on parent Balance Sheet*
- *Taxation efficiency*
- *PR : improve equity returns*

Debt / Equity Swaps:

- *Debt restructuring reasons*
- *Inflationary? Local currency equity*

LENDER REQUIREMENTS
FOR PROJECT FINANCE

CONTENTS

- what are the characteristics of credit / debt?
- who are the Lenders?
- under what constraints do they operate?
- Inter-Lender relationships
- procedures adopted by Lenders
- what do Lenders require in a project?

SUMMARY OF PROJECT FINANCE

FINANCE STRUCTURE

At Risk:

Equity
(e.g. 20%)

- *IRR / Equity IRR*
- *Investment Period*

- Mezzanine equity & subordinated debt

No Risk:

Debt
(e.g. 80%)

Why are lenders so risk averse??

-
- Grants and subventions

TYPICAL PROJECT COMPANY: SIMPLIFIED CORPORATE ACCOUNTS

Balance Sheet

ASSETS

LIABILITIES

Fixed Assets:

Tangible assets

[less cum. depreciation] = a

Investments = b

Total Fixed Assets = [a + b]

Current Assets

Stocks & Work-in-Progress = c

Debtors = d

Cash = e

Total Current Assets = [c+d+e]

Current Liabilities:

Creditors (due within 1 yr.) = f

Tax(due within 1 yr.) = g

Total Current Liabilities = [f + g]

L-T Creditors (due after 1 yr.) = h

Capital:

Paid-up Share Capital = i

Share premium = j

Revaluation Reserve = k

Profit & Loss Account / Reserve = l

[Note: Net Worth = (a+b+c+d+e-f-g-h)]

TYPICAL PROJECT COMPANY: SIMPLIFIED CORPORATE ACCOUNTS

Profit & Loss Account

Revenues	= p
Operating Costs	= q
Operating Profit	= [p - q] = r
Interest received & payable	= s
Depreciation	= t
Tax	= u
Net Profit	= r - [s + t + u] = v
Dividends	= w
Retained Profit	= [v - w]

TYPICAL LENDING BANK:
SIMPLIFIED CORPORATE ACCOUNTS

Profit & Loss Account

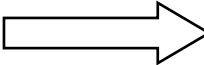
Interest received	= p1
Fees & Commissions	= p2
Dealing profits	= p3
Administrative expenses	= q
Operating Profit	= [$\sum p - q$] = r
Provisions for bad / doubtful debts	= s
Losses for bad debts	= t
Tax	= u
Net Profit	= r - [s + t + u] = v
Dividends	= w
Retained Profit	= [v - w]

TYPICAL LENDING BANK: SIMPLIFIED CORPORATE ACCOUNTS

Balance Sheet

ASSETS

LIABILITIES

Tang.Fixed Assets [less cum. depr.]	= a	Deposits by banks	= f
Intangible Assets [less cum. depr.]	= b	Customer accounts	= g
Loans & Advances to banks	= c	Other Liabilities	= h
Loans & Advances to customers	= d		
Debt & equity instruments held	= e	<u>Capital:</u>	
Cash & balances @ Central Bank	= f	Paid-up Share Capital	= i
		Share premium	= j
		Revaluation Reserve	= k
		P& L Account / Reserve	= l
			
<u>Total Assets</u>	= [a+b+c+d+e+f]	<u>Total Liabilities</u>	= [f+g+h+I+j+k+l]

Notes: *Contingent Liabilities to be included ?*

IMPACT OF BASEL II and III

Banking Supervision

Current: if a bank lends \$1m, it is required under capital adequacy rules for a loan with 100% weighting to own or hold, say, 8% (i.e. \$80,000) of capital to match the loan amount.
Sovereign risk is generally seen as 0% weighting.

Basel II and III: “AAA” sovereign risk will be 0% weighting.
Less than “B-” rating will have 150% weighting.

Comment:

Specialised & corporate lending, e.g. project finance, will depend on the contractual structure. If the project and/or off-taker is underpinned by strong contractual obligations, then weighting could be low, et vice versa.

Result : Increased cost of PF loans??

SUMMARY OF PROJECT FINANCE
LENDERS' MEASURES

$$\text{Debt Service Cover Ratio [periodic]} : = \frac{\text{Free Cash Flow}}{\text{Fixed Charges}}$$

$$\text{Free Cash Flow} = \text{Net Operating Profit}$$

[plus : depreciation & amortization]
less : increase in working capital
less : incremental cap. expenditure
less : tax

$$\text{Fixed Charges} = \text{loan principal + interest}$$

*[plus : mandatory dividends, lease
payouts]*

SUMMARY OF PROJECT FINANCE
LENDERS' MEASURES

Project Life Cover Ratio:[over remainder of project] :

$$= \frac{\text{NPV of Future Free Cash Flow}}{\text{Book Value of Outstanding Debt}}$$

[NB: discount rate? Cost of borrowing?]

SUMMARY OF PROJECT FINANCE FINANCE STRUCTURE

At Risk:

Equity

Typical Debt/Equity Ratios:

Hotels & property = 50/50

Industrial projects = 70/30

Infrastructure = 75/25

& power = 80/20

No Risk:

Debt



SOURCES OF DEBT

- Development banks [eg. World Bank; ADB; IFC, FMO, KfW, Proparco, EBRD]
- Export credits: [eg. UKEF (ECGD); SACE, Coface, Hermes, Atradius]
- Bilateral funds [OECD; OPIC; KfW]
- Commercial loans
- Capital markets / bond issues
- Private placements & institutional markets
- Islamic banking
- Leasing
- Barter

DEVELOPMENT BANK (“IFI”) LOANS

[e.g. World Bank; Asian Dev. Bank.]

ISSUES:

- preferred creditor status;
- hard currency loans
- priority access to borrower’s foreign exchange earnings;
- no impedance of foreign exchange remittances;
- sovereign guarantee required;
- limited support for non-recourse deals;
- procurement rules compliance;
- strict environmental requirements;
- can require lengthy negotiation period
- rather bureaucratic process

EXPORT CREDITS

[e.g. UKEF; Coface; JBIC]

Issues:

- Terms governed by OECD Consensus (Berne)
- Support for national exports of capital goods & services.
- Hard currency loans
- Usually longer term than commercial loans
- Up to 85% of export value of goods and services, plus up to 15% of local costs;
- Balance from commercial “complementary” loan
- Fixed interest rates governed by OECD
- Insurance fee payable by buyer/borrower.
- Check differences between national schemes
- Direct and indirect loans, depending on exporter scheme
- Can be tied into aid schemes, but must be overt
- Government. guarantee & non-recourse deals possible

COMMERCIAL LOANS

Issues:

- Greater flexibility
- Complementary to ECA funding, etc.
- Floating & fixed interest rates (beware if linked to swap)
- Usually for shorter term than ECA funds;
- Arranging banks will syndicate to mitigate risks
- Possible requirement for lenders to make provisions (against possible future loss)
- Fees comparable to ECAs
- Competition possible

EXPORT CREDITS AND COMMERCIAL LOANS

TERM SHEET

- Borrower
- Amount
- Currency
- Lender(s)
- Security & Guarantees
- Drawdown procedures
- Interest Rate:
 - *fixed or floating*
 - *margins over LIBOR?*
 - *capitalisation?*
 - *payment dates*
- Loan Repayments:
 - *amortisation schedule*
- Fees:
 - *negotiation fees*
 - *administration fees*
 - *commitment fees on outstanding balance*
- Conditions:
 - *effectiveness;*
 - *suspension; termination; prepayment*
 - *ratios & covenants;*
 - *reporting;*
 - *negative pledge;*
 - *dividend constraints*

BOND ISSUES

Considerations:

- Local or foreign (hard) currency issue
- Short or long-term?
- Drawdown limitations
- Nature and location of bondholders
- Transaction costs
- Flexibility (e.g. re-negotiation)?
- Need for a “rating”
- Private placements
- Secondary market
- Bond wraps (AMBAC, FCIA; etc.)

ISLAMIC BANKING

- Comply with the principles of the Sharia
- Loan must be free from interest
 - *Loan must aid production of goods and services for society*
 - *Interest makes no contribution*
- Risks must be shared between borrower and lender, e.g. no predetermined profit
- Loan must be for benefit of society: financing of trade/commodities prohibited under Sharia not allowed
- Uncertainty (i.e. speculative contracts) not allowed
- Culturally and politically can represent key component

BARTER / COUNTERTRADE

Considerations:

- Nature of goods
- Quality of goods
- Market for goods
- Availability of goods
- Timing of availability
- Magnitude of value
- Delivery point

CAPITAL MARKETS INSTRUMENTS

- Interest rate swaps
- Foreign currency swaps
- Nature of contract : flexibility?
- Costs;
- Availability?
- Contingent liabilities & balance sheet implications?

LENDER REQUIREMENTS

- Identification of Risk
- Allocation of Risk
- Mitigation of Risk
- Inter-Lender Relationships

Risk

Issues:

- risk is fundamentally a subjective issue;
- risks can be identified;
- the impact of risks under chosen scenarios can be quantified ;
- sensitivity testing can identify the most important risks;
- probability analysis can provide further insights into impacts;
- **risk is best allocated to those best able to carry them.**

Further issues:

- can risks be shared, and thereby mitigated? If so, how?
- risk changes over time.
- risk always exists

The process of “due diligence”

Financial Risk

- Opportunity cost of capital = Required Rate of Return (from the perspective of the investors).
- Cost of Capital = Cost of Equity x Ratio of Equity + Cost of Debt x Ratio of Debt
- Cost of Debt = Interest Rates x (1 - Tax Rate)
- Cost of Equity = Risk-free Rate + (β x Equity Risk Premium)
- Discount rate = risk free rate + β * (equity market risk premium)
- Beta coefficient = how the expected return of a stock or portfolio is correlated to the return of the financial market as a whole.
- Net Present Value = Σ (discounted cash flows - discounted cash outflows)
- Internal Rate of Return = interest rate which the investment of capital will return

Discount Rate

- Discount rate = risk free rate + beta * (equity market risk premium)
- Risk Free Rate: The percentage of return generated by investing in risk free financial instruments.
- Equity Market Risk Premium: The return on investment that investors require above the risk free rate.
- Beta coefficient - how the expected return of a stock or portfolio is correlated to the return of the financial market as a whole.
- The discount rates typically applied to different types of companies:
 - Startups seeking money: 50 – 100 %
 - Early Startups: 40 – 60 %
 - Late Startups: 30 – 50%
 - Mature Companies: 10 – 25%

Discount Factor

- The **discount factor**, $D(n)$, is the number which a future cash flow, to be received at year n , must be multiplied by, to obtain the current present value. A fixed annually compounded discount rate is:

$$D(n) = \frac{1}{(1+r)^n}$$

- The fixed continuously compounded discount rate is:

$$D(n) = e^{-r n}$$

LENDER RISK MITIGATION

USE OF INSURANCE

Construction Cover:

- *Builders' Risk*: construction delays; material damage; loss of profits.
- *Transit & Marine Risk*: material damage; loss of profits

Operational Cover:

- *All Risks*: material damage; loss of profits.
- *Machinery Breakdown / Explosion*: material damage; loss of profits.

Political Risk Cover:

- *Confiscation, Expropriation, Nationalisation & Deprivation*: Loss of investment; loan principal & interest; inability to perform
- *Political Violence & Strikes*: damage & loss of profit
- *Currency Inconvertibility*:
- *Frustration and non-Performance by Government* : loss of profit
- *Arbitration Default* : loss of investment, etc.

RISK MATRIX

Risk	Type	Mitigation
Pre-completion	<ul style="list-style-type: none">- Cost over-runs- Delays	<ul style="list-style-type: none">(a) Fixed price turnkey contracts(b) Warranties / penalties / incentives(c) Fixed project specification(d) Strong contractors
Post-completion	<ul style="list-style-type: none">- Revenue forecasts- Revenue build-up- Operating costs- Management failure	<ul style="list-style-type: none">(a) Committed supply contracts(b) Committed off-take contracts(c) Strong operators(d) Performance guarantees
Technical	<ul style="list-style-type: none">- Performance- Environmental- Safety	<ul style="list-style-type: none">(a) Warranties(b) Proven technologies(c) Public consultation and approval

RISK MATRIX

Risk	Type	Mitigation
Financial - Debt/equity ratio	<ul style="list-style-type: none"> - Return on capital - Risk / reward ratio - Foreign exchange - Interest rates - Debt service cover - Taxation 	<ul style="list-style-type: none"> (a) 75/25 debt: equity ratio (b) Acceptable Equity IRR (c) Acceptable cover ratio (1.5-2.0) (d) Escrow and reserve accounts (e) Dividend constraints (f) Loan syndication (g) Insurance/financial instruments (h) Standby funding facilities
Legal	<ul style="list-style-type: none"> - Regulatory framework? - Concession law? - Budget and finance law? 	<ul style="list-style-type: none"> (a) Experienced lawyers. (b) Clear simple documents & laws
Political	<ul style="list-style-type: none"> - Regime stability - Force majeure - Political intervention 	<ul style="list-style-type: none"> (a) Clear regulatory regime (b) Investment insurance (c) IFI support

RISK MATRIX

Energy & Renewable Energy

Risk	Type	Mitigation
Yield	<ul style="list-style-type: none"> - Overestimate of generation - Change of climate/weather patterns - Seasonality, variability 	<ul style="list-style-type: none"> (a) Independent review of studies, conservative probability min P90 (b) Conservative probability (c) Reserve account, scheduling debt service
Incentives, Regulations	<ul style="list-style-type: none"> - Change of regime (FiT to CfD,) - Change of tariffs, retroactive change - New taxes, charges - Change priority to grid access - Opposition to higher prices, local opposition 	<ul style="list-style-type: none"> (a) Committed supply contracts (b) Change of Law clause, political insurance (c) Change of Law (d) Alternative buyer? (e) Management of public opinion
Electricity system management	<ul style="list-style-type: none"> - Demand/supply management - Safety of supply 	<ul style="list-style-type: none"> (a) Grid management (b) Smart grids

LENDER RISK MITIGATION

USE OF INSURANCE

Note:

- Insurance claims have to be established before payout
- Guarantees : “pay now and argue later”!

Sources of Insurance:

Political Risk:

MIGA
ECA's
ADB; IFC
OPIC

Commercial & Political Risk

Lloyds, London Market
AIG; Zurich
Sovereign (offshore)
Spec. Private Ins. Co's

LENDER RISK MITIGATION

Primary Loan Syndication

