Commercialising Solar Power

Public funding Models to Promote Solar R&D and Demonstration

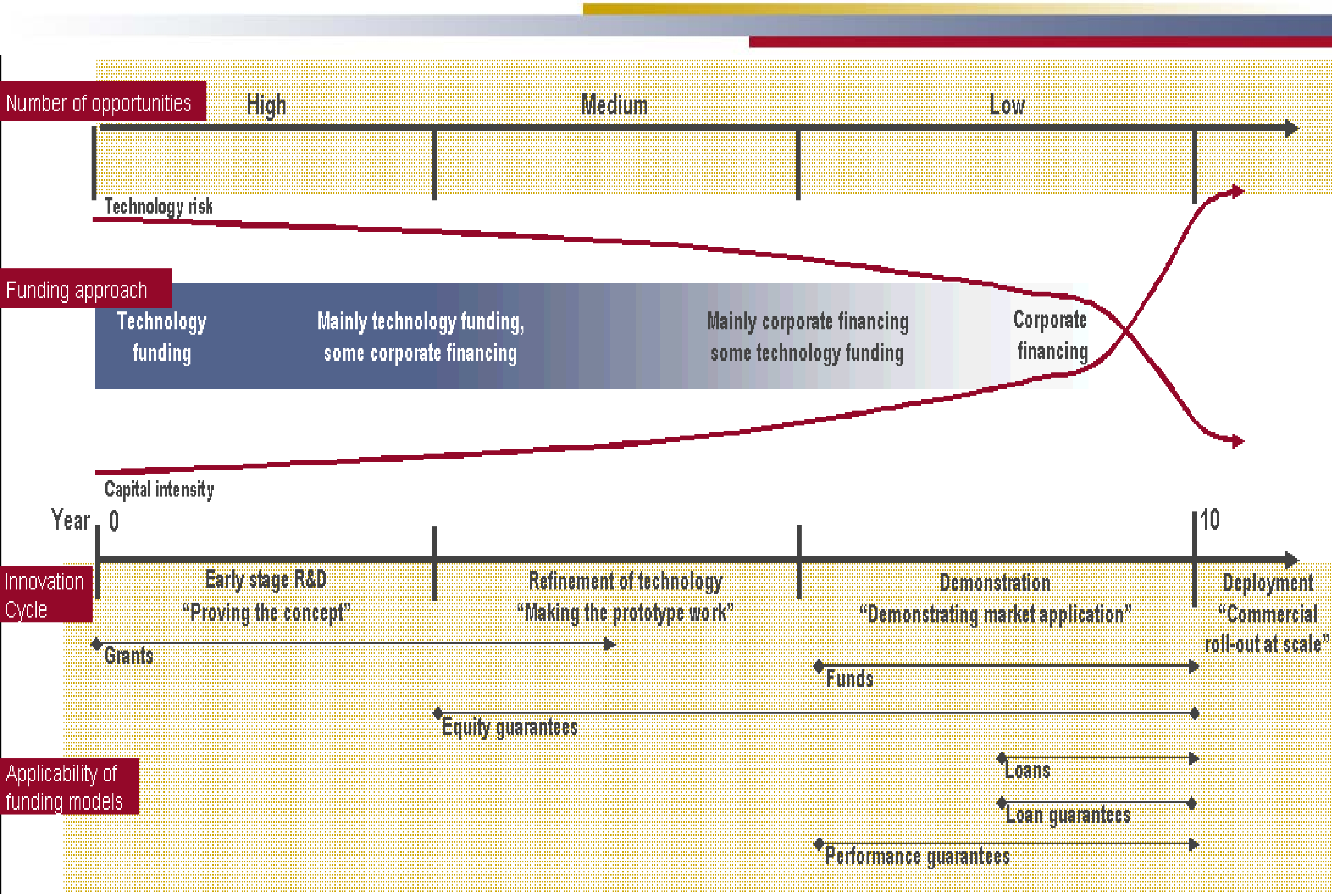
Clean Energy Expo Asia, 2010
Singapore
2 November 2010

Paul Curnow, Partner
Sydney

Commercialisation of solar?

For projects to be bankable, solar technologies must be economic…

…but there are numerous barriers to this in the solar sector.


Number of opportunities
High
Medium
Low
Technology risk
Funding approach
Technology funding
Mainly technology funding, some corporate financing
Mainly corporate financing some technology funding
Corporate financing
Capital intensity
Year
0
10
Innovation Cycle
Early stage R&D
"Proving the concept"
Refinement of technology
"Making the prototype work"
Demonstration
"Demonstrating market application"
Deployment
"Commercial roll-out at scale"
Grants
Funds
Equity guarantees
Applicability of funding models
Loans
Loan guarantees
Performance guarantees

Public funding models for solar RD&D

– Grants
– Funds
– Equity guarantees
– Loans (commercial, subordinated, concessional)
– Loan guarantees
– Performance guarantees

Grants

- Mainstay of public funding for RD&D:
  - Australia's Solar Flagships: grants for large-scale solar demonstration projects
- Proven ability to leverage private finance (e.g. partial grant with matched private funding)
- Early-stage grants may meet a significant proportion of R&D costs, while capital intensity still relatively low (cf. demonstration)
- Staging using milestones can provide sustained support and incentive
- Key disadvantages:
  - incentives limited to the short-term (duration of funding rounds)
  - capital-intensive for donor: equity injection without repayment

Public/private funds

- Solar = high risk; funds mitigate risk for equity investors
- May incorporate range of incentives using public funding:
  - matched public investment commitments
  - preferential returns to private investors
    e.g. CVF REEF
- May be combined with other funding models:
  e.g. Pennsylvania Green Energy Revolving Loan Fund
- Yield returns for public investors: self-sustaining.
- But are RD&D investments too high risk?
- Funds may not be adapted to invest in the financial instruments used to finance solar RD&D.

Loans

- Public loans may be:
  - concessional: terms favourable to borrower (low/zero interest rates, longer tenors)
  - commercial: borrowers can accommodate commercial terms, but provide lenders perceive as too high risk
  - subordinated: quasi-equity as lower priority ranking than private lenders
  - balloon: loan not fully amortised during term, interest-only repayments with principal (or a large part of it) payable at maturity

Loans cont.

– Loans are:
  – capital-intensive, but
  – sustainable (assuming repayment with interest)
– May not be appropriate for significantly pre-commercial activities (i.e. until approaching successful demonstration and deployment)
– May be linked to other structures, e.g. revolving loan funds

Publicly-backed guarantees

- Equity guarantees:
  - mitigate risk that equity investor will lose investment (or part thereof) should the investee company fail
  - more appropriate in medium-late stages of innovation cycle, to promote corporate equity investments in R&D companies
- Loan guarantees:
  - mitigate risk of lender losing loan (or part thereof) should borrower business fail
  - more appropriate in late stages of innovation cycle, to promote lending to companies approaching deployment (and hence able to service loans)
- Performance guarantees:
  - guarantee for technology performance using specific performance indicators (e.g. in demonstration)
  - more appropriate for demonstration and deployment stages

Publicly-backed guarantees cont.

- Generally only partial guarantees, to mitigate moral hazard
- Do not necessitate significant initial capital outlay
- Revenue from fees can reduce reliance on ongoing funding injections for guarantor agencies
- By their nature entail risk exposure
- May require back-to-back government counter-guarantees

A portfolio of funding models?

- Differing models have differing applicability across different stages in the solar innovation cycles
- Commercialisation may be best aided by a portfolio models adapted to different stages:
  - grants for early stage R&D
  - equity guarantees for angel/VC equity investments
  - public/private funds to channel investment to promising solar companies
  - loans, loan guarantees, performance guarantees for demonstration
- Key considerations:
  - ability to leverage private investment
  - financial sustainability for public agencies
  - risk exposure

Any questions?

Thank you!

Paul Curnow
Partner, Sydney
paul.curnow@bakermckenzie.com
(+61) 2 8922 5173