

REIF 2015

QA AND STANDARDS

UNDERPERFORMING SYSTEMS AND EXPERIENCE FROM THE FIELD
CUSTOMER/INVESTOR PERSPECTIVES



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Quality & Bankability

A Project is considered to be 'Bankable' when its minimum projected cash flow is sufficient to repay the invested capital

A Bankable Project requires bankable sponsors, bankable suppliers, bankable technology

Bankable Technology: a proven technology for which an investor can precisely estimate *worst case* project yields, system degradation, failures

Yield, degradation, failures are strongly correlated to Quality and Reliability

Quality and Reliability Standards should play a key role in *informed* investors' decisions

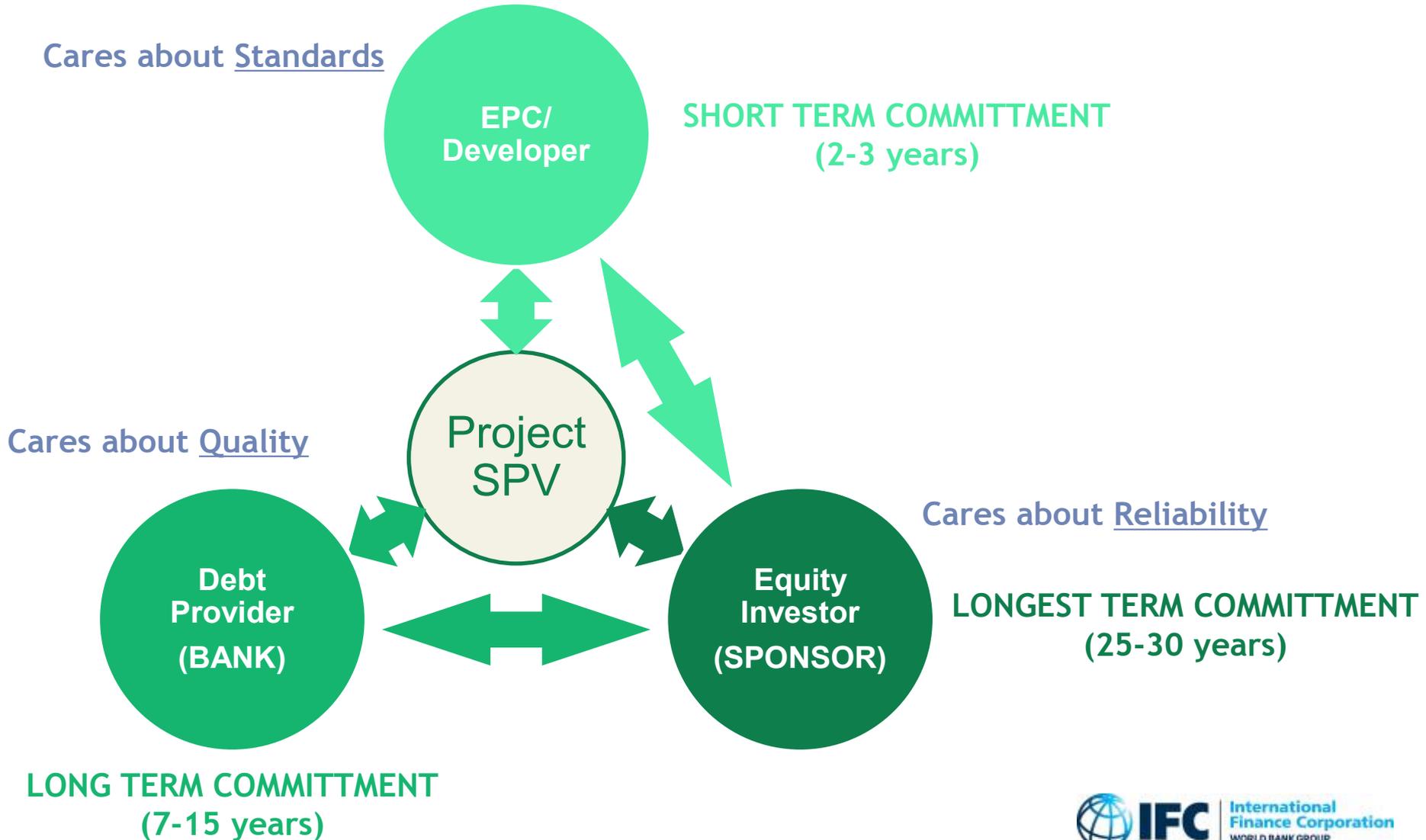
The investors' perspective

Quality Standards and Technical Quality Assurance Procedures (PAT, FAT,..) are not necessarily 'transparent' to investors, moreover:

- Many investors perceive quality based on recommendation
 - By a technical advisor
 - By another investor
- Many do not differentiate between quality and reliability, regardless of location or application

There is a knowledge gap, there is asymmetry of information, particularly in new and emerging PV markets

Potential conflicts of interest



Underperforming systems

Two main typologies of underperforming systems

- Poorly designed/poorly installed systems
 - Relatively easy to detect, may be easily fixed
 - Short term impact
 - Frequent in new markets, high reputational impact
- Systems with degrading performance and quality/reliability issues
 - Often controversial (e.g. snail trails, microcracks, ..)
 - Mid to long term impact
 - Less frequent but may lead to significant losses/major recalls
 - Quality and Standards critical to prevent or deal with them

Quality (in)consistency: not a technology issue

INCIDENTAL

Process-related. With adequate QA systems in place it is minimal

- BOM qualification >1 year
- Top tier yields >99%, customer rejects <50ppm

INTENTIONAL

In highly price sensitive markets (India, China, Chile..) customers end up squeezing suppliers and trade-off price for quality

- IEC “minimum” versus durable BOMs
- “B”-class, “C”-class products market

Quality goes beyond components

