

Financial Aspects of CDM and Carbon Finance

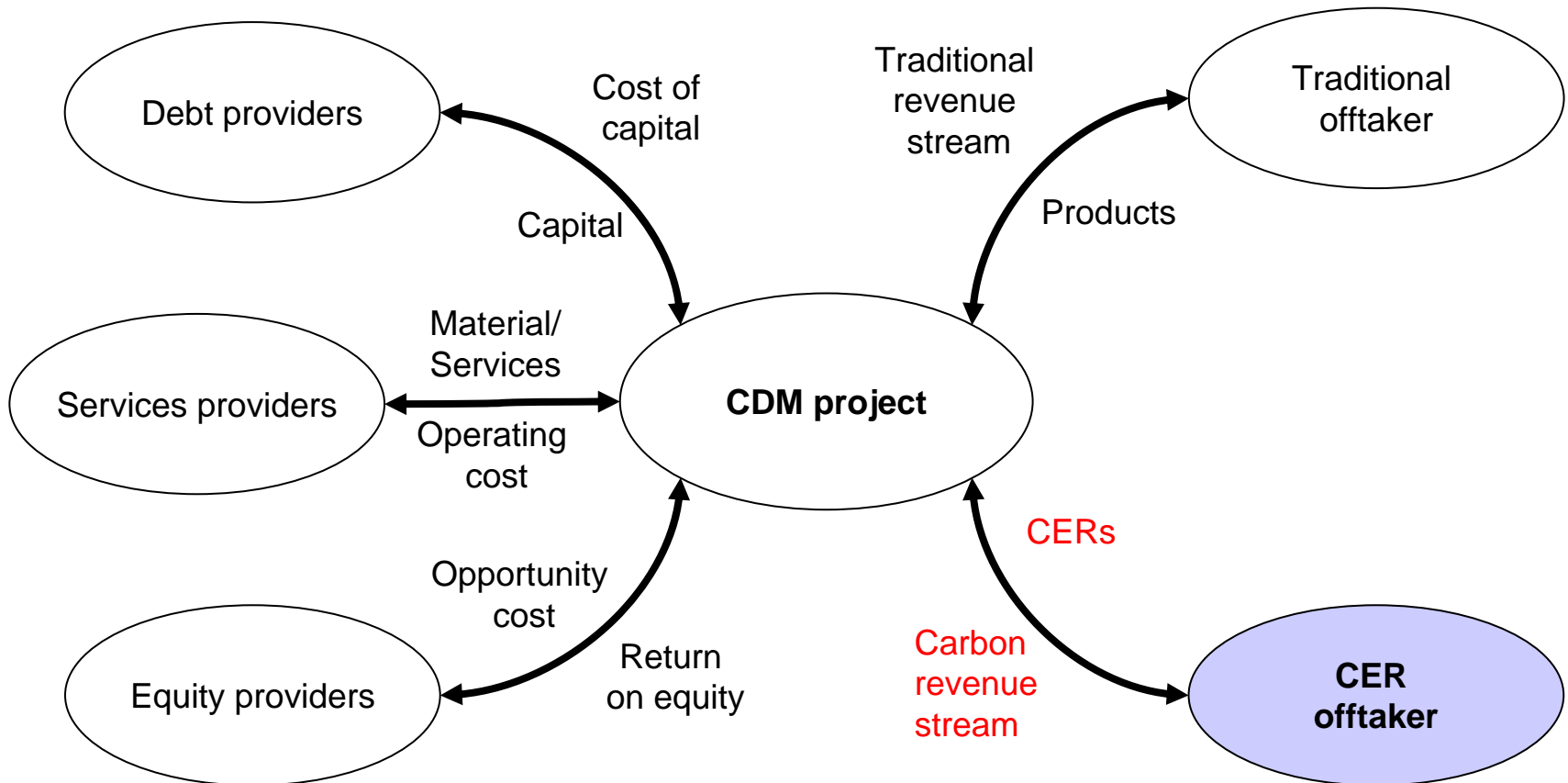
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Key Questions

- *How can carbon finance assist in project development and financing? By how much?*
- *How do you measure this benefit?*
- *What are the transaction costs?*
- *What are the key criteria for viability? How high do carbon prices need to be? How important is price?*

CDM Risk and Return: Basic Concept



How can CF Benefit?

- An additional revenue stream that *may* increase project's total investment return at limited cost
- Guaranteed long-term cash flow: offtake contract with limited (or no) price fluctuation
- Offshore payments in hard currency eliminate currency convertibility and transfer risks
- May facilitate access to capital markets and boost bankability (possible partial up-front payment).
- Depending on how financial performance is increased, CDM can help attract more or more attractive project financing
- May attract strategic “partners” (e.g. technology providers)
- Promotes diversification

Why Should Tanzanian Bankers Care?

- Exposure and international recognition in a steadily growing business around the world
- Expands client portfolio
 - Non-acceptable clients may become more attractive with enhanced cash-flows
- Increases lendability and lender's profitability
 - Creates new projects with lower risk
- Creates/expands existing business lines
- Can help mitigate project finance risks

Impact of Carbon Finance – World Bank Avg. Estimates *

INCREMENTAL IRR - CARBON FINANCE					
Renewable Energy					
ER Prices	Purchase period				
	5y ('07-'12)	7y	10y	14y	21y
\$5.00	0.5%	0.6%	0.8%	1.0%	1.2%
\$8.00	0.8%	1.1%	1.4%	1.6%	1.9%
\$10.00	1.0%	1.4%	1.7%	2.1%	2.3%

Impact per Unit
\$3.16 / MWh
\$5.06 / MWh
\$6.33 / MWh

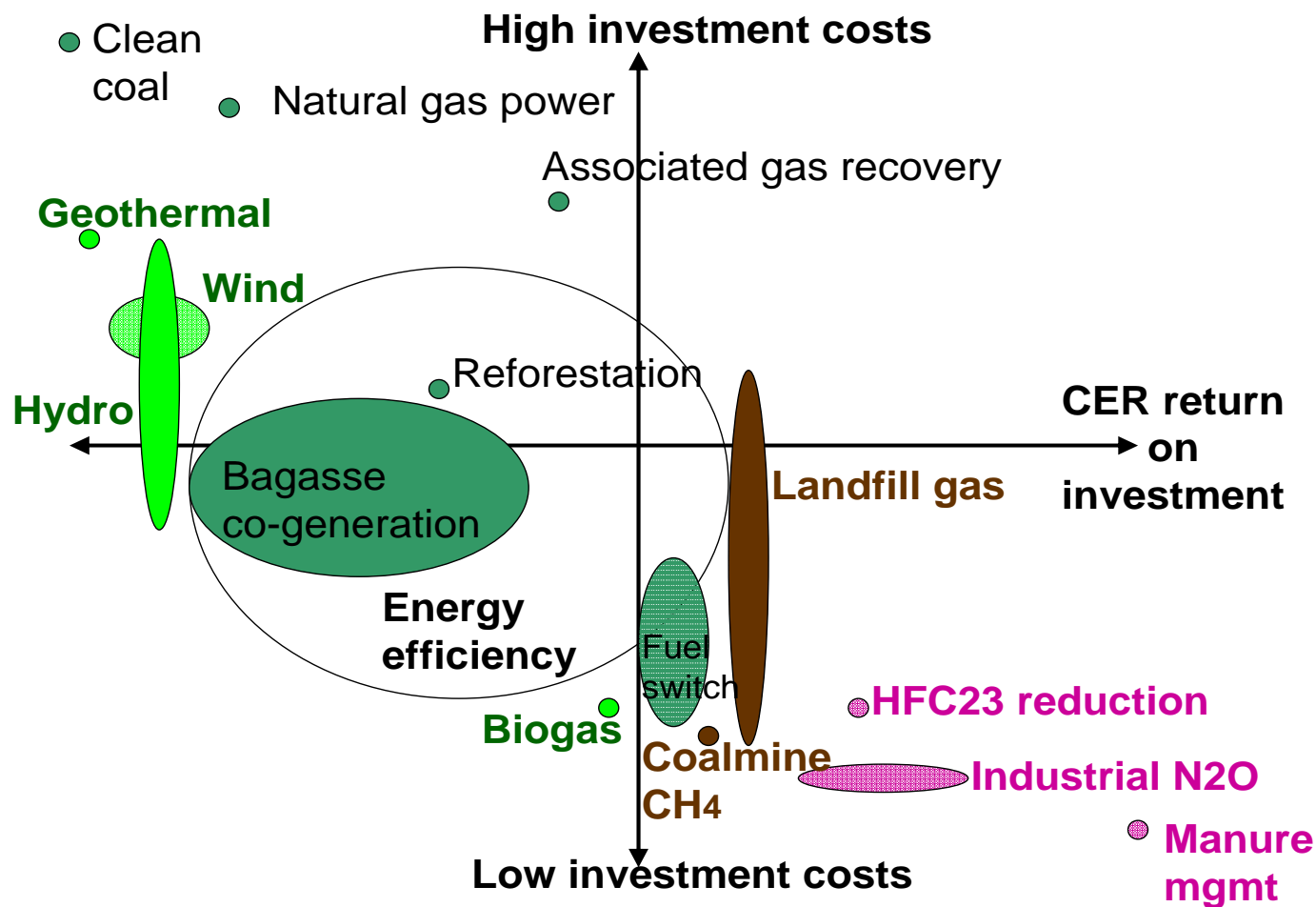
INCREMENTAL IRR - CARBON FINANCE					
Solid Waste					
ER Prices	Purchase period				
	5y ('07-'12)	7y	10y	14y	21y
	0.58 tCO _{2e} /tSW	0.74 tCO _{2e} /tSW	0.93 tCO _{2e} /tSW	1.11 tCO _{2e} /tSW	1.29 tCO _{2e} /tSW
\$5.00	17.9%	24.1%	29.2%	31.7%	32.8%
\$8.00	37.9%	45.1%	49.2%	50.7%	51.3%
\$10.00	52.3%	59.1%	62.4%	63.5%	63.8%

Impact per Unit
\$41 / MWh
\$66 / MWh
\$82 / MWh

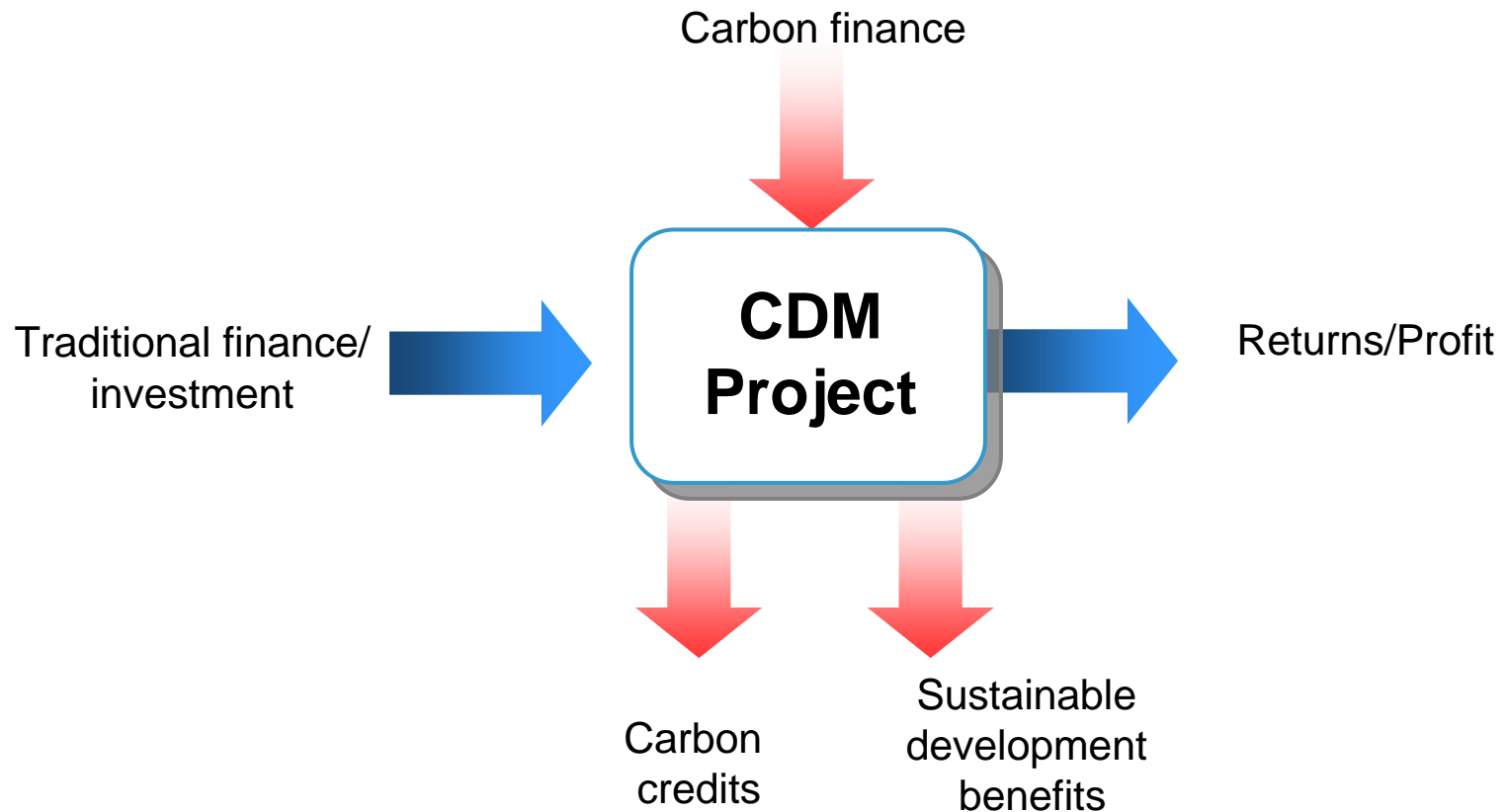
*tSW = ton solid waste

INCREMENTAL IRR - CARBON FINANCE					
HFC23					
ER Prices	Purchase period				
	5y ('07-'12)	7y	10y	14y	21y
\$5.00	110.8%	112.3%	112.7%	112.7%	112.7%
\$8.00	153.0%	153.8%	154.0%	154.0%	154.0%
\$10.00	176.7%	177.3%	177.4%	177.4%	177.4%

Estimated Historical Return on Investment from CDM Projects

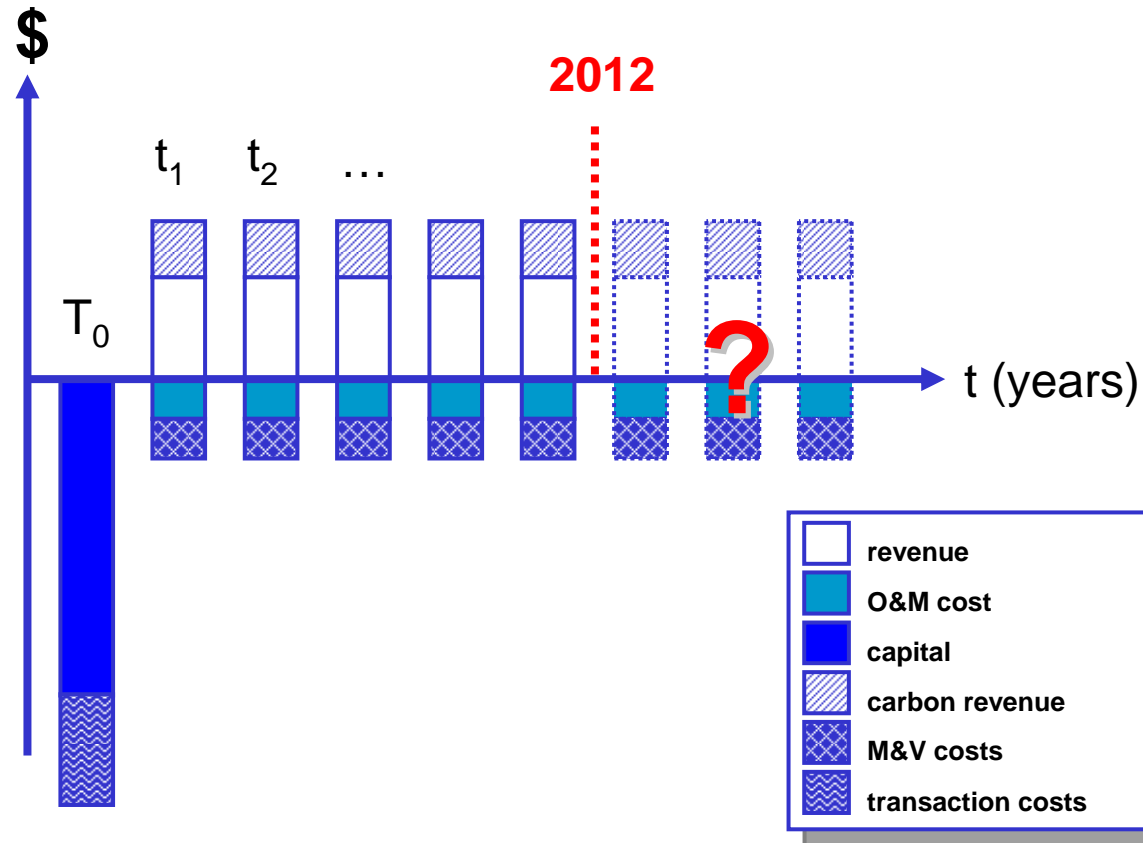


How is CDM different?



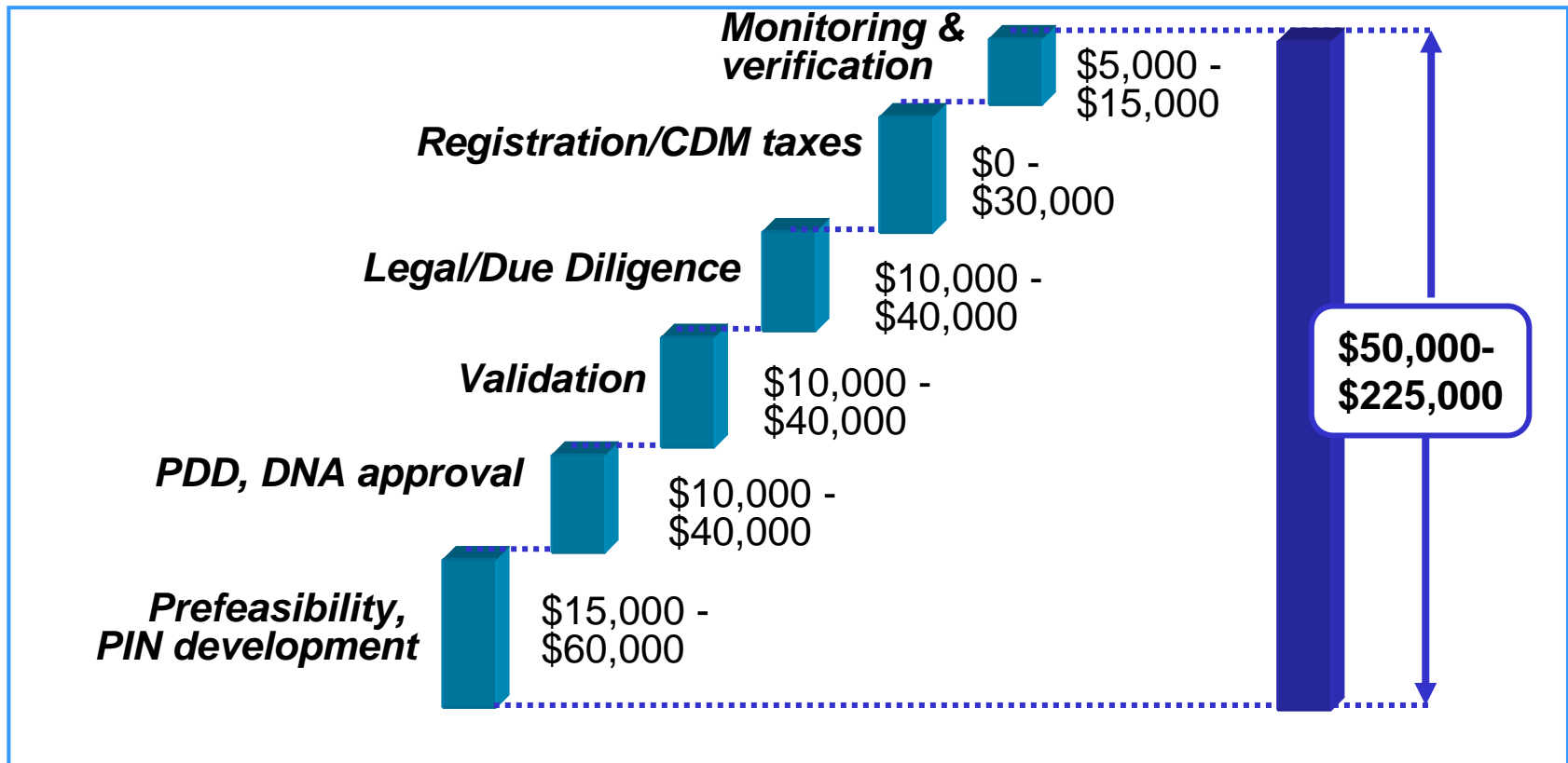
...layered incremental costs and returns

How to measure incremental benefit?



How would NPV/IRR improve over baseline case without CDM?

Transaction costs for small and medium-sized projects



CDM Transaction Costs

1. Generally don't vary much as function of project size

↳ Hence, limited investor appetite

2. Very high transaction and opportunity costs for small-scale, dispersed activities (e.g. rural electrification)

↳ Low energy usage (hence emissions) displaced so need to bundle to achieve economies of scale

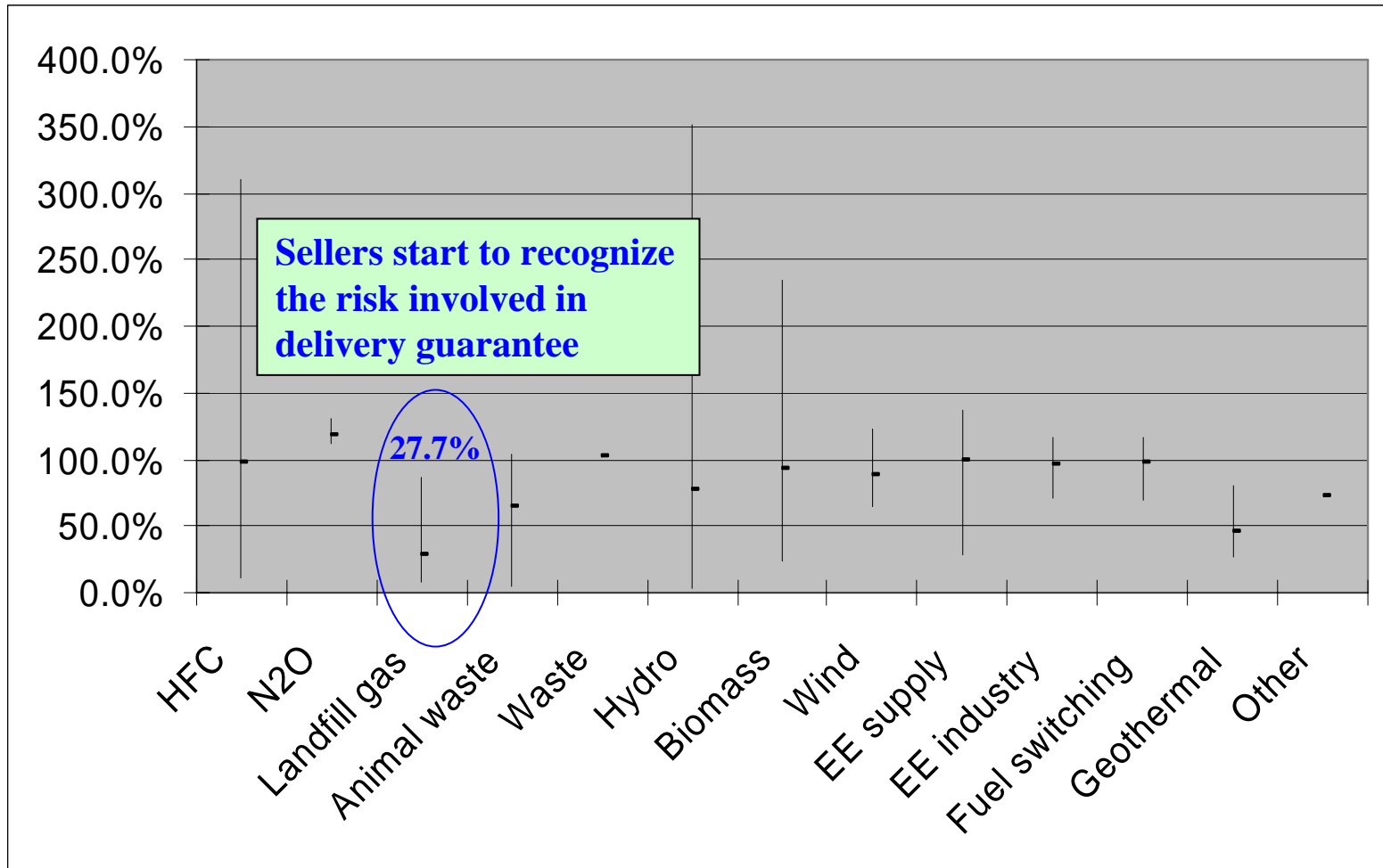
↳ Small-scale « modalities and procedures » provide some relief, perhaps not enough

3. Present a big hurdle for rural energy access projects

Key Criteria: (1) Risk and (2) Return

- Are the additional benefits commensurate with additional risk?
 - “Acceptable” returns are subjective to each organization
 - CDM is *de facto* not most financially attractive option or must present additional barriers/risks to implementation
 - Some benefits are tough to “monetize” (e.g. SD impacts)
- In addition to the underlying project risk, CDM presents some specific additional categories of risk:
 - **CDM regulatory risks** (e.g. issues or delays in project cycle)
 - **CER performance risk** (e.g. volume of CER generated)
 - **CER price risk** (e.g. as traded commodities the price fluctuates over time)

Example: Underdelivery in LFG projects is a financial issue



How important is price?

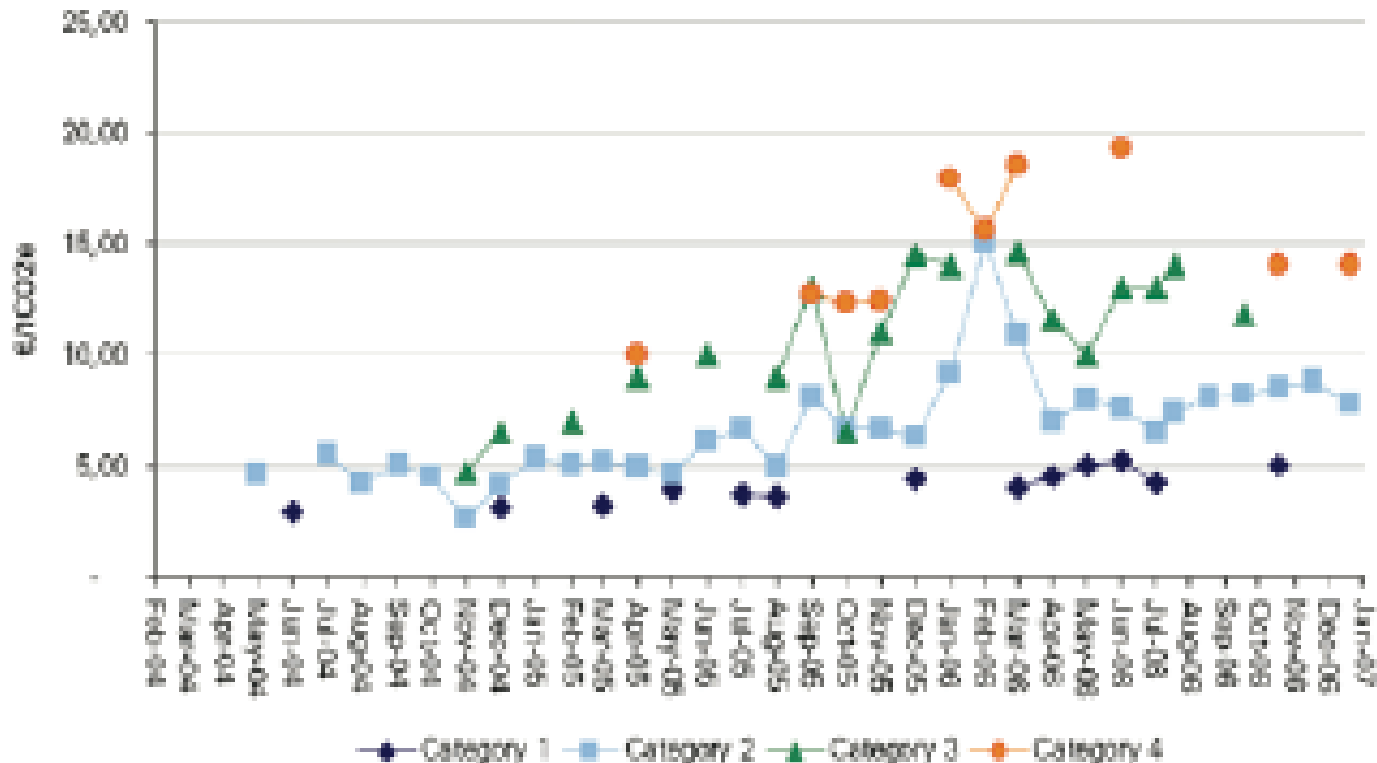
- Important driver, maybe not most important
- Spot prices volatile, forward prices hard to predict
 - Demand and supply balances in each segment
 - Risks and other attributes of particular project
 - Distribution of risks among parties to ERPA
- Ways to maximize price:
 - Advanced project development
 - Unilateral
 - Structured finance products
 - Delivery guarantees

Prices Depend on Risks

(weighted average prices in US\$ per ton CO₂e)

Fig. X.1

Illustration of CER price trends by Point Carbon category



Key Price Determinants

- Guarantee of delivery of registered ERs
 - Who takes risk that baseline or methodology will not be approved? EB won't issue CERs? etc
- Creditworthiness of project sponsor
- Viability of underlying project, and liabilities of seller in case it under-performs
- ER vintage: pre- or post-2012
- Cost of validation and potential certification
- Host country support or barriers
- Additional environment and social benefits

Case Studies

- Over to Randall...