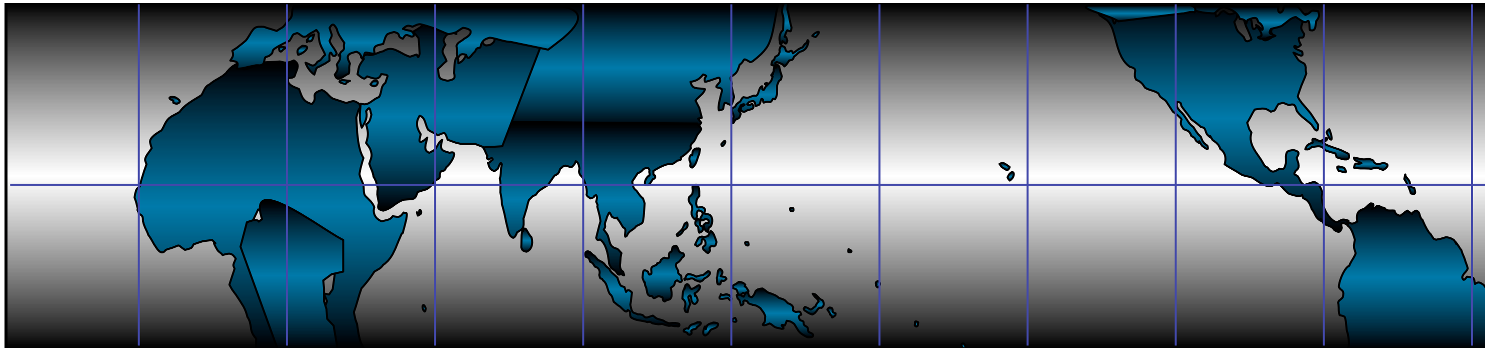

Pricing, Risks and Costs in Carbon Transactions

Veronique Bishop

Host Country Committee Meeting

February 15, 2005

www.carbonfinance.org

Pricing, Risks and Costs

- Price as a function of risk & risk sharing
- CFB vs. other buyers
- CFB pricing experience
- Cost trends

Elements of Risk in CDM/JI Projects

- Kyoto / Baseline / Regulatory risk
- Project risk
- Country risk
- Market risk

✵ Pricing reflects these risks and how they are *shared*

Sharing of Risk

- Principle: allocate risk to party best able to bear
- Sellers assume *most*:
  - Project risks
  - Country risks
- Buyers assume:
  - Market risk
  - *Some* project & country risk—depending on whether there are enforceable *delivery guarantees & penalties*
- WB CFs usually assume Kyoto/Regulatory risk
  - …by buying *verified* ERs
  - Most carbon buyers buy CERs

Contractual Sharing of Risk

- Seniority
- Overcollateralization / Sharing of ERs
  - Provides incentive to perform
- Payment on delivery ("commodity" model)…
  - Sponsors & lenders assume most project risks
- …vs. Upfront payment ("project finance" model)
  - CF faces investment risk
- Capitalization of preparation, supervision costs
  - Deducted from ER pmts (capped)
  - Important financial planning tool for project sponsors

Contractual Sharing of Risk

- Default Provisions
  - Retiring obligations during construction
  - Minimum ER deliveries
  - HC ratification / compliance with KP
  - Penalty for selling our ERs elsewhere
- Remedies
  - Penalties for under-delivery, other defaults?
  - Likelihood that sponsor will be able to pay penalty?
  - Cancellation (CF must re-invest, possibly at higher cost)

WB CF vs. Other Buyers

Contractual Provision	Typical WB CF	Most Other Buyers
Asset purchased	VERs	CERs/ERUs/EUAs
Kyoto Risk assumed by	WB CF Participants	Project Sponsor
Penalty for non-delivery	Willful misconduct only	Any non-delivery
Price	Lower	Higher
Bankability	High	Low

- **CFB assumes more risk than typical buyers.**
- **How does CFB manage these additional risks?**

Portfolio Risk Management

Ex Ante:

- **Risk screening**
- **Host Country approval**
- **Due Diligence** (BLS, MP, Validation, appraisal, safeguards…)

Ex Post:

- **Diversification**
- **Hedging**
  - Call Options
  - Insurance
- **Monitoring**
  - Portfolio Management Model
  - ER database
  - Audits

PCF Pricing

Country/Project	Price/tCO2e	Rationale
Uganda: Small Hydro (2001)	3.00	CDM; semi-fixed payments; hi country risk
Bulgaria: Biomass	3.50	JI with HCA; resource risk
Mexico: Inelec Hydro	3.50	CDM: pooling of 4 projects; OECD count.
Moldova: Soil Conservation	3.50	CDM: low risk but 15 yr delivery; option
Chile: Small Hydro –firm	3.50	CDM
Chile: Small Hydro –option	3.50+0.75	CDM-option premium wrapped into price
Romania: Afforestation	3.60	JI with HCA; low risk but 15 yr delivery
India: ABIL MSW	3.75	CDM: strong sponsor
Mexico: Fuerza Eolica Wind	3.75	CDM: strong sponsor, OECD country
Guatemala: El Canada Hydro	3.75	CDM: strong sponsor; fin. Closure
Indonesia: IndoCement	3.75	CDM: strong sponsor; high collateraliz.
South Africa: Durban MSW	3.75+0.20	CDM: Low risk + social ben's
Colombia: Wind	3.50+0.50	CDM + premium for social ben's
Bulgaria: District Heating	4.00	JI with HCA; ERPA with Municipality
Czech Republic: EE	4.00	JI : State Agency
Hungary: fuel conversion	4.20	JI, ETS compliance likely, strong sponsor
Latvia LFGTE (2000)	4.11-6.39	JI w/HCA; Upfront pmts; Govt Guarantee

CDCF Pricing

Country/Project	Price/tCO2e	
Argentina Sm. LFG	4.00	Premium for small projects and
Honduras: Sm. Hydro	4.50	additional social and environmental
Nepal: Biogas	4.50	benefits

- All-in unit cost likely to be similar to those of other buyers

“Should I sell VERs or CERs?”

- **Sponsors should consider selling CERs** if
  - They thoroughly understand baseline methodologies and CER/ERU registration process and
  - They are prepared to assume delivery risk
  - in exchange for a higher price
  - They do *not* need to borrow against ER cash flows
- **Sponsors should consider selling VERs if**
  - They are *not* prepared to take VER-CER conversion risk
  - They cannot / do not want to guarantee delivery
  - They need to finance preparation costs
  - They need to borrow against ER cash flows

Indicative Project Prep. Costs: CDCF

	India	Honduras	Nepal	Argentina
	Brick	Sm. Hydro	Biogas	LFG
Project identification and early preparation	25,000	5,000	15,000	15,000
Carbon asset appraisal (PDD etc)	60,000	5,000	40,000	25,000
Investment appraisal	50,000	20,000	55,000	50,000
Transaction structuring and negotiation	100,000	7,000	40,000	10,000
Other		3,000		
Total	235,000	40,000	150,000	100,000
CDCF + or other grants	-	-		
Costs expectd to be recovered under ERPA	200,000	40,000	150,000	100,000
Total	200,000	40,000	150,000	100,000

Pricing, Risks and Costs

Key Messages

- Price is a function of asset quality, risk *and sharing of risk*
- CFB pricing reflects:
  - Buyers assume "regulatory" risk (ie we usually buy VERs)
  - Risk management policy (assessment, structuring, pf mgt)
  - Premium for asset quality
- Preparation and Verification costs are:
  - Declining
  - Subject to economies of scale

Thank you!

www.carbonfinance.org