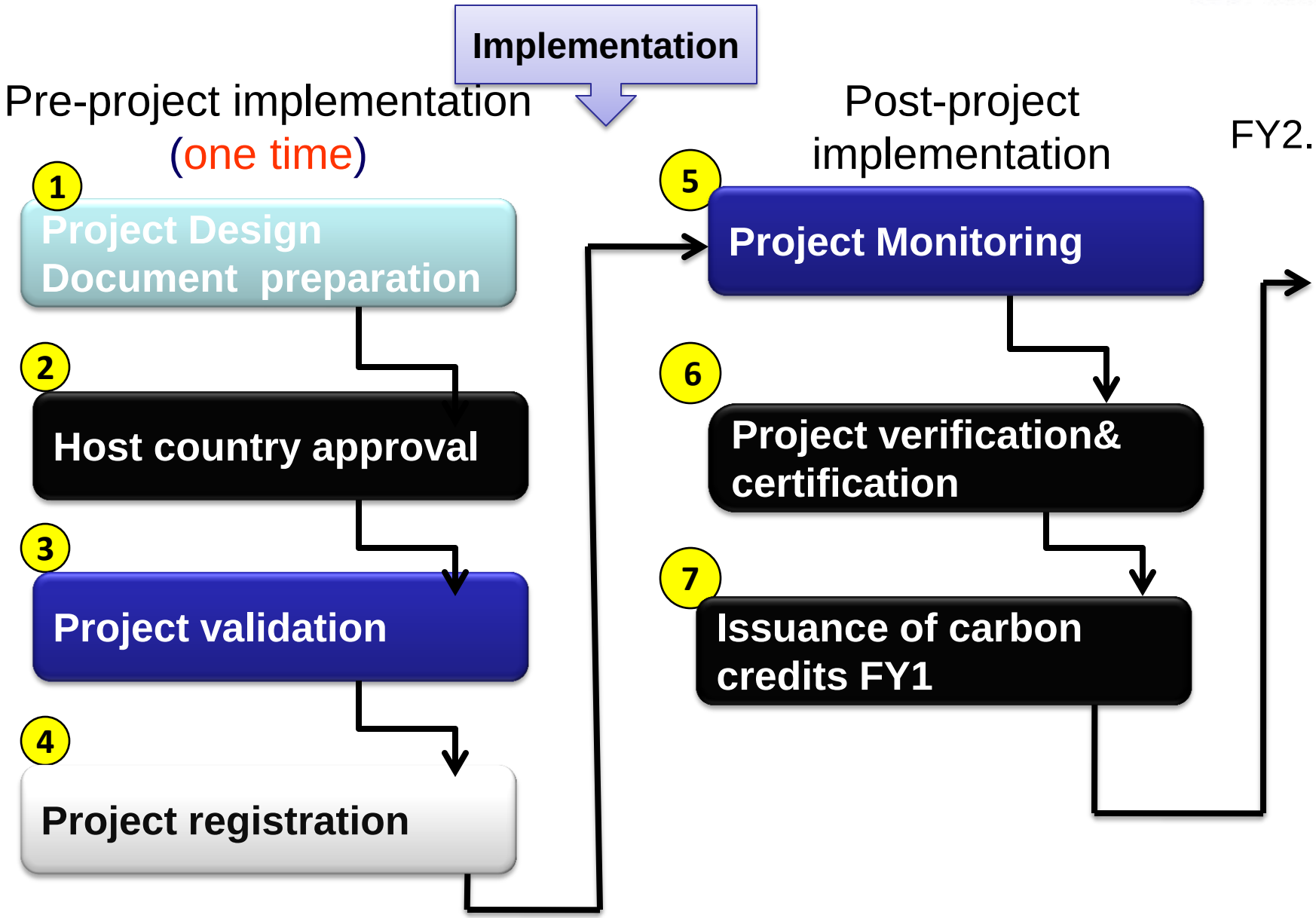
CDM Project Issues and Analysis

Carbon Finance Project Development Workshop

Ulaanbaatar, Mongolia
June 23-24, 2008

Project Cycle



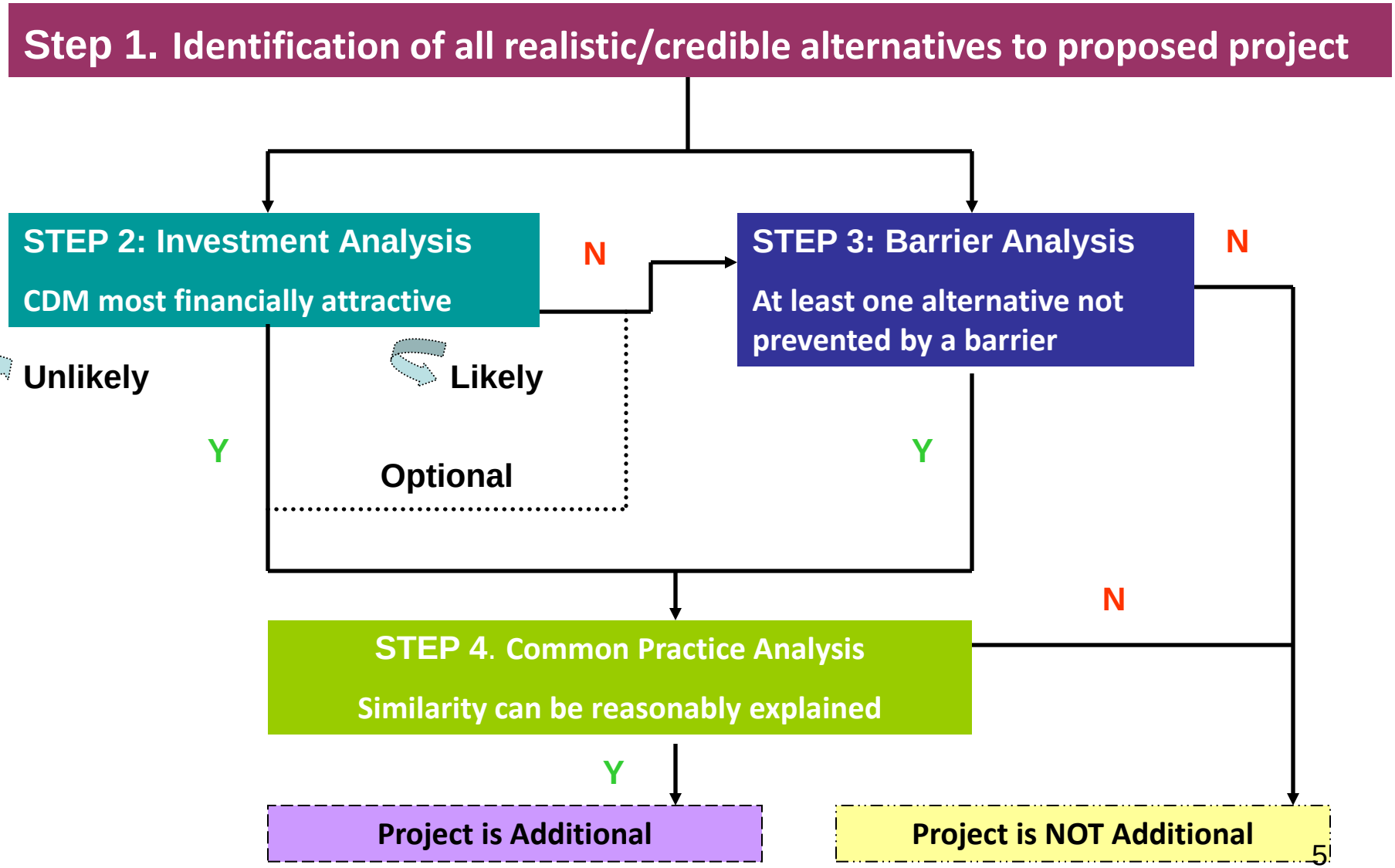
"Baseline" Methodology

- Approved procedure to determine emission reductions from a project activity over time including:
  - determination of emissions in the relevant reference scenario (baseline) and in the project scenario
  - procedures to collect and use data to calculate emission reductions: monitoring
  - demonstration that the project reduces emissions compared to baseline: additionality
- Approval of methodologies by CDM Executive Board

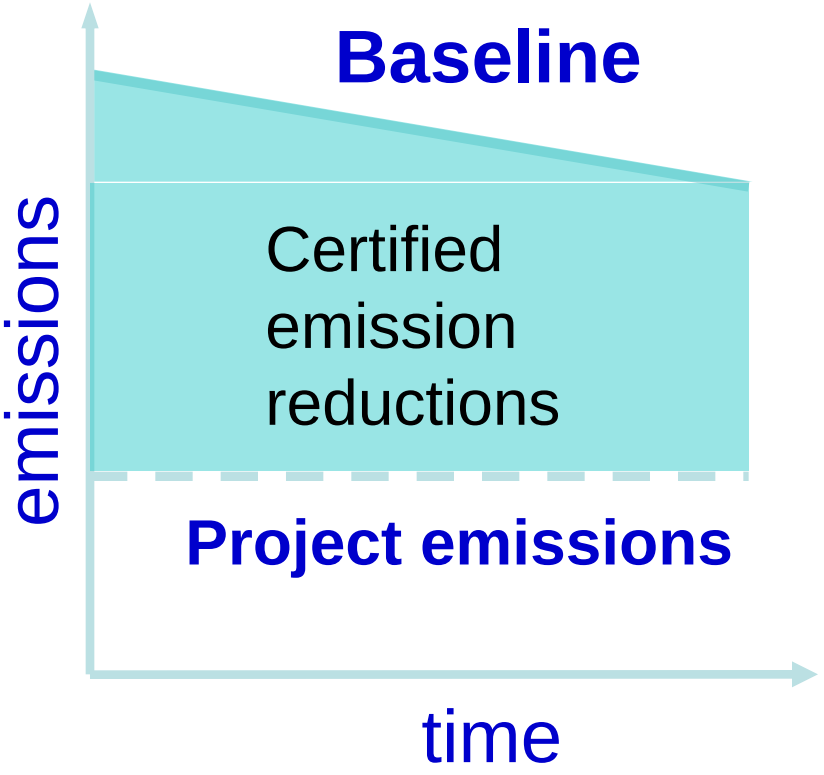
Concept of "Additionality"

- The most complex feature of CDM
- Additionality is demonstrated if GHG emissions are reduced below those that would occur in the absence of the CDM project
- Additionality assessment is part of CDM Methodology utilizing typically Additionality Tool
  - More simple assessment is available for small scale projects

Additionality Tool



Baseline/Additionality



Main Issues

-Baselines are counterfactual/ hypothetical

-Determining "additionality" based on subjective assessment

The difference between the actual project emissions and the emission baseline constitute the volume of CERs

If project = baseline → no CERs

Financial Issues

- **Higher annual cash flow and Internal Rates of Return**
  - Up to 3.0% incremental IRR for renewables / energy efficiency
  - >$3-8 per MWh for renewables, energy efficiency
  - >20% incremental IRR for CH_4 (i.e. landfill gas)
  - Much higher IRRs for N_2O and HFC projects
- **High quality cash flow and contract value**
  - OECD buyers (investment-grade payers)
  - $ or € denominated
  - Long-term contract with no price fluctuation guarantees flow
  - Payments abroad eliminate currency conversion and transfer risks
- **ER revenues + Financial engineering allow access to capital market and boost project bankability (borrowing against ER streams)**

Financial Issues

- Payments are typically made against delivered ERs to the Project Sponsor over the Crediting Period
- Crediting period can be 10 years or renewable 3*7 years
- Example:
  - ERs are generated in 2008
  - ERs are verified in early 2009
  - Payment is made on VER contracts based on positive verification report
  - Payment is made on CER contracts based on positive certification and issuance of CERs by CDM Executive Board

Financial Issues

- Upfront payments possible
- Maximum of 25% of value of ERPA (Emission Reduction Purchase Agreement)
- Not exceeding investment cost
- (Bank) Guarantee required

Financial Issues – Pricing CERs

- Adding/subtracting adjustments for different risk components and risk allocation in ERPAs
  - Project risk
  - Kyoto regulatory risk
  - Purchase beyond 2012
  - Other ERPA Terms and other project factors
- Sometimes additional price /discounts
  - Additional community and/or environmental benefits
  - Market premium/discount for technology and region/country
- Price adjustments
  - Upfront payment
  - Costs and expenses

Legal Issues

- Compliance with CDM Rules
- Creating and owning VERs/CERs - Issuance and Registry
- Negotiating ERPA

Legal Issues

ERPA

$$

CERs

VERs

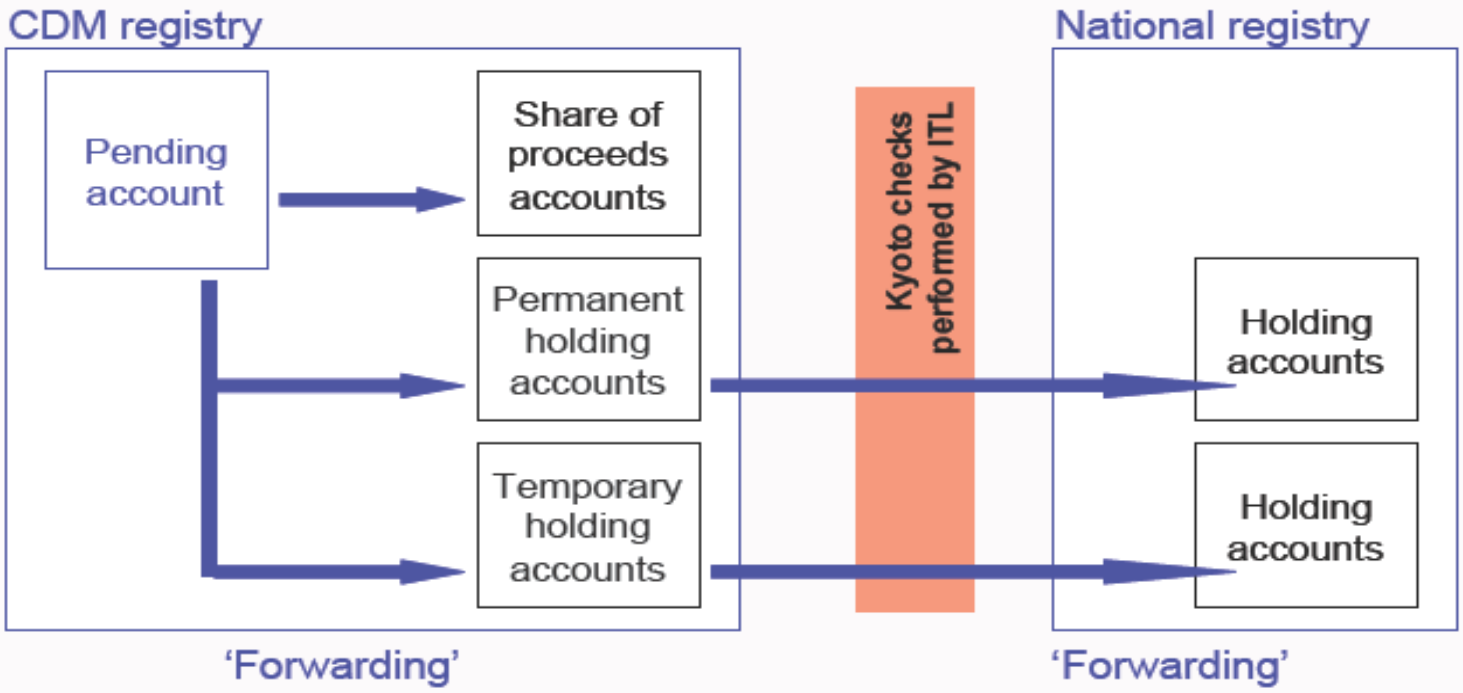
Approval of the Methodologies, Registration of the Project, Issuance of Certified Emission Reductions

Verification by a Designated Operational Entity

Generation of GHG emission reductions (in tonnes of CO_2e]

Legal Issues – Issuance and Registry

Forwarding to national registries



Legal Issues - Contracting

- Purpose of ERPA
  - Record agreement
  - Identify responsibilities
  - Establish rights
  - Manage risk

ERPA – Main Features

- Two parts
  - General conditions - standard terms, conditions, rights/ obligations
  - Negotiated agreement - purchase amount, price, payment terms, preconditions, risks and warranties

- **Sale and Purchase agreement**
  - **Object ERs**
  - **Amount, Price and Payment**
- **Who does what**
    - **Validation**
    - **Registration**
    - **Verification**
    - **Certification**
- **Risk - *allocated to the party best able to bear it***
    - **Project risk (to be borne by Project Entity)**
    - **KP regulatory /baseline risk (to be borne by Trustee)**
    - **Market risk (shared)**

ERPA – Key Provisions

- Definitions
- Payment upon delivery
- Monitoring and Verification
- Project Development and Operation
- Events of Defaults
- Remedies
- Termination events

ERPA – Risk Allocation

Methodology risk – change in methodology (e.g. baseline and monitoring methodology) from ERPA signing reduces ERs generated	Buyer	Seller
Registration risk – e.g., project not registered due to additionality/methodology	Buyer	Seller
Request for review risk – EB reviews DOE's verification which could delay, reduce or eliminate CER issuance	Buyer	Seller

ERPA – Obligations

Verification – contracting for DOE to undertake verification	Buyer (Trustee)	To be negotiated
Focal Point – who communicates with EB (principally relates to issuance)	Buyer	Buyer or Joint Buyer/Seller
Share of proceeds – who pays the shar e of proceeds	Buyer	Seller
Payment by Buyer	60 days after receipt of Transfer Form that follows Verification	60 days after CER delivery

ERPA – Default Issues

- Transfer Failure
- Dissolution/liquidation/bankruptcy
- Material delay in construction
- Material breach of terms of ERPA
- Repeated failures to comply with CDM rules
- Failure to meet the requirements of the Monitoring Plan

ERPA – Remedies

Buyer Remedies	VERs	CERs
Intentional breach	Cost recovery + damages	Costs + liquidated damages in the amount of: ERs x (spot price – unit price)
Not an intentional breach	(i) Allow delivery in subsequent years, (ii) reduce annual amounts + increase option, or (iii) terminate after 3 years	Same as for VER
Seller remedies – Project Entity		
	(i) Recover outstanding payments + interest, and/or (ii) terminate ERPA	Same as for VER

ERPA – Other Issues

- Costs
  - Deduction of project preparation / KP related costs from annual payment (capped) by Trustee/ Developer in the Annual Payments
- Taxes
  - Deduction of Host country taxes by Trustee/ Developer
- Disputes
  - Governing law – English Law
  - Arbitration - UNCITRAL

Case Study

Abanico Hydroelectric Project in Ecuador

Project Features

- 30 MW Run-of-river mini hydroelectric plant in Ecuador
- Project developed in two phases:
  - **Phase I:**
  - Installed capacity: 14.9 MW
  - Annual average generation: 111 GWh
  - Investment cost: US$ 21 million
  - Commissioning & Start up date: Jan-2006
  - **Phase II:**
  - Additional capacity: 14.9 MW
  - Increment in annual average generation: 111 GWh
  - Investment cost: US$ 12.5 million
  - Commissioning & Start up date: Jan-2008
- Financially viable (~16% IRR; US$ 1.1 million / MW)

Barriers

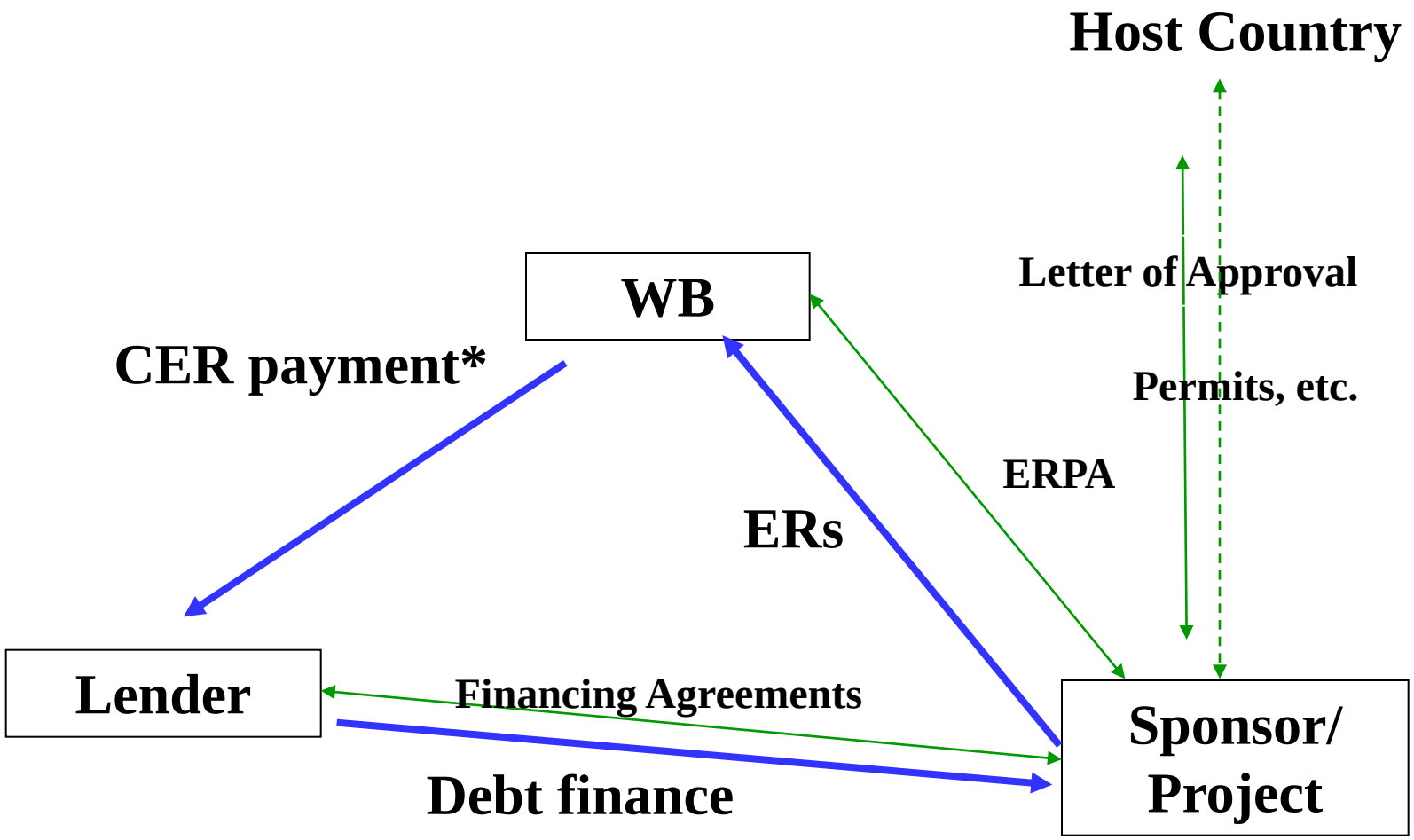
- High Country Risk (CCC+ sovereign rating by S&P) in the Latin America Region
- The lowest Foreign Direct Investments in South America (US$ 4.8b in 1998-2002)
- Among the highest local interest rates worldwide (14-15% in $ terms)
- Negative business environment for the energy sector

➢ **Result:** no private hydroelectric plants

Carbon Mitigation

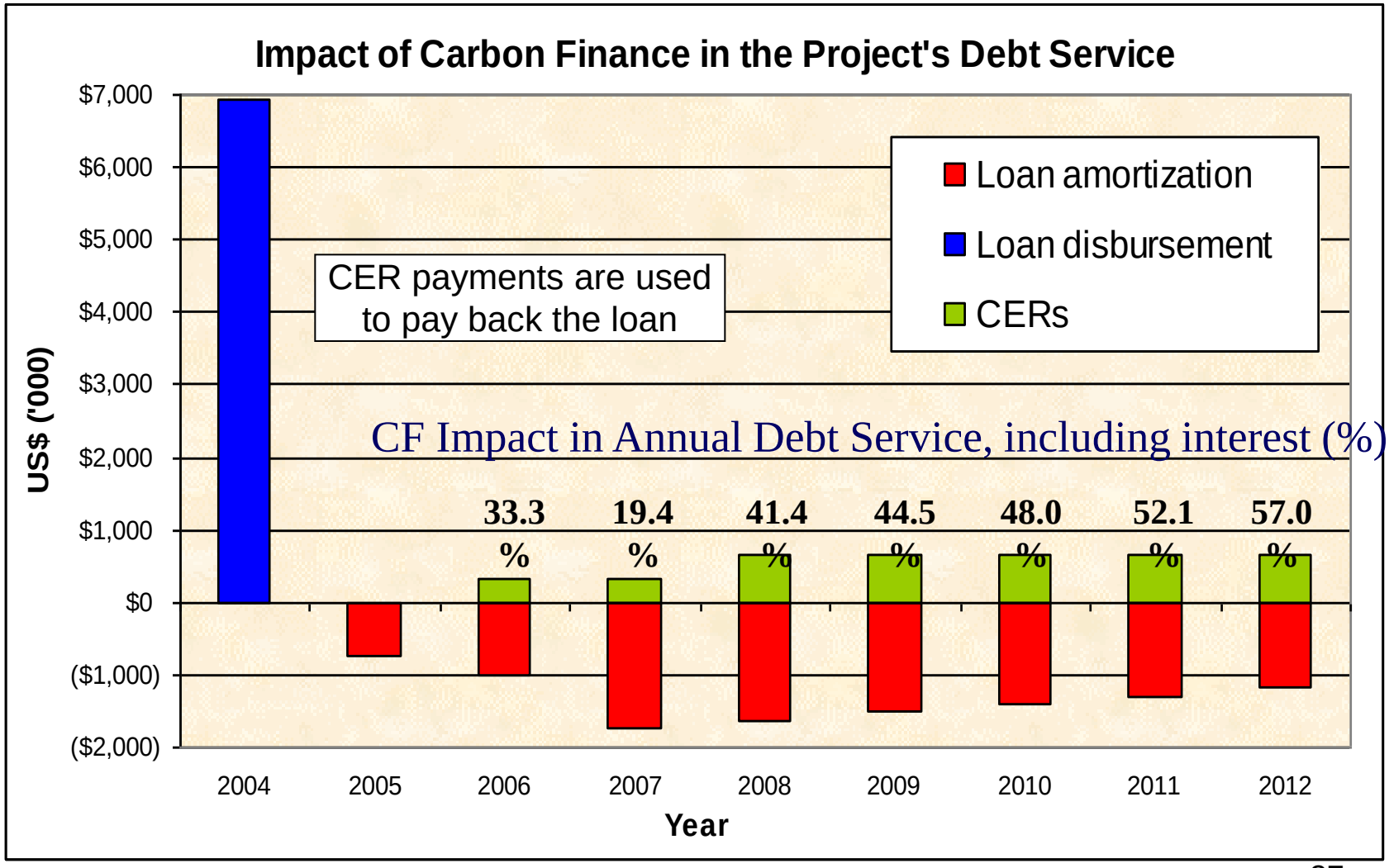
- **Baseline Methodology**: “Consolidated baseline methodology for grid-connected electricity generation from renewable sources ACM 0002”;
- **Additionality / Eligibility for CF**: “Tool of the demonstration and assessment of additionality”. Analysis based on country risk and sectoral barriers, demonstrating that such project is not “business as usual” and that CF alleviates existing hurdles;
- **Emission Factor**: Calculated according to CDM methodology = 0.668 tCO2e / MWh of electricity sold to the grid (displacement of fossil fuels);
- **Emission Reductions**: 806,000 tCO2e up to 2012 (i.e. US$ 4.03 million).

Deal Structure



**Typically CER payments are made directly to the Project Sponsor*

Impact of Carbon Revenue



Impact of Carbon Revenue

- Slightly increase in cashflow IRR
  - From 15.61% to 16.33% (0.72% increase in IRR)
- Financial engineering
  - ERPA cash flow helped project to comply with lender's covenant of project's minimum off take agreements to secure debt service
  - Payments for the CERs to the lender eliminate convertibility and transfer risks (1% reduction in loan's interest rate due to ERPA)
- ➢ Result: Value added CER revenues + Financial engineering allowed project bankability and financial closure
- ➢ Construction began immediately after financial closure