

2nd CDM Capacity Building Workshop in the Pacific under
the EC ACP MEA Project

Economics of CDM Projects

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Economics of CDM Projects – Key Factors

- CDM projects produce both **conventional** project output and **carbon benefits(CERs)**.
- The value of carbon benefits and its impact on project viability are **influenced** by several factors which include:
 - **Viability/feasibility** as CDM project (**Technical/Financial**)
 - **Quantity** of CERs generated by the project
 - **Price** of CER
 - **Transaction costs** involved in securing CERs
 - **Risks** involved

Financing CDM Projects – Basics

➤ Whether a potential CDM Project is **feasible or viable?**

- **Technologically** feasible

- **Financially** sound

➤ **Different types** of financing

- **Project financing** – Grants/Loan/Equity

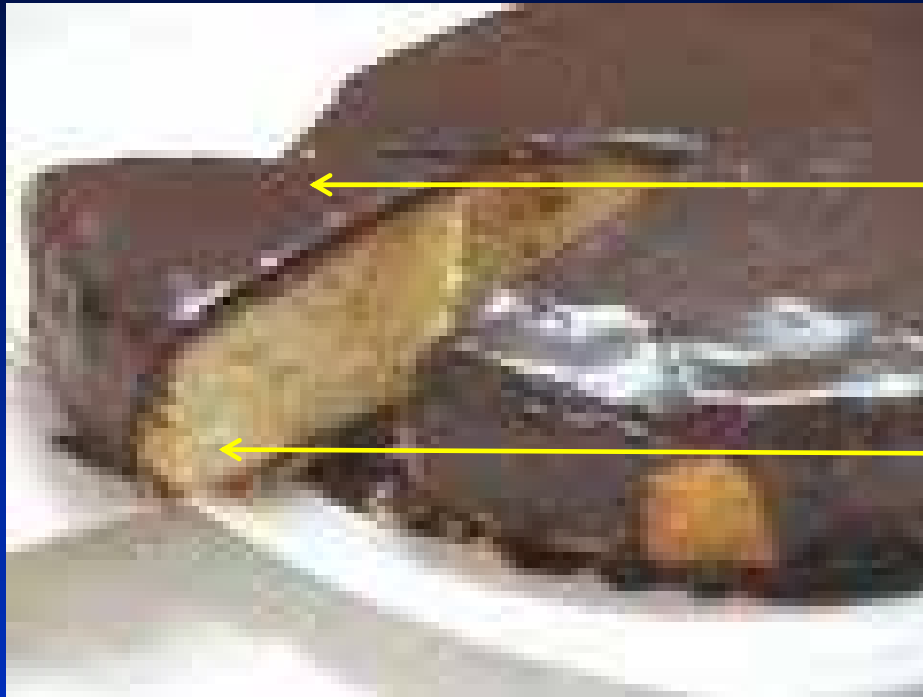
Financing of investment and construction costs, operating and maintenance

- **Carbon Financing** – CDM Costs & CER revenues

- Transaction costs,

- Revenue earned from the carbon credits- typically 5 to 15 % of total project costs

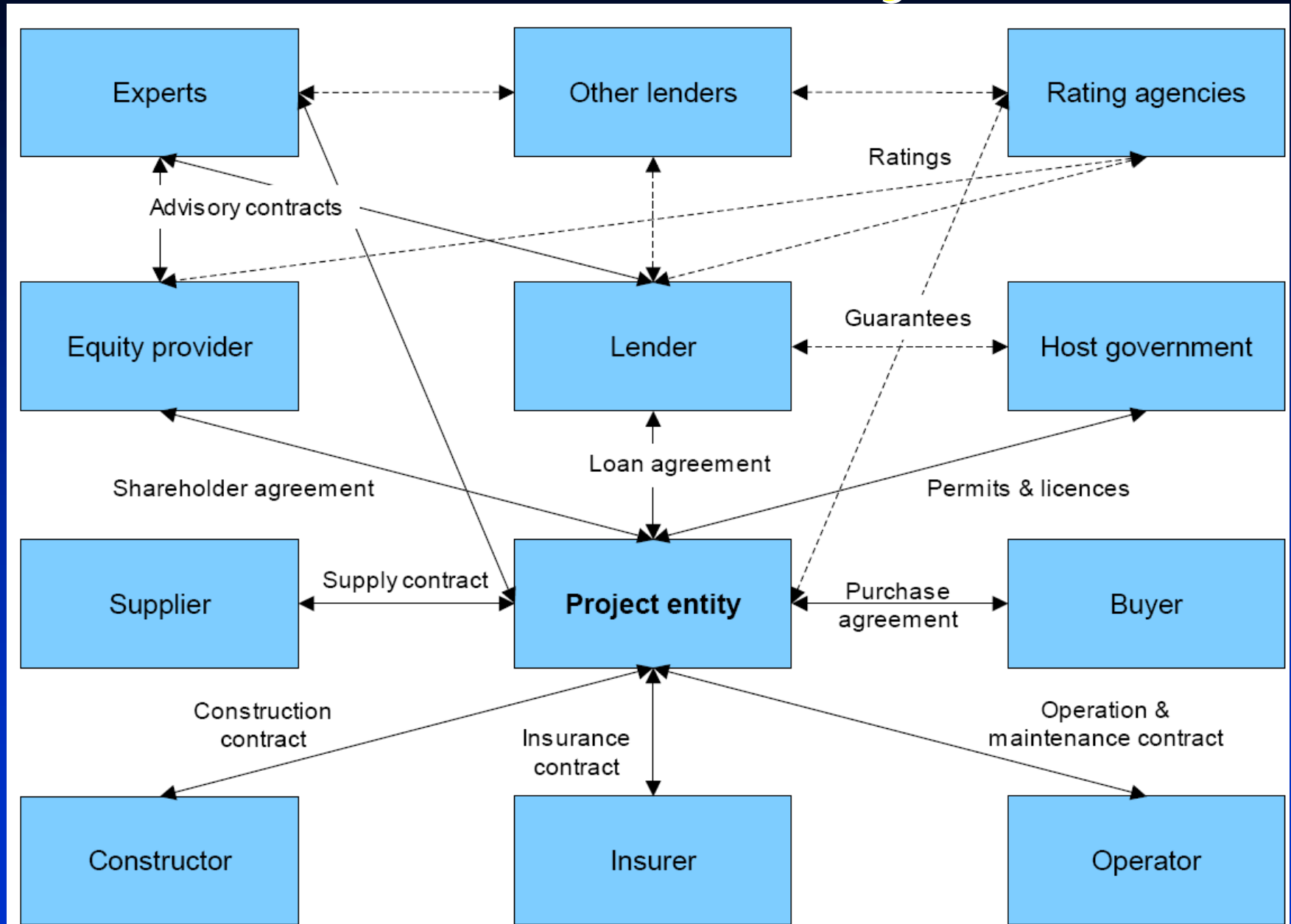
Carbon Financing is just an Icing on the Cake



Carbon Financing

Project Financing

Stakeholders involved in Project Financing

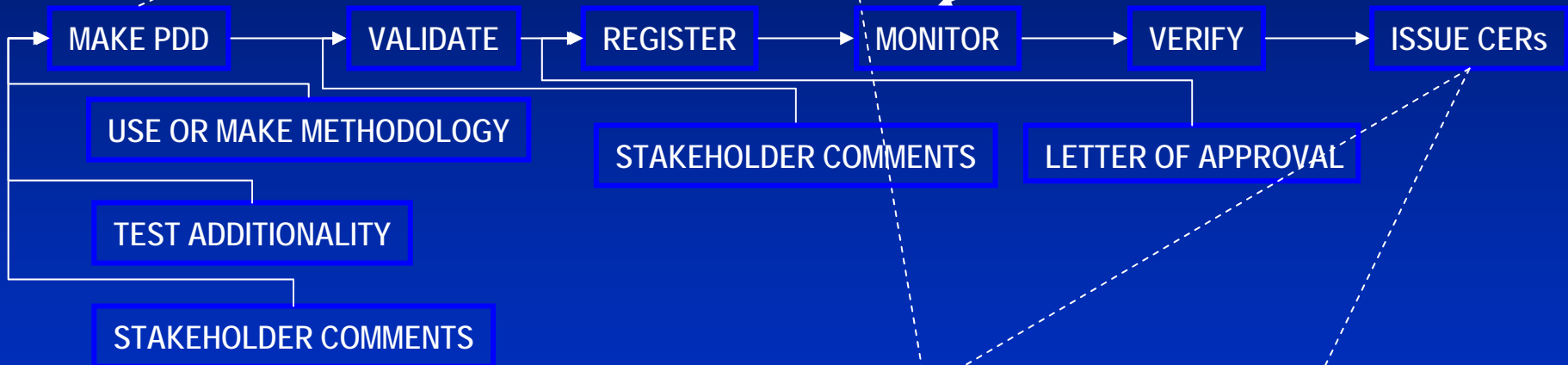


Conventional & CDM Project Development

PHYSICAL PROJECT DEVELOPMENT



CDM DEVELOPMENT



COMMERCIAL DEVELOPMENT



Project Costs & Sources

➤ Total Project Cost Estimates

- Investment costs, including development costs, up to commissioning of project, Operation & maintenance

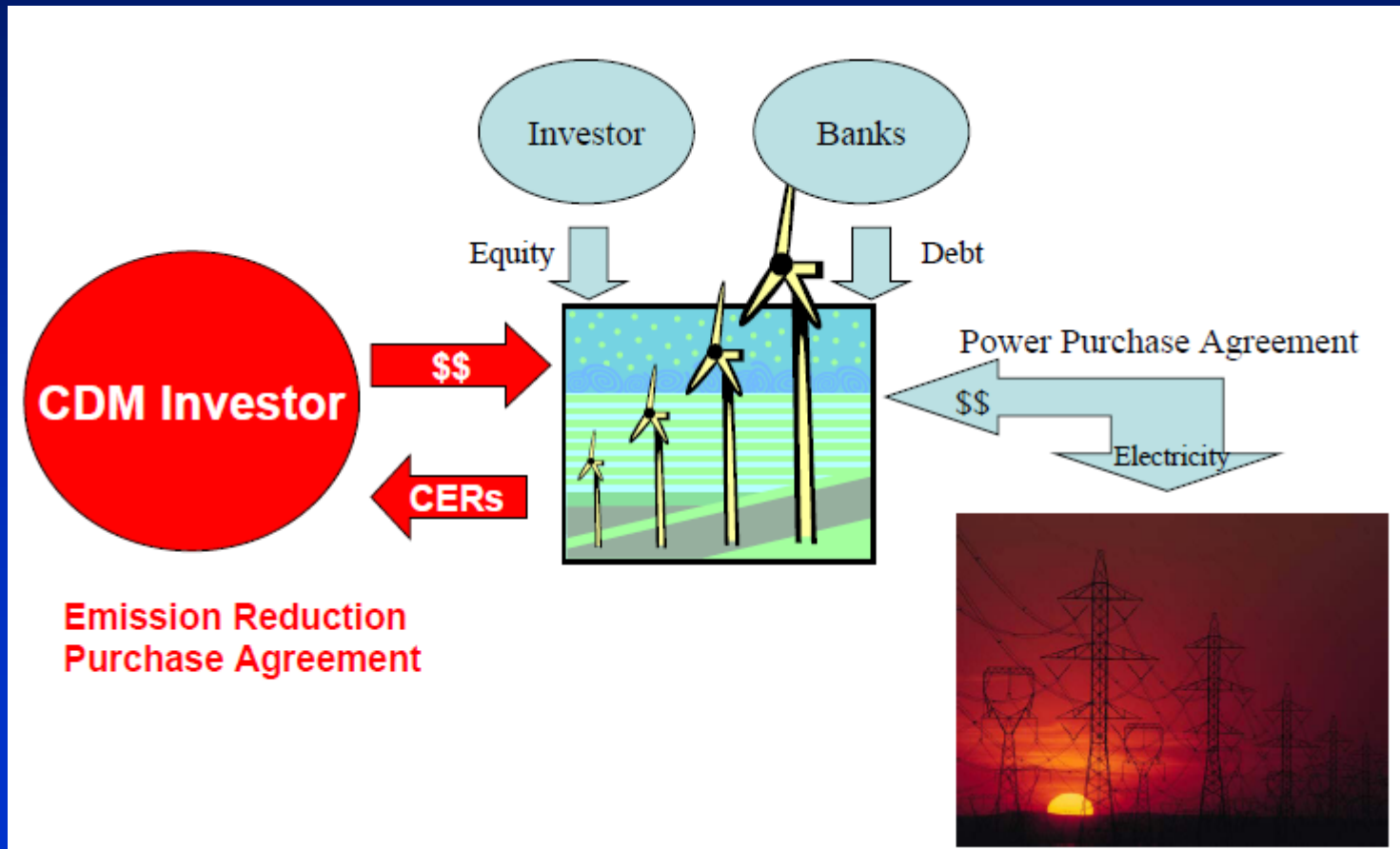
➤ Sources of Finance to be Sought or Already Identified

- Critical to identify other debt and/or equity finance
- Typical sources of funding: Multi-lateral/Bi-lateral, Financial Institutions

➤ CDM contribution = typically 5-15% of total project costs

Options for CDM Financing - ERPA

- ERPA - Emission Reductions Purchase Agreement
- Annex I investor agrees to buy CERs as they are generated by the project



Emission Reductions Purchase Agreement

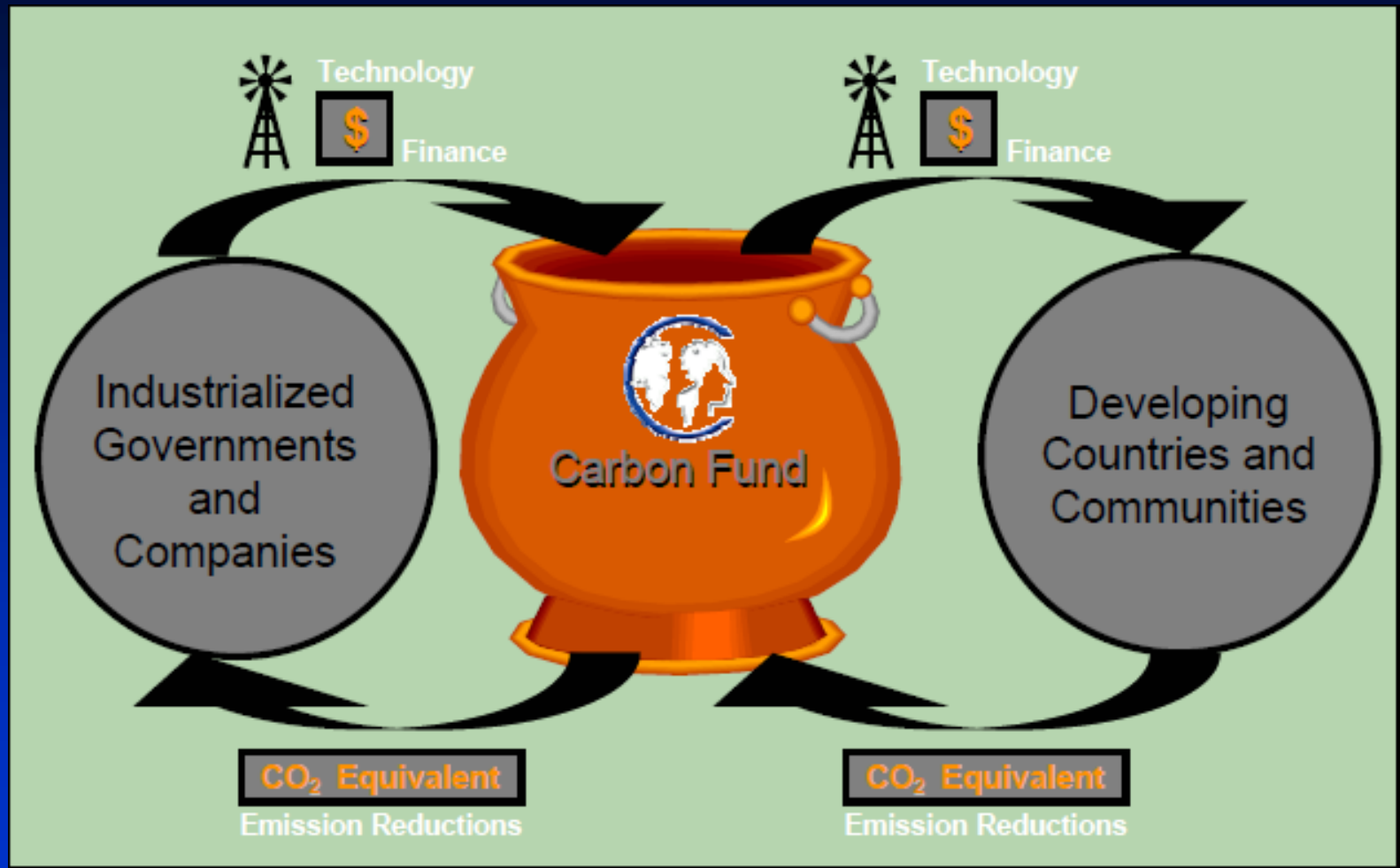
- Can improve the **project IRR**
- Typically **forward contracts**
 - Payment upon **delivery** of verified ERs
 - **Upfront payments** are possible
- Helps secure **financing and reduce project risk**
 - Future ER payments as collateral for project loans
 - Can be paid into an escrow account, protecting lenders from currency convertibility and transfer risks

Options for CDM Financing – Carbon Funds

Carbon Funds

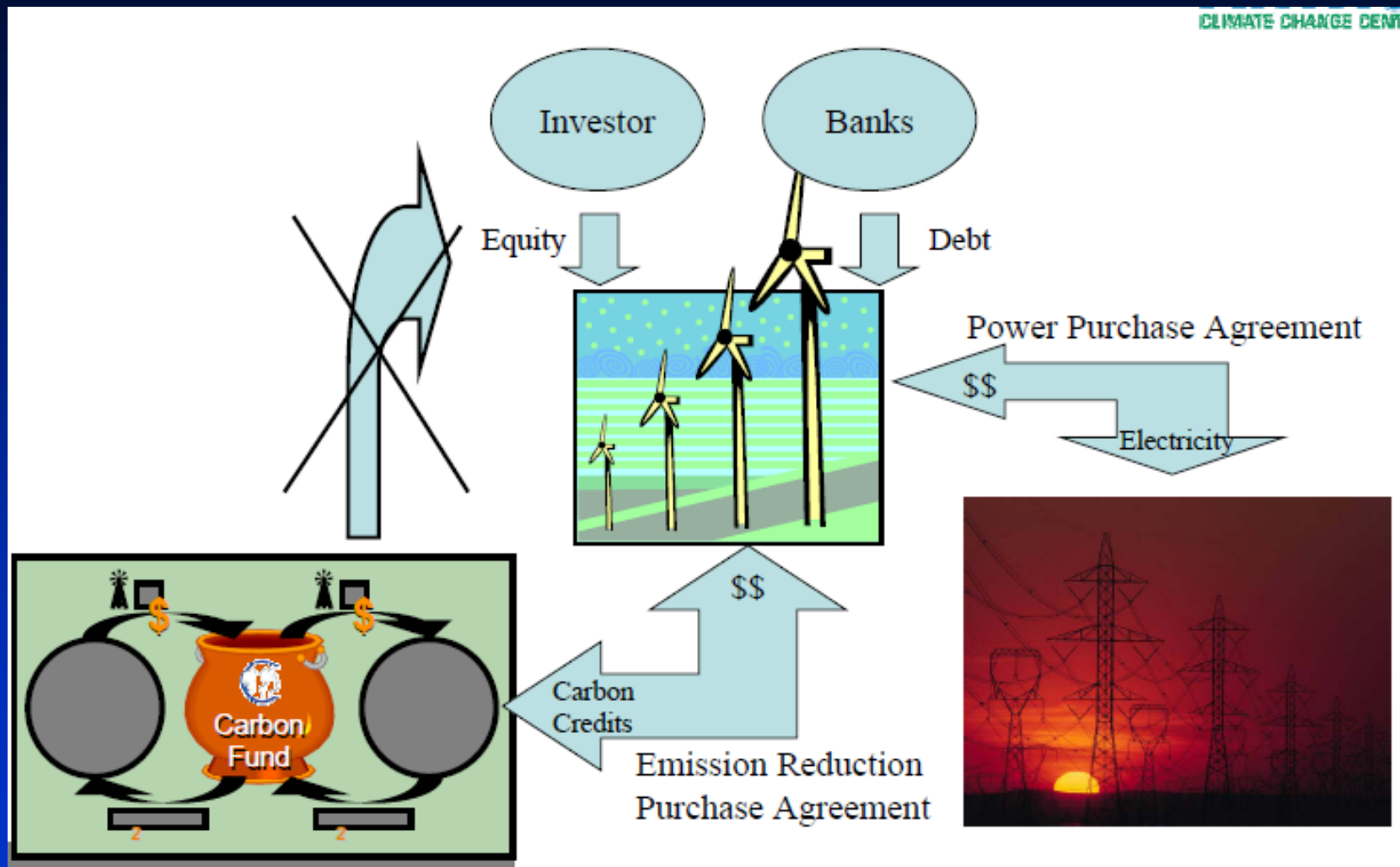
- Annex I investors contribute to a **mutual fund**
- Mutual fund **agrees to buy CERs** as they are generated by the project
- Carbon Fund Examples:
 - ADB – Asia Pacific Carbon Fund/Future Carbon Fund
 - World Bank – Prototype Carbon Fund/Bio carbon Fund/Community development Carbon Fund
 - European Carbon Fund

How Does a Carbon Fund Work?



Carbon Funds – Nature of Contract

CLIMATE CHANGE CENTER



Options for CDM Financing – Equity or Debt

- Full or Partial Equity Financing
- Annex I Investor finances all or co-finances part of a CDM project in return for full or shared financial returns and CERs
- Local investors co-financing CDM projects in a host country may wish to have share in CERs so that they have the opportunity to sell the credits at a later time
- Debt Financing - Annex I Investor provides loan or lease financing at concessional rates in return for CERs

CDM Projects – Transaction Costs

- Transaction costs vary depending on the **specific circumstances** of the project and the **service providers**.
- Project participants may absorb the costs by carrying out the **task in-house** (e.g. development of a PDD)
- Typical Transaction costs can include:
 - Project **finding** and **assessment**
 - New **methodology development** and submission
 - **PDD** development
 - **Validation**
 - Host country **approval**
 - **Contract** negotiation and **legal** costs
 - **Monitoring**
 - **Verification/Certification**

Range of Transaction Costs

Project finding and assessment

Large scale Low: 3,000 - High: 29,000

Small scale Low: 3,000 - High: 21,000



PDD development

Large scale Low: 6,500 - High: 120,000

Small scale Low: 3,800 - High: 25,000



Approval by the Host and Investing Parties

Host and investing countries in most cases do not charge fees for granting approval. There may be actual expenses associated with obtaining an approval, e.g. travel costs in cases where DNAs require project participants to make a presentation.



Contract negotiation/legal costs

Large scale Low: 5,000 - High: 63,700

Small scale Low: 1,500 - High: 26,000



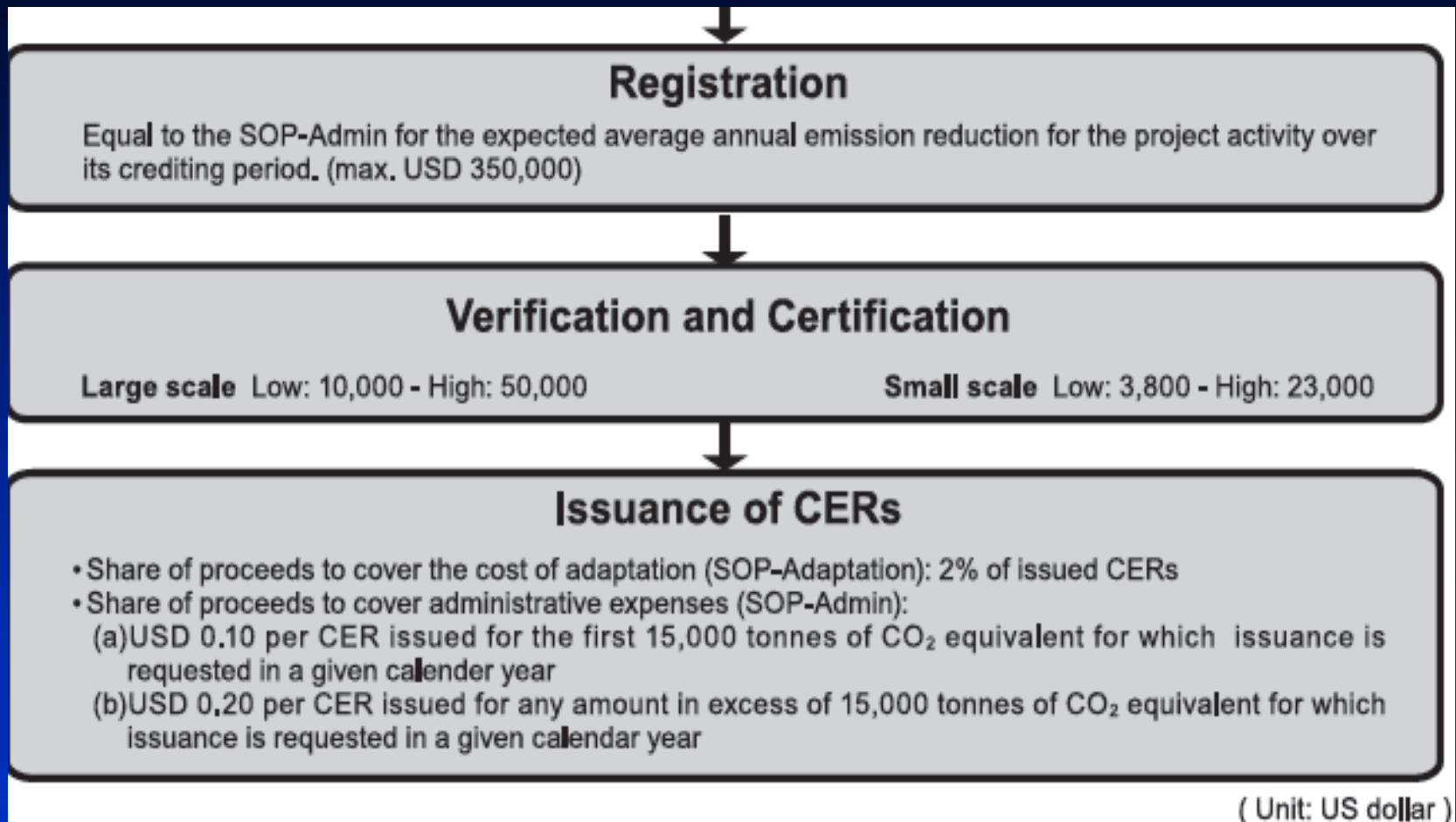
Validation

Large scale Low: 6,000 - High: 80,000

Small scale Low: 3,800 - High: 20,000



Range of Transaction Costs



Source: "CDM/JI Manual for project developers and policy makers." ed. Japan Ministry of the Environment (MOE). Tokyo.

Economics of CDM Projects – Quantity of CERs

- Depends on the **emission reductions** achieved and **crediting period** selected.
- Grid-based or off-grid projects that displace more **carbon intensive coal** and **diesel** fuels generate more CERs than those that displace **natural gas**.
- Projects that capture **methane** and GHG's other than CO₂ produce **more CERs** – GWP of methane and other gases are several times higher than that of carbon dioxide

Economics of CDM Projects – Price of CERs

Key Determinants include:

- **Risk** allocation (Registration risk; Delivery risk)
- **Creditworthiness & experience** of project sponsor
- **Viability** of underlying project
- **Contract structure** (e.g. upfront payments incur discount, penalties for non-delivery, ability to pay penalties)
- Emission reduction **vintage**
- Host country **support & willingness** to cooperate
- **Additional Environmental and Social Benefits**

Economics of CDM Projects – Other Risks

➤ Market/Price Risk

- Will there be a market for post 2012 CER's?
- Will contract price exceed market price?

➤ Policy/Compliance Risk

- What if no Kyoto Protocol?
- What if host country does not ratify or comply?
- What if host country does not approve project?

➤ Baseline Risks

- Baseline design--is the baseline robust?
- Will its assumptions remain valid over time?
- Performance--*actual* performance will determine level of ERs generated

THANK YOU