Climate Technology Initiative Side Event

Mobilizing Private Sector Financing for Climate Technology Transfer

Toru Kubo
Principal Climate Change Specialist
Head of Carbon Market Program
ASIAN DEVELOPMENT BANK

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Outline of Presentation

- Brief ADB introduction
- Ongoing projects
- Low-carbon project characteristics
- Lessons learnt from public-private partnerships
- (ADB programs on technology transfer)

The Asian Development Bank (ADB):

- Multilateral development finance institution established in 1966
- Poverty reduction is overarching mandate
- Provides financial and technical assistance
- 67 members – 48 from Asia and Pacific region
- Annual approved financial assistance:
  - $6-14 billion during 2004-2009
  - Above $13 billion annually from 2011 onwards

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ADB's Long-term Strategic Framework and Climate Change

ADB's "Strategy 2020" (2008-2020)

- Inclusive Economic Growth
- Regional Integration
- Environmentally sustainable growth
  - Environment including climate change: one of the five core areas of operations
  - Aims to scale up support for projects that address climate change

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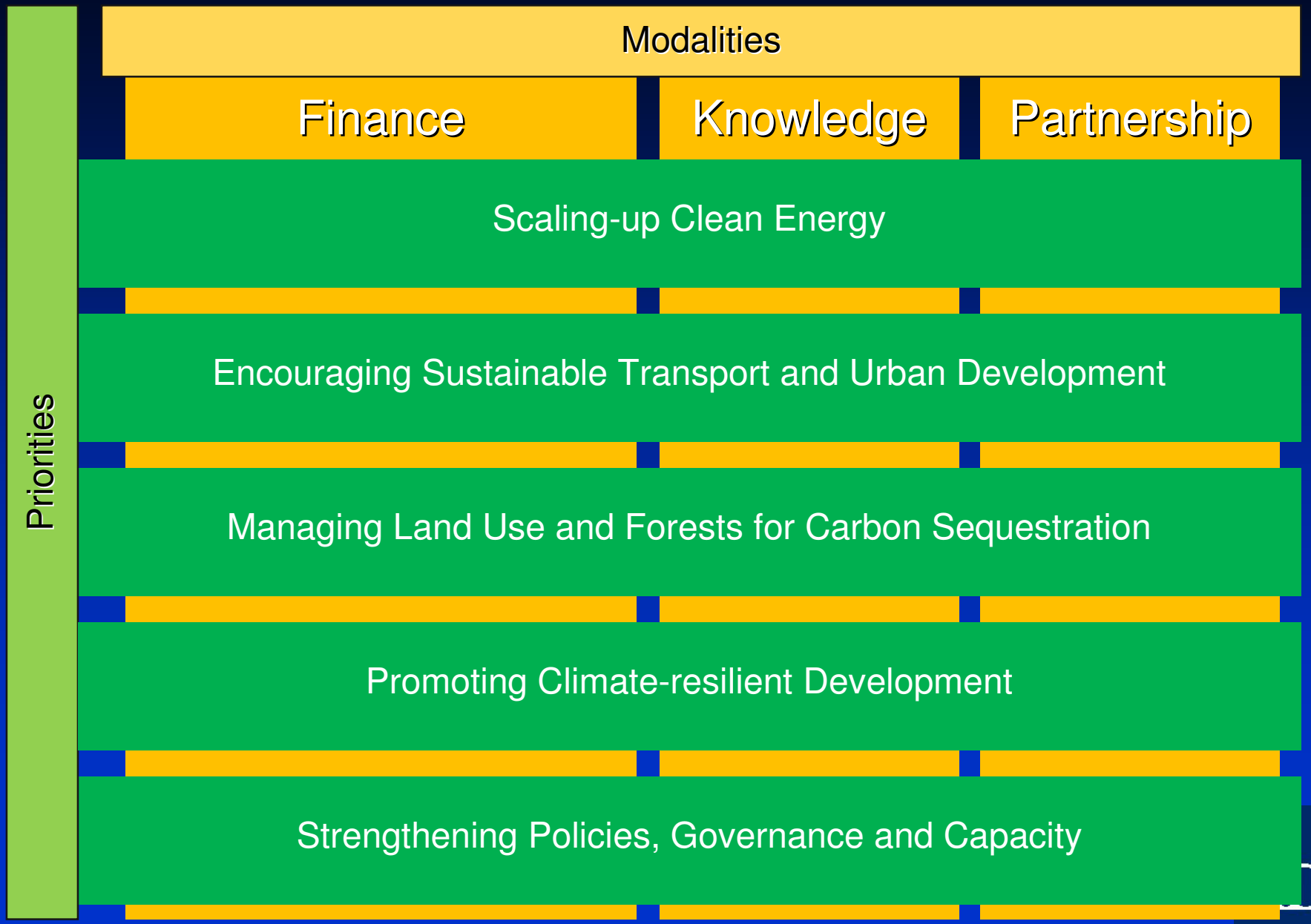
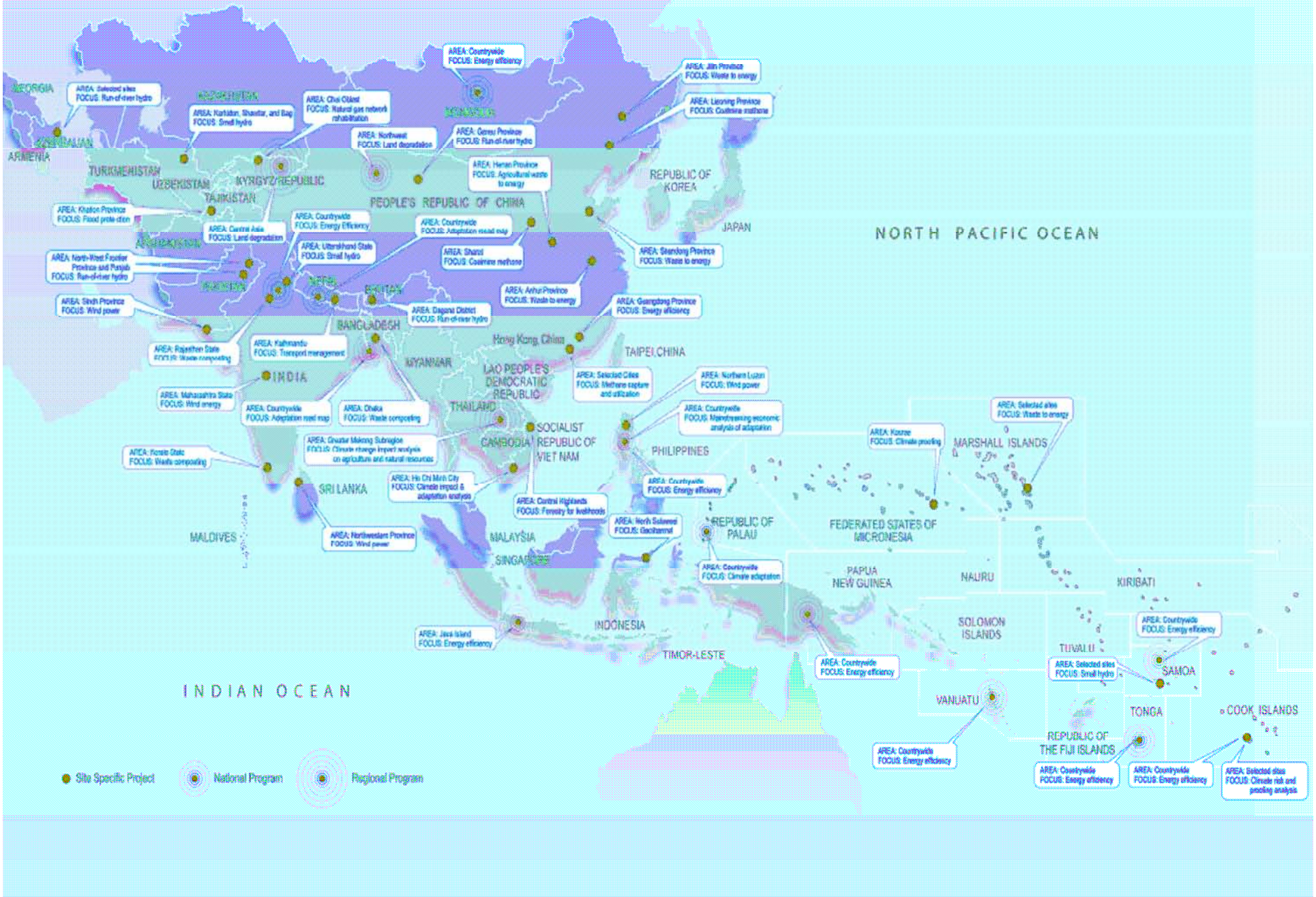
ADB Climate Change Program



ADB Region and Ongoing Climate Change Projects



Renewable Energy Examples

- Multi-tranche Financing Facility - National Power Grid Development Investment Program (India)
- Inner Mongolia Wind Power Project (PRC)
- Gujarat Paguthan Wind Energy Financing Facility (India)
- Public-Private Infrastructure Development Facility (solar projects) (Bangladesh)
- Uttarakhand Power Sector Investment Program (India)
- Renewable Energy for Remote Island and Mountain Communes (Viet Nam)

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Energy Efficiency Project Examples

- Guangdong Energy Efficiency and Environment Improvement Program (PRC)
- Nagpur Water Supply Project, with energy efficiency improvement (India)
- Preparing Lahore Rapid Mass Transit System (Pakistan)
- Power Transmission Enhancement Project (Azerbaijan)
- Demand Side Management (DSM) for Municipal Street Lighting (Sri Lanka)
- Asian Clean Energy Private Equity Funds (Regional)

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Thailand Solar Power Project

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Project Features

- 73 MWp (gross) thin film voltaic solar plant in Lopburi province, Thailand
- Sponsors CLP, Mitsubishi and EGCO
- Power Purchase Agreement with EGAT under Small Power Producers programme automatically renewable every five years
- EPC contract with Sharp and Ital Thai
- Long term performance guarantees from Sharp on photovoltaic module
- Loan documents signed June 2010
- Scheduled Commercial Operations Date 2012

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Financing Features and ADB Assistance

- Project cost Bt 9 billion = $271 m
- Funded by grant from Clean Energy Fund, sponsor equity, pre sale of some CERs to Future Carbon Fund & debt
- ADB debt Bt 1.7 billion = $51 m with 18 year tenor at market rates
- Thai commercial bank debt Bt 3.4 billion = $102 m with 12.5 year tenor
- Total debt Bt 5.1 billion = $153 m (56% gearing)
- ADB and banks provided the financing on a limited recourse basis

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Gujarat Paguthan Wind Energy

Project Location

Project Features

- 183 MW wind farm in Gujarat (126 turbines, 800 kw) and Karnataka (103 turbines, 800 kw)
- Gujarat Paguthan Energy Corp (GPEC) also owns 655 mw gas-fired combined cycle power plant
- GPEC is 100% owned by CLP Group. Largest wind project undertaken by CLP at the time
- Enercon constructs the project and provides O&M services
- Off-take by Gujarat Urja Vikas Nigam and Bangalore Electricity Supply Company with fixed tariff for 25 years and 10 years, respectively

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Financing Structure

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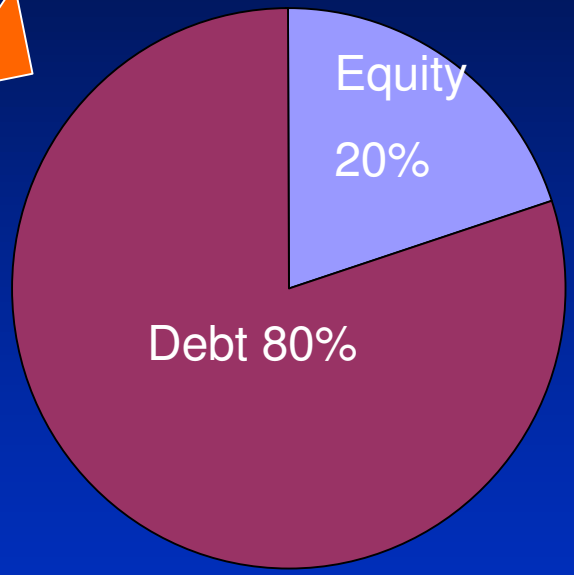
GPEC

[CLP Group]

Local Banks



Total Project Cost
RS 9.9 billion
($249.5 million)

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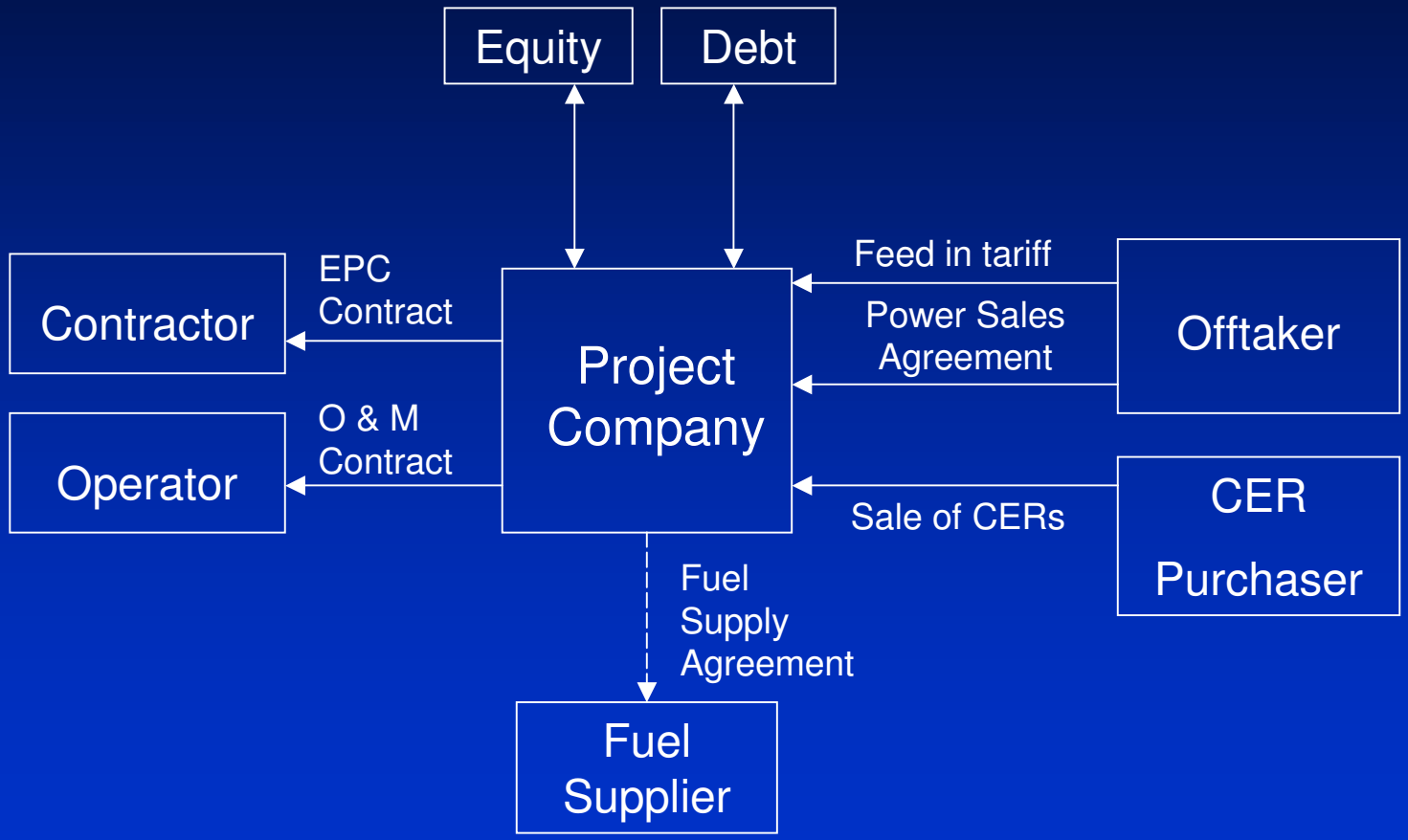
Features of ADB Assistance

- Indian Rupee denominated loan ($117 million equivalent)
- Loan tenor 13 years
- Recourse to GPEC

Low-carbon finance basics

TYPICAL RENEWABLE ENERGY PROJECT CASH FLOWS



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Conventional Energy Project
Typical Risk Allocation

- Most construction risk taken by Contractor via EPC Contract
- O & M risk shared with operator
- Technology mostly proven
- Fuel price risk passed through to Offtaker
- Some finance risks such as FX and interest passed through to Offtaker

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Renewable Energy Project
New Risk Characteristics

- Unproven technology needs support from Contractor
- No fuel cost (solar, hydro) but lower/intermittent availability; or
- Unfamiliar fuel supply risks/costs (risk husk, other biomass, etc.), all local currency
- Higher capital expenditure / MW than conventional fuels

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Renewable Energy Project Issues

- High upfront capital costs and low capacity factor during operation
- Relatively low return and uncertainties over tariff level
- Credit risks of off-taker
- Intermittent resource (not base load) - availability and quality of data is limited
- Technical and economic criteria of equipment
- Project size tends to be small – high transaction costs
- Newly implemented and untested government supports (tariff, tax incentives)
- Long term fixed interest rate finance is rare
- Carbon finance is under-utilized

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Due Diligence focused on Renewable Energy Projects

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Business Due Diligence

A. Market Analyses

- ✓ Power Market: Demand, Supply Competition, Regulations
- ✓ Regulatory and Policy Framework for Wind Power Development
- ✓ Recent Development in Wind Power Market
- ✓ Forecasting Tariff Change Trends and Their Implications for the Project
- ✓ Operation Analysis on Selected Existing Wind Farms
- ✓ Analysis of the Power Grid Operator – Off-taker
- ✓ Project Economic Analysis

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Business Due Diligence

B. Engineering Verification

- ✓ Resource Re-assessment (wind, solar, hydro, others)
- ✓ Equipment Procurement and Performance Evaluation
- ✓ Wind Farm Design Optimization
- ✓ Power Grid Integration
- ✓ Dispatch Arrangements
- ✓ Construction Scheduling and Supervision Arrangements
- ✓ Completion Testing and Validation Arrangements
- ✓ Maintenance Scheduling Reliability Enhancement

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Business Due Diligence

C. Corporate Governance

- ✓ Corporate Development Strategy
- ✓ Operational/Organizational Structure and Capacity
- ✓ Operations of the Board and Shareholders Meetings
- ✓ Capability of the Management Team
- ✓ Technical and Operational Human Resource
- ✓ Incentive Structure
- ✓ Shareholders Support
- ✓ Relationships with Stakeholders (local government agencies, service contractors, off-taker…)
- ✓ Corporate Citizen Responsibility and Support to Hosting Communities

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Business Due Diligence

D. Environmental and Social Safeguards

- ✓ Environmental Impact Analysis Review
- ✓ Land Acquisition and Resettlement Issues
- ✓ Analysis on Social Issues and Poverty Alleviation
- ✓ Other Compliance, Anti-Corruption, and Safeguard Issues
- ✓ Analysis on CER Potentials and Arrangements

Financial Due Diligence

A. Sponsor Creditworthiness Assessment

- ✓ Reviewing Sponsors' 3 Years Audited Financial Statements
- ✓ Track-records/Financial Performance of Sponsors' Existing Wind Farms
- ✓ Ability to Inject Adequate Equity
- ✓ Quality of Guarantees on Project Completion/Debt Service Gap Coverage (if applicable)

Financial Due Diligence

B. Project Financial Analysis

- ✓ Reviewing Project Construction Costs and Financing Plan
- ✓ Reviewing Projections on Project Operational Costs
- ✓ Reviewing Accounting and Auditing Policies of the Project Company
- ✓ Developing/Reviewing Project Financial Model
- ✓ Conducting Cash Flows and Financial Statement Analysis
- ✓ Break-even Analysis and Sensitivity Analysis
- ✓ Debt Service Coverage Analysis
- ✓ Mechanisms and Accounts for Debt Services and Financial Settlements

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Financial Due Diligence

C. Insurance Consultation

- ✓ Reviewing Current Insurance Markets
- ✓ Identifying/quantifying Insurable Risks
- ✓ Recommendation of Suitable Insurance Plan

Legal Due Diligence

- ✓ Advice on Applicable Laws, Regulations, and Policies
- ✓ Integrity checks of Sponsors
- ✓ Reviewing the Legal Status of the Project Company (Shareholders Agreement, By-laws, registration…)
- ✓ Reviewing Project Licenses/Permits/Contracts

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Lessons Learnt from Public-Private Partnerships

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Key Benefits of PPPs

- Disciplined procurement approach for government
- Implementation of the project to time and budget
- Opportunity to leverage innovation and information from the Private Sector
- Clear /efficient allocation of risks throughout the life of the project
- Integrated approach to the maintenance of the asset over the whole lifecycle (government is purchasing the long term provision of public services rather than an asset)

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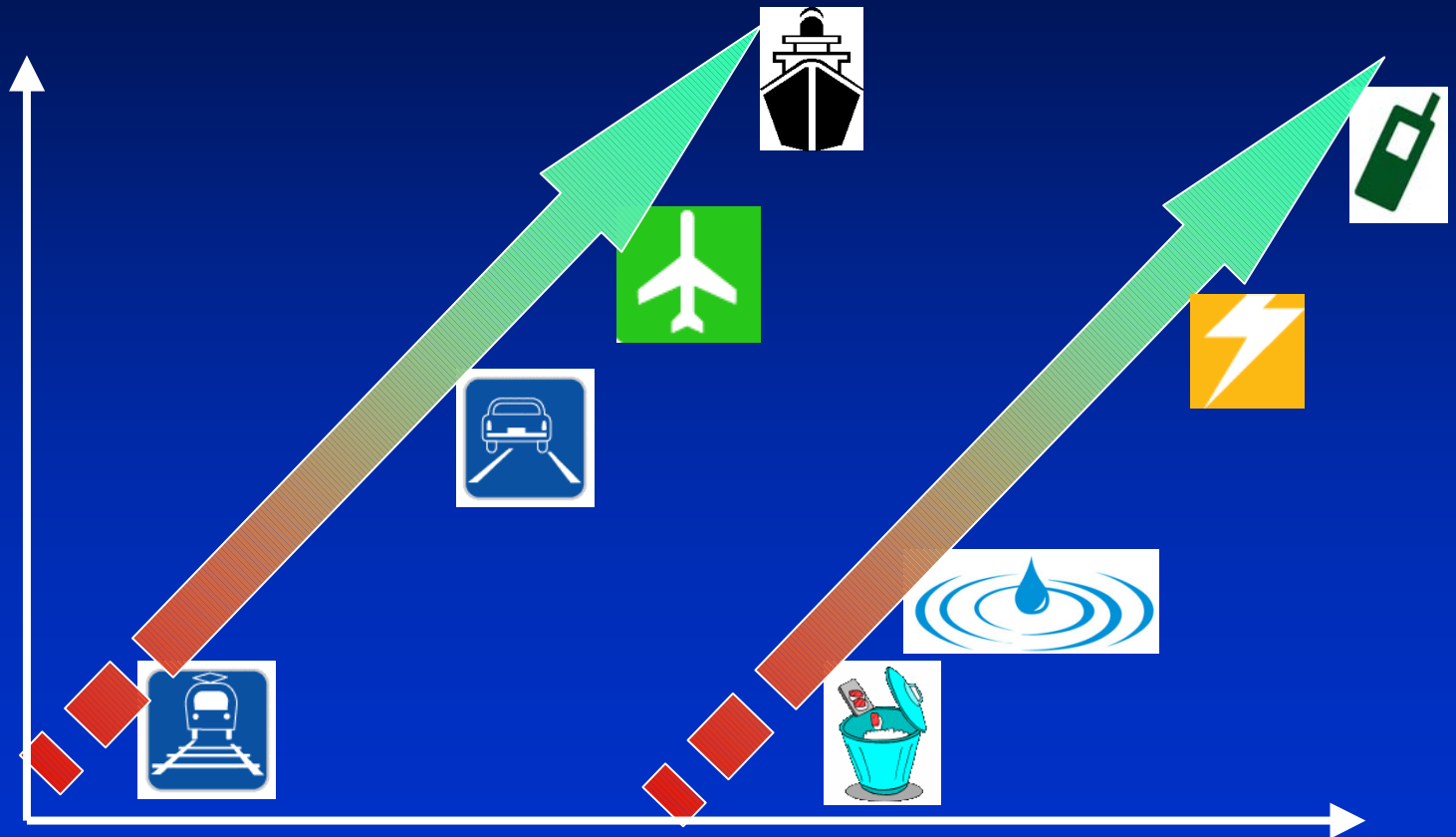
The PPP viability scale



What went wrong?

Unfortunately the best lessons often come from the worst projects!

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Why deals go wrong?

badly prepared

badly bid

bad risk allocation

bad market studies

bad sponsors

bad location

bad technology

bad operator

bad idea

bad politics

bad advisors

bad weather

bad timing

bad company

bad incentives

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Lessons learnt (1)

- Require Strong political will
- Effective and balanced PPP models, backed up by long term and stable policies
  - Enabling environment key (sufficient resources)
- PPP Champion
  - Change of culture within government
  - Change of culture within private sector
  - Involvement/consultation with the private sector
- Gvt. → upfront project development work
  - Identifications of projects – establish priorities
  - Time and costs to complete need to be understood
  - Land acquisition (compensation and resettlement, environmentally sensitive)

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Lessons learnt (2)

- Need to have a pipeline but success of first few PPPs is vital
  - Demonstration effect
- Transparent bidding
- Predictable legal and regulatory framework (standard Contracts) critical for PPP
- “Devil is always in the detail”: use experienced advisers, sponsors, lenders

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Lessons learnt (3)

- Gvt. needs to understand "key issues" for both sponsors and lenders and show flexibility under changing circumstances
- Focus of government: mitigate risks that the market cannot assume at a reasonable cost
- Appropriate risk transfer
- Recognition recognition that PPPs are not:
  - A magic solution to all short term budget problems
  - A replacement for good public financial policies
- Instead, PPPs should be viewed as a tool available to serve the policies of government

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Hope over experience

Outturn compared with Forecast	
Capital cost	+50 to +100%
Implementation time	0 to +50%
Operating cost	0 to +200%
Ridership	- 33% to -67%

(Example of rail systems)

"So what if I underestimated costs and overestimated revenues? It all averages out in the end."

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Need to ensure interests are aligned

Economic interests must be aligned – is this in the long-term interest, not just of the developers / investors, but also the end users?

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Summary: Success Factors

- Sound regulatory environment
- Strong government support
- Clarity in project formulation, preparation and documentation
- Real priority projects of the country
- Transparency in sponsor selection and contract negotiation
- Committed sponsors
- A fair deal for all parties

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ADB's Programs in Technology Transfer

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Technology – Innovation, Transfer, Diffusion

Innovation: Asia Climate Change and Clean Energy (AC^3E) **Venture Capital Initiative** will provide (i) equity (USD 60-100 million), and (ii) advisory, to 3-5 venture capital funds that will invest in nascent companies with climate mitigation and adaptation technology products.

Transfer: Asia Clean **Technology Exchange** will establish a marketplace that will bring together commercial buyers and sellers of low carbon technologies and assist them with executing transactions. **Tech-transfer CDM** will use carbon credits to lower the cost of energy-efficient and/or renewable energy technology products and make them affordable in developing countries.

Diffusion: ADB will utilize public funds to leverage significant amount of capital from markets through bond issuance and syndication private sector actors, in the order of $ billions, for low-carbon and resource-efficient infrastructure in Asia.

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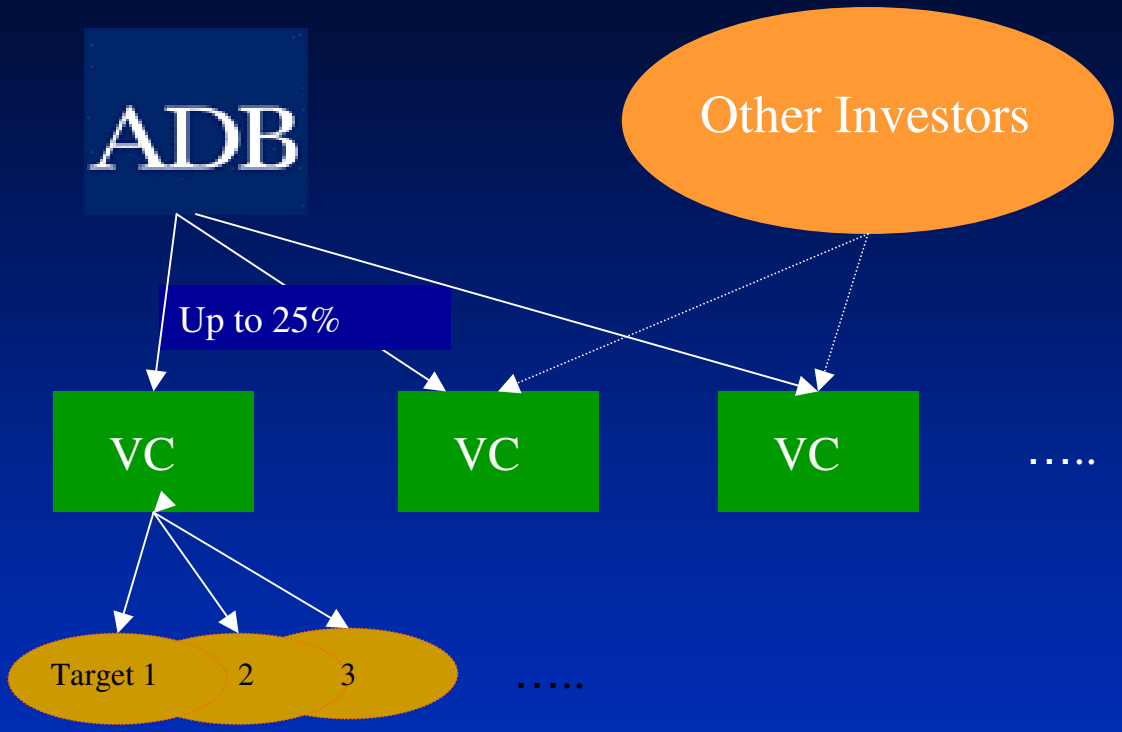
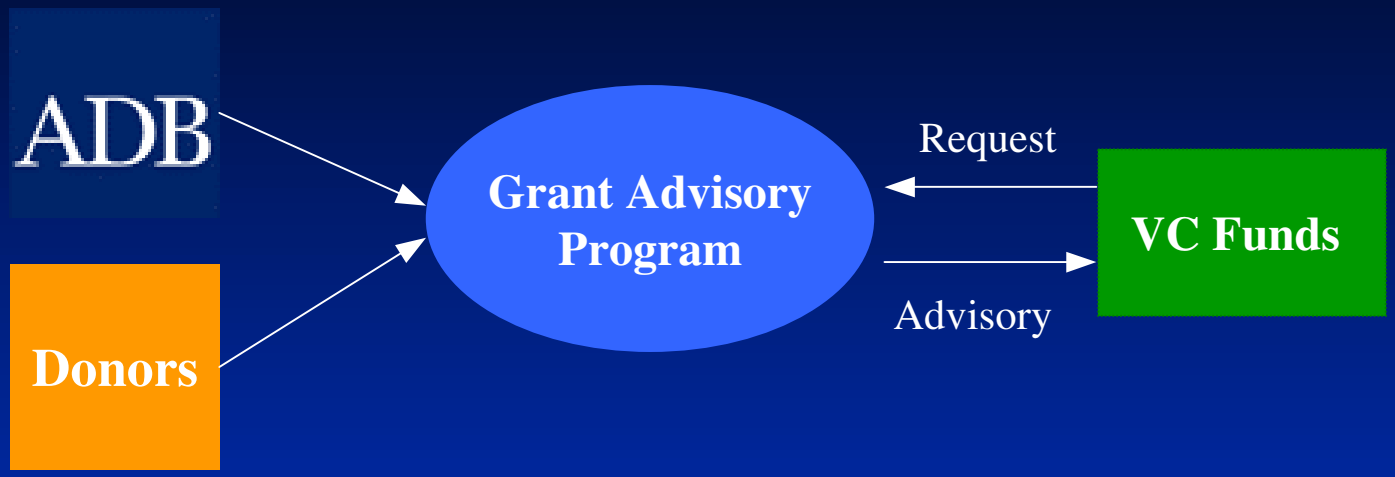
VC Initiative: Equity Investment



ADB's role (1):

- Dedicate circa $60-100 million to multiple VC funds
- Leverage its network to invite commercial investors and government agencies to co-invest in VC funds

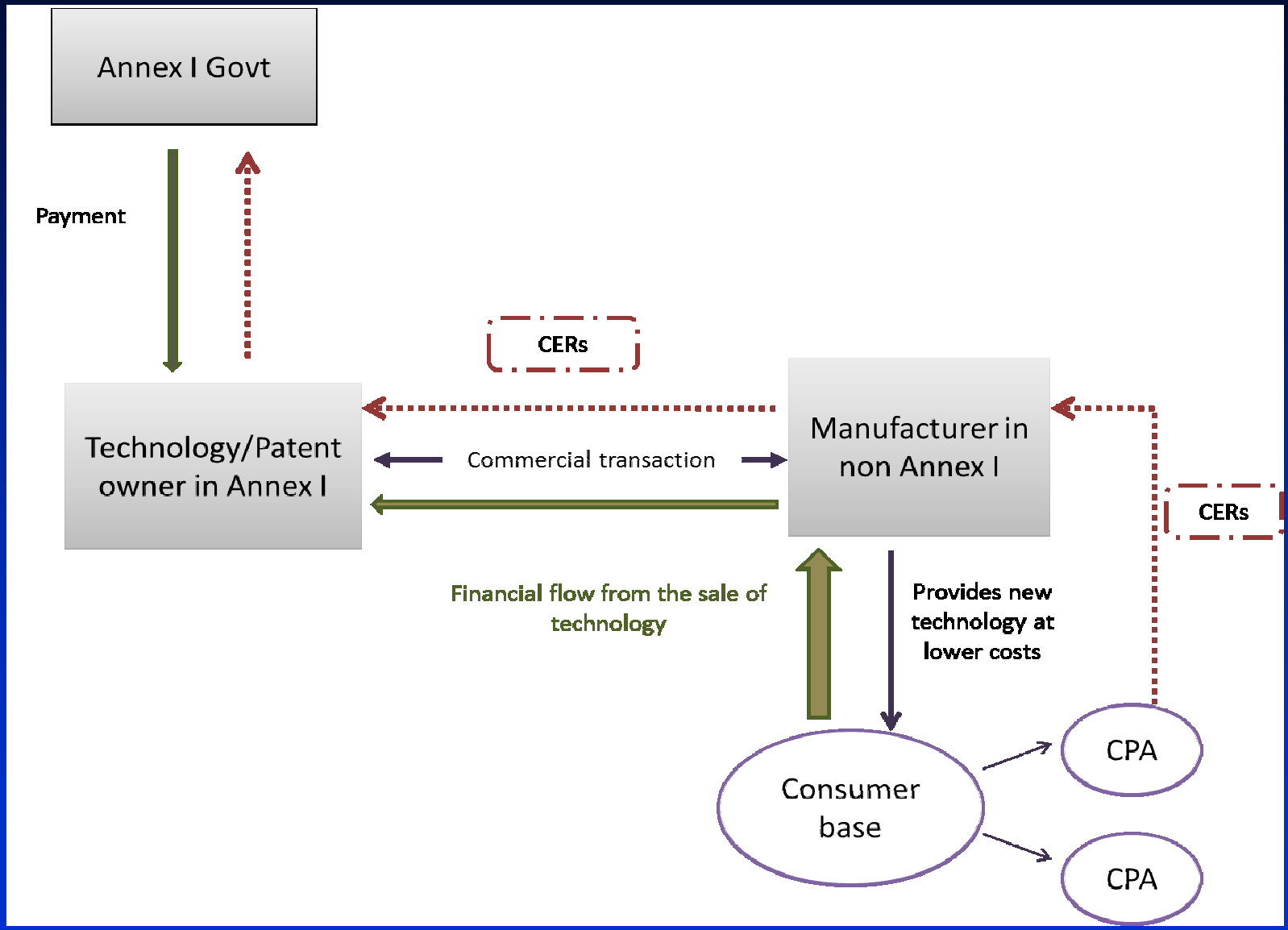
VC Initiative: Technical Support



ADB's role (2):

- Secure funds (own and donors) to provide a pool of technology experts and consultancy firms for VC funds
- This allows VC funds to expand their focus sectors, allocate more resources to early stage opportunities, reduce transaction costs, and give a better chance to boost return profile

Tech-Transfer CDM



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Thank you!

For more information:

Toru Kubo

tkubo@adb.org

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