



Financing Energy Projects

ESMAP Renewable Energy Training

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THE WORLD BANK

1- Introduction to WBG financial products

2- Financing Structures to support Energy projects

2.1 – Renewable Energy: Back ending, guarantees

2.2 – Energy Efficiency: Revolving financing structure

3 – Conclusion: Energy Financing; How can Treasury help?

1- INTRODUCTION TO WBG FINANCIAL PRODUCTS

Asset management

- USD 100 billion asset under management
- Full spectrum of assets: fixed income to private equity

Bond issuance

- USD 10-45 billion per year for IBRD and other clients such as IFFIm and the Adaptation Fund

Risk management transactions

- USD 20-35 billion per year for IBRD and other clients such as IFFIm, IDA, and AMC

Financial Advisory and Banking

Banking:

- Designing and customizing IBRD financial products and communicating product-related information to clients.

Public Debt Management advisory:

- Active engagements in 20 countries on average per year building capacity to better manage sovereign debt portfolios risk

Asset Management advisory:

- Strengthening the capacity of 40 plus member country institutions per year to manage foreign currency reserves and other pools of national assets.

Market presence;

Hands-on expertise in capital markets, public debt and risk management;

Structuring of financial solutions for currency, interest rate, disaster, and commodity price risks

Clients

- Member countries
- World Bank Group
- Central banks and other official sector institutions
- Other development organizations

Lending Instruments

WHAT we support:

- ✓ Projects
Investment operations
- ✓ Policy and institutional actions
Development policy operations
- ✓ *Program-for-Results*

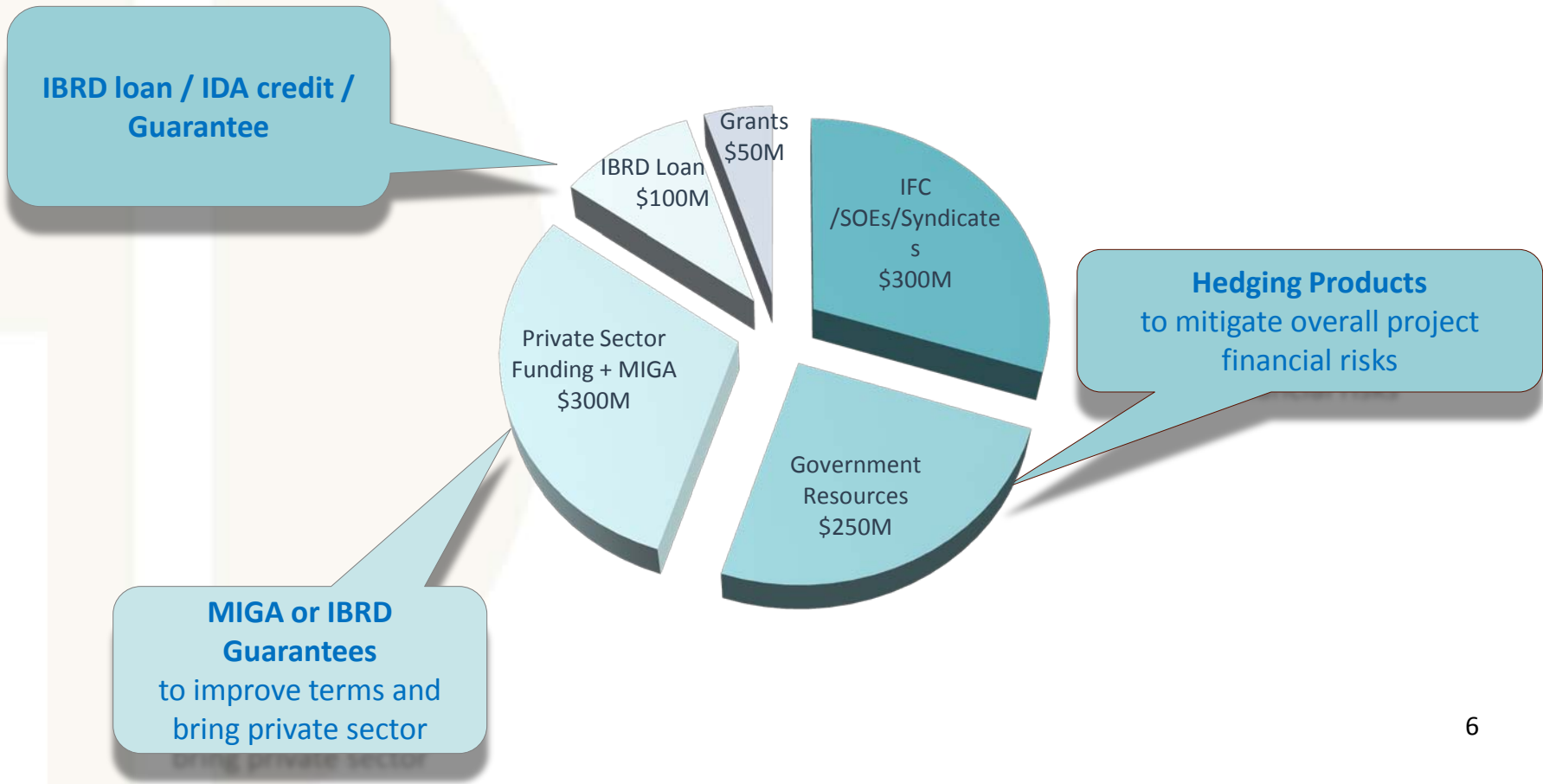
Financial Products

HOW we structure the financing:

- ✓ **Loans**
IBRD Flexible Loan, Local currency loans, sub-national finance, (IFC window)
- ✓ **IDA credits**
- ✓ **Credit Enhancement**
Partial risk guarantees (IBRD and IDA), partial credit guarantees and policy-based guarantees
- ✓ **Risk Management Products**
Currency, interest rate, commodity and disaster risk swaps; interest rate caps and collars

Objective: use the Bank's Balance Sheet and technical expertise to bring the best financial package possible, within exposure limits

Illustration: Total Project: \$1Billion



Role of TRE and Banking Products Officer (FAB)



- Structuring loans and other financing
- Accessing financial markets and arranging financing
- Coordinating with MIGA and IFC
- Structuring risk management products and transactions to reduce financial risks of project financing
- Executing derivatives transactions on behalf of borrowers

All of these services are free of charge for most IBRD countries

Financial Product Menu



			CREDIT EXPOSURE	
Loans	<input type="checkbox"/> IBRD Flexible Loan (IFL)		100%	
	<input type="checkbox"/> Local currency loans		100%	
	<input type="checkbox"/> Sub-national finance		0%	
Contingent Financing	<input type="checkbox"/> Deferred Drawdown Option (DDO)		100%	
Credit Enhancement	<input type="checkbox"/> Partial credit and policy-based guarantee	25%		Except near SBI
	<input type="checkbox"/> Partial risk guarantee (IBRD and IDA)	25%		Limited to \$1.
	<input type="checkbox"/> MIGA NHSFO Guarantee	0%		
Hedging Products	<input type="checkbox"/> Currency swap			
	<input type="checkbox"/> Interest rate swap		0% IBRD	
	<input type="checkbox"/> Interest rate cap and collar		10% Non-IBRD	
	<input type="checkbox"/> Commodity price swap			
Disaster Risk Financing	<input type="checkbox"/> Weather hedge		0%	
	<input type="checkbox"/>		100%	
	<input type="checkbox"/> Insurance pool		0%	
Fee-Based Client Advisory Services	<input type="checkbox"/> Catastrophe bond		0%	
	<input type="checkbox"/> Asset management		0%	
	<input type="checkbox"/> Public debt management		0%	
	<input type="checkbox"/> Asset-liability management		0%	
	<input type="checkbox"/> Capital market access strategy & implementation		0%	
	<input type="checkbox"/> Transaction processing, reporting, and IT		0%	

Difference in terms: IDA vs. IBRD



	IDA Credits (Blend) ^{2,3}	IBRD Loans
Maturity Limit	40 yrs final maturity; 10 yrs grace period	Up to 30 yrs final maturity; 18 years maximum average maturity
Fees	0.75% Annual Service Charge. ⁵ Commitment charge on committed and undisbursed balances set annually between 0 and 0.50% (0% for FY13)	0.25% Front-End Fee
Interest Rate	N.A. ⁴	Choice of Fixed Spread or Variable Spread over LIBOR: LIBOR + 0.27% up to LIBOR + 1.00% for USD loans ¹
Currency Choice	SDRs Only	Major currencies: USD, EUR, JPY Other currencies dependent on market availability
Embedded Options	No	Currency, Interest Rate conversions; Interest Rate caps/collars

1/ This is equivalent to a fixed USD rate of 3.48% based on market data as of October 4, 2012 for an 18 year bullet loan with a fixed spread.

2/ IDA terms as listed above are effective as of July 1, 2012. Blend terms apply to blend countries and IDA countries with GNI per capita above the operational cutoff for more than two consecutive years, known previously as "gap" or "hardened term" countries

3/ IDA credits include an acceleration clause, providing for doubling of principal payments from creditworthy borrowers where per capita income remains above eligibility thresholds.

4/ Countries with a high risk of debt distress ("red light countries") receive 100% of their allocation in the form of grants and those with a medium risk of debt distress ("yellow-light countries") receive 50% in the form of grants. Grants are not subject to repayment of fees, but carry of 20% volume discount on the country's allocation. An exception to the GNI per capita operational cutoff for IDA eligibility has been made for some small island economies on the basis of their vulnerability.

5/ The service charge is 0.75% of the disbursed and outstanding credit balance



Cost

Interest Rate	LIBOR + Variable <u>or</u> Fixed Spread
Front-End-Fee	0.25%

Currency

Currencies of Commitment

- Main currencies (USD, EUR, JPY...)

Maturity

Long Maturities

- Maximum **Final** maturity: **30 years**
- Maximum **Average** Maturity: **18 years**

Repayment

Repayment Schedules are adaptable...

- Linked to Commitment
- Linked to Disbursements*



...and amortization profiles are flexible:

- Level
- Annuity
- "Bullet"
- Customized

Conversions

Embedded options for Conversion

- Interest Rate conversions
- Currency Conversions (including local, where available)
- Caps and Collars

2.1- FINANCING STRUCTURES TO SUPPORT ENERGY PROJECTS: RENEWABLE ENERGY

Back-ended principal repayments: Reduce risks to commercial lenders using flexibility of IBRD repayment schedules



Structure IBRD loans with “back-ended” principal repayments – due after commercial or IFC loans have been mostly paid back.

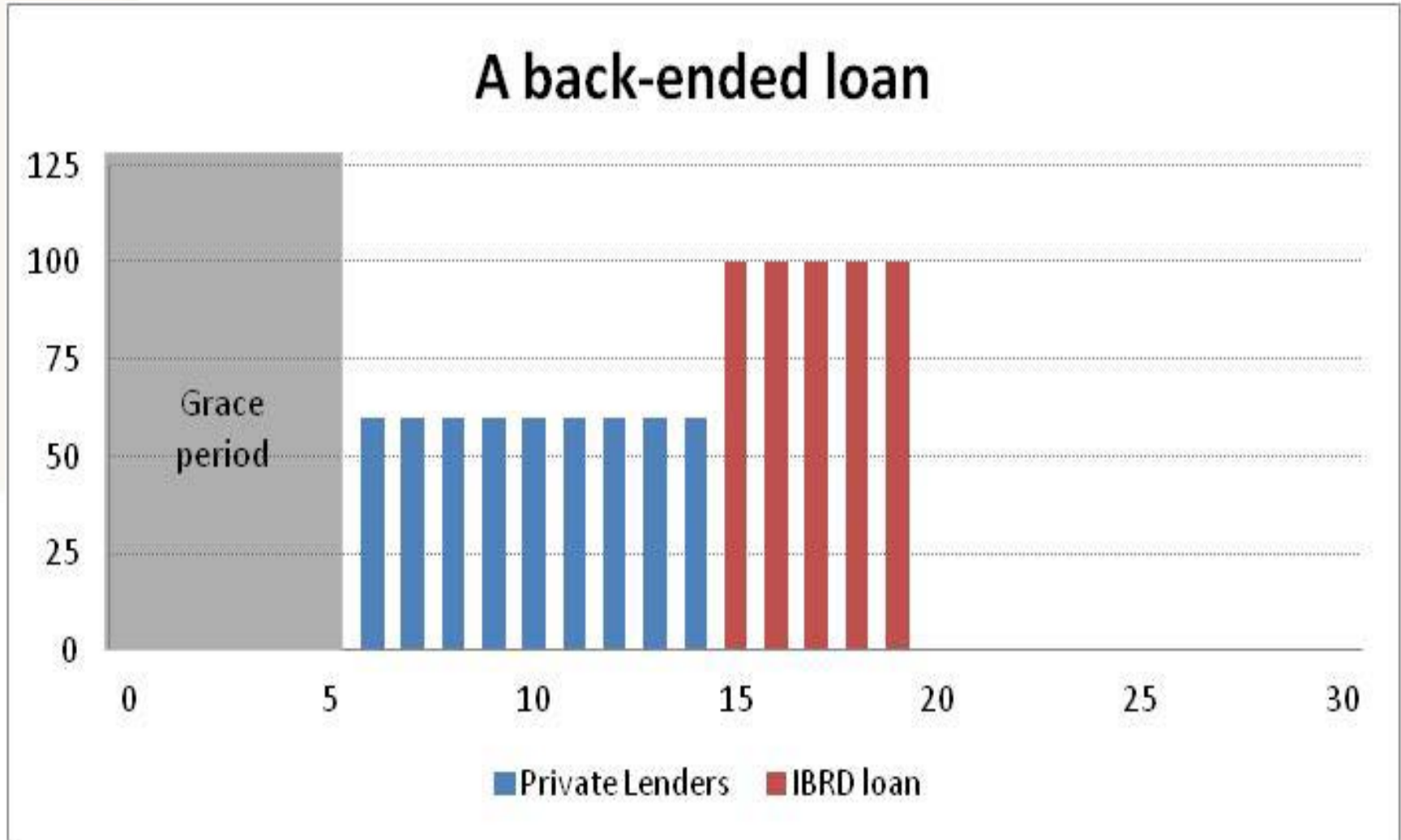
Improves commercial borrowing terms

- Improves risk profile for commercial banks and IFC by increasing the debt service coverage ratio
- Better financing terms from commercial banks and IFC - increased participation and lower cost

Stretches IBRD borrowing limit

- Reducing IBRD loan amount reduces amount of Government guarantee and contingent liabilities
- Frees up IBRD funding to support other projects

Back-ended principal repayments: Reduce risks to commercial lenders using flexibility of IBRD repayment schedules



- **Increase/diversify government's financing sources**
- **Improve the terms of commercial financing** by extending debt tenors and lowering spreads, allowing for affordable long-term investments for infrastructure
- **Facilitate access to increasingly tight markets:** Make commercial financing possible by enhancing credit profile of projects in a risk-averse environment
- **Develop local markets:** Open access to local currency financing from untapped sources in the domestic market
- **Leverage IBRD funds:** Strategic use of IBRD envelope and scarce financial resources

- **Partial Credit Guarantee (PCG) and Policy Based Guarantee (PBG):**
 - guarantee a portion of debt service to lenders or bond holders, regardless of the cause of default
 - PCGs and PBGs can be offered to governments (PCG/PBG) or to SOEs and other sub-national entities (PCG) with a sovereign counter-guarantee
 - PBGs are for fiscal support, while PCGs and PRGs are project-based
- **Partial Risk Guarantee (PRG):** Covers debt service default resulting from government's non performance of contractual obligations. IBRD PRGs require a government counter-guarantee
- **IBRD Enclave PRGs:** Enclave guarantees cover projects located in IDA countries, but whose purpose is to export to IBRD countries.

- Covers sovereign or sub-sovereign's financial repayment obligations or guarantees
- Must be related to a specific investment project with developmental benefits, i.e. “bricks and mortar”
- Can be used for projects involving a number of structures:
 - ✓ MoF acts as borrower and is unconditionally obliged to repay the loan
 - ✓ MoF unconditionally guarantees repayment of loan by an SOE or sub-sovereign
 - ✓ Credit-worthy sub-sovereign assumes MoF roles above
- Has no impact on country lending envelopes
- Does not require a government counter-guarantee
- Pricing is market-based

- **Interest rate:** changes in interest rates can affect project financing costs (interest rate swaps)
- **Currency:** mismatch between local currency revenues of a utility and foreign currency of loan (currency swaps)
- **Weather hedging:** Risk to hydro power project of lower than expected rainfall (weather derivative)
- **Commodity price volatility:** impact on project of oil/gas price volatility (commodity-linked loans, commodity hedging)

IFC's Sub-national Finance Program (sovereign guarantee not needed)



Loans

- Local (and foreign) currency loans
- Syndicated Loans
- Subordinated Loans

Risk Share and Partial Credit Guarantee

- Risk Share programs with local commercial banks
- Partial credit guarantees

Equity and Quasi Equity

- Pre-IPO equity investments

Advisory Services

- Energy and water efficiency
- Revenue management
- Business simplification and red-tape reduction

2.2 – FINANCING ENERGY EFFICIENCY

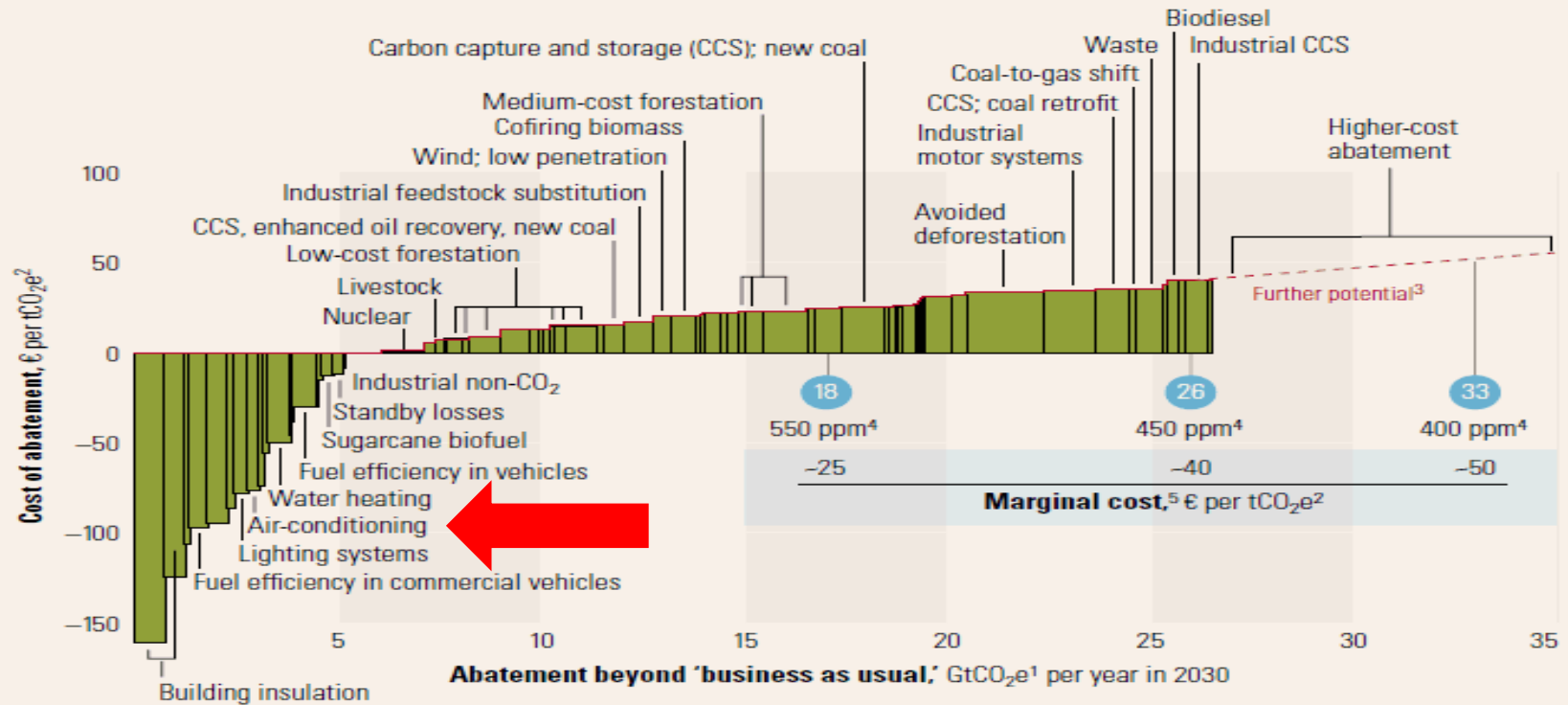
What we do and what could be done: present and future

McKinsey Curves illustrate the areas where mitigation investments can be more efficient



Global cost curve for greenhouse gas abatement measures beyond 'business as usual'; greenhouse gases measured in GtCO₂e¹

● Approximate abatement required beyond 'business as usual,' 2030



¹ GtCO₂e = gigaton of carbon dioxide equivalent; "business as usual" based on emissions growth driven mainly by increasing demand for energy and transport around the world and by tropical deforestation.

² tCO₂e = ton of carbon dioxide equivalent.

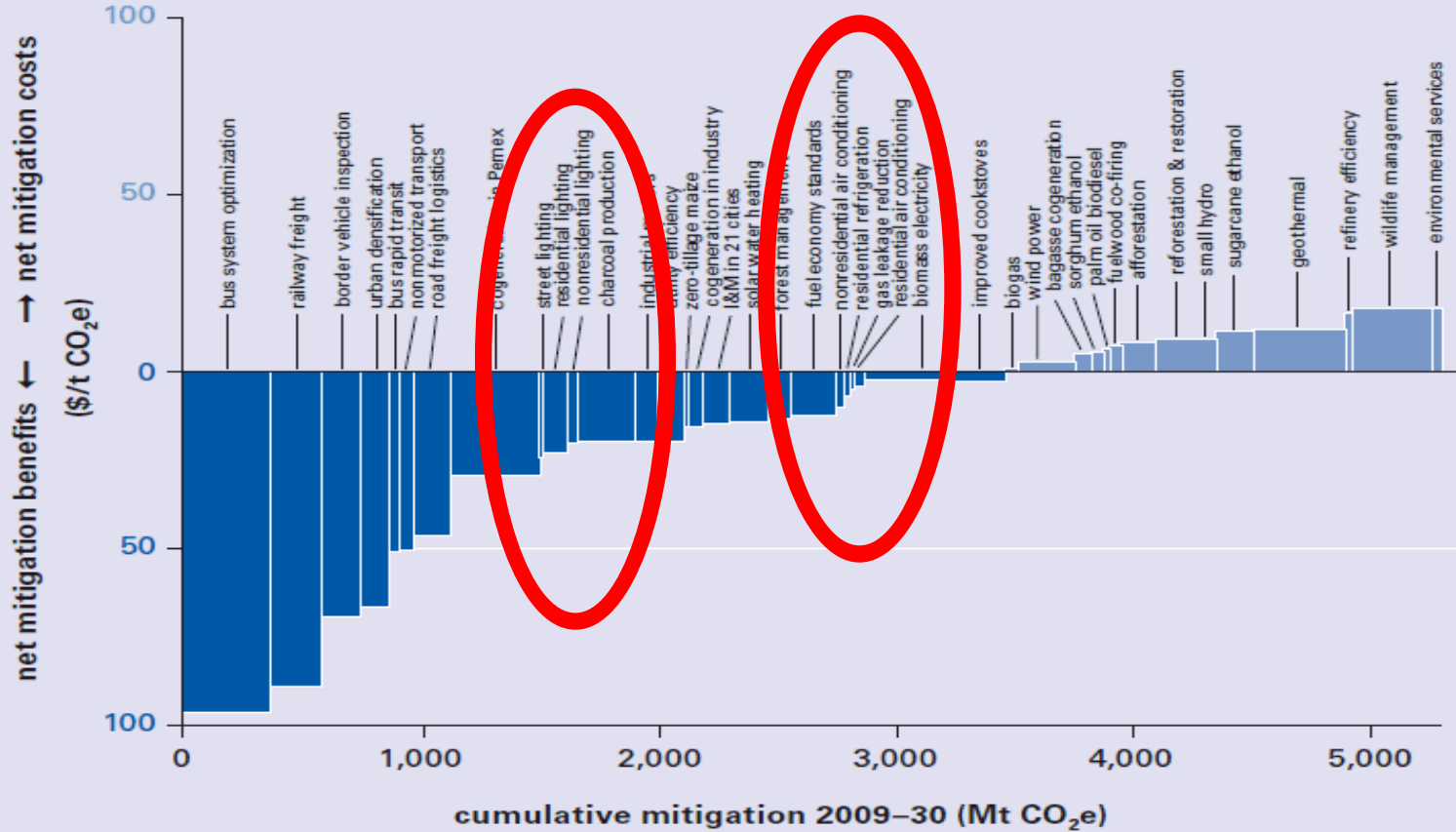
³ Measures costing more than €40 a ton were not the focus of this study.

⁴ Atmospheric concentration of all greenhouse gases recalculated into CO₂ equivalents; ppm = parts per million.

⁵ Marginal cost of avoiding emissions of 1 ton of CO₂ equivalents in each abatement demand scenario.

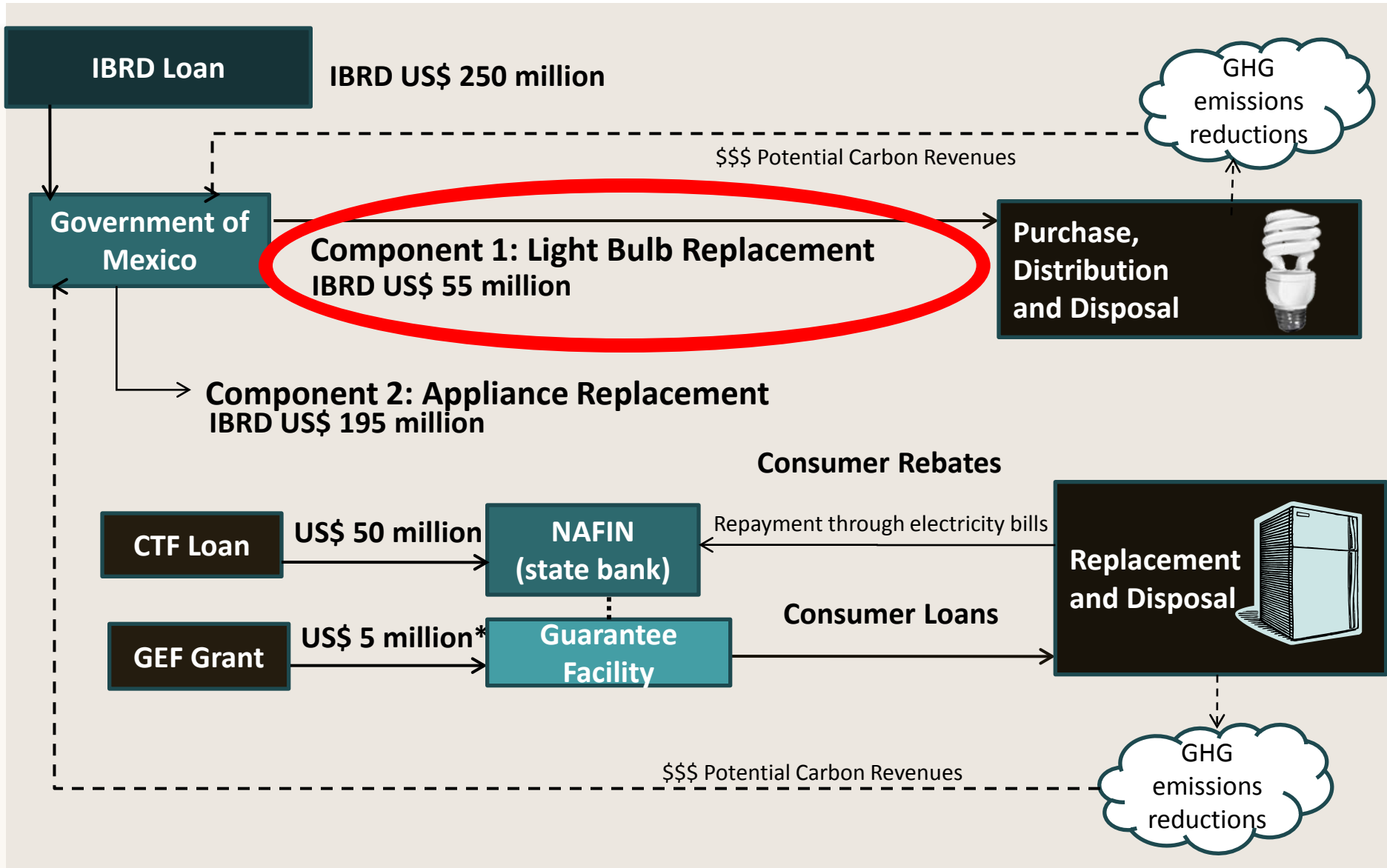
Abatement costs for Mexico

Figure 2 Marginal Abatement Cost Curve



Source: Authors, based on MEDEC study results.

Residential Energy Efficiency in Mexico: Financing Structure

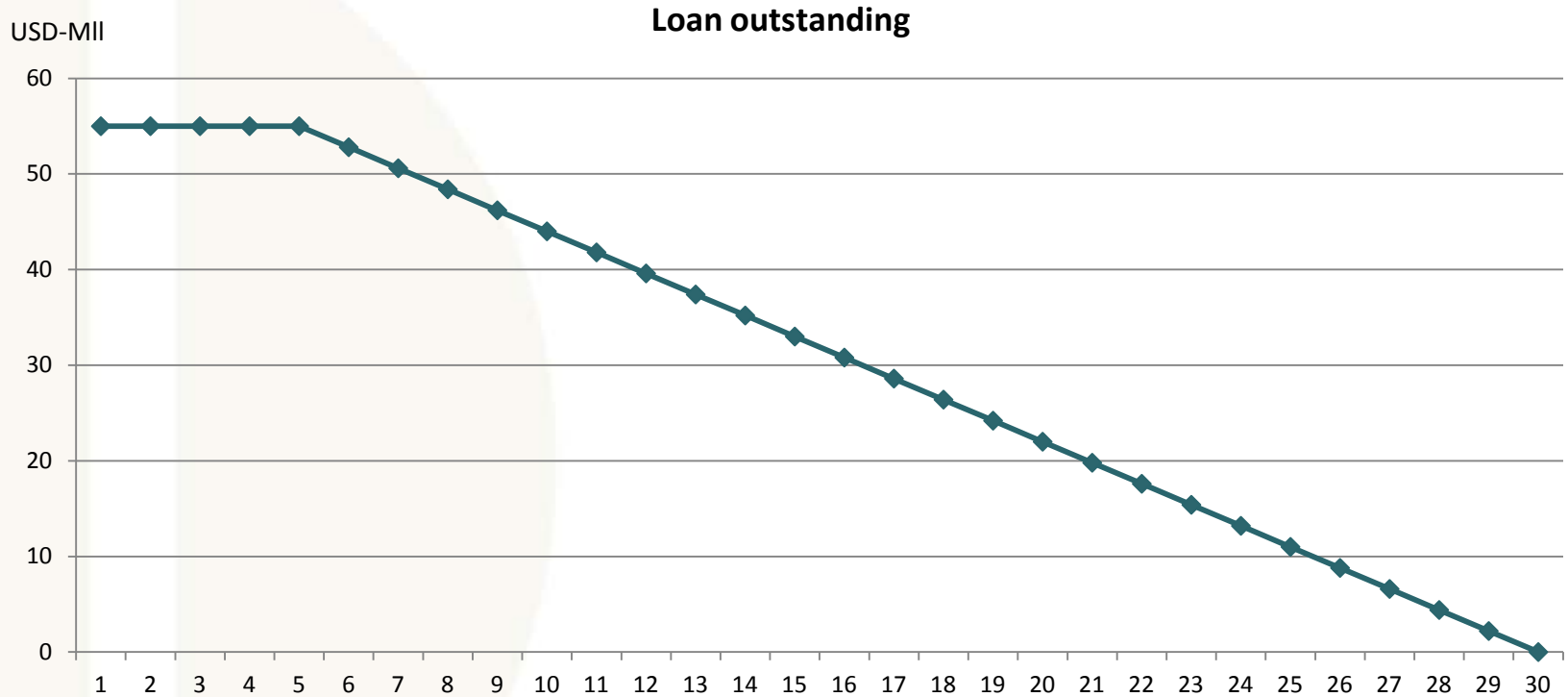


Traditional IBRD loan



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Pay-back period CFLs = 1 year !!!



Financial Terms:

Amount : 55 USD million

Maturity : 30 years **Grace period:** 5 years

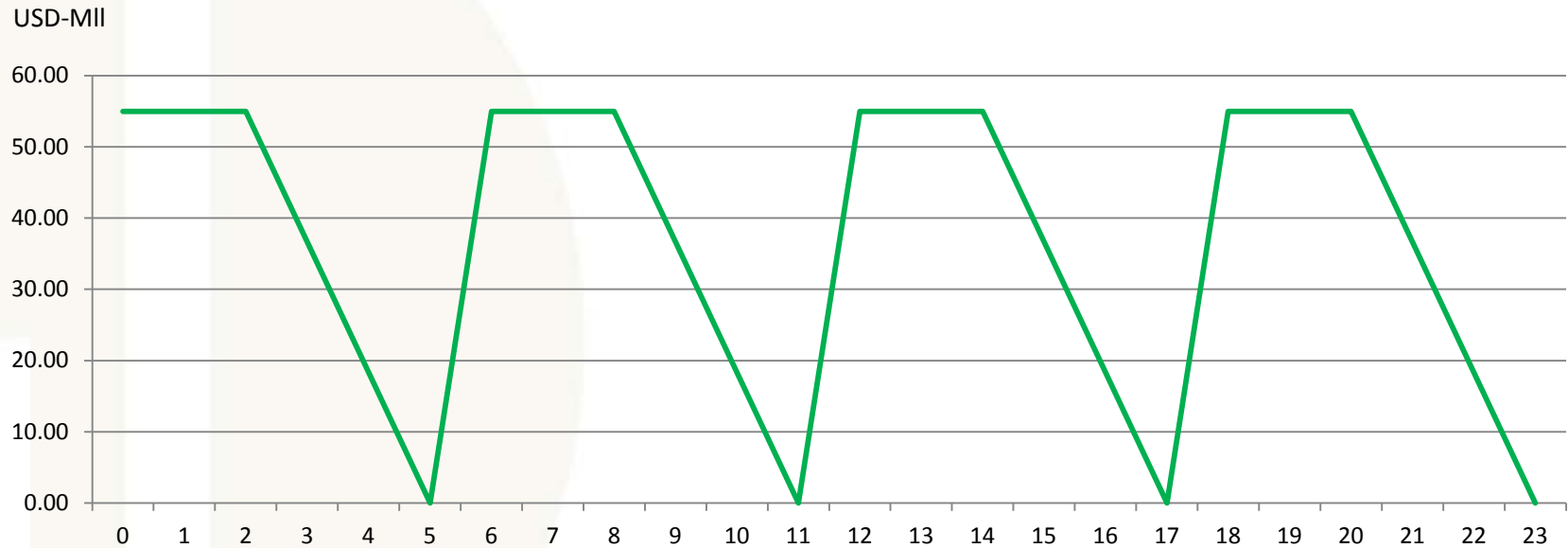
Bank's country exposure: 55 million USD

Optimizing Lending Terms for EE: Recycling Loan for CFL Projects



Pay-back period CFLs = 1 year !!!

Loan outstanding for different tranches



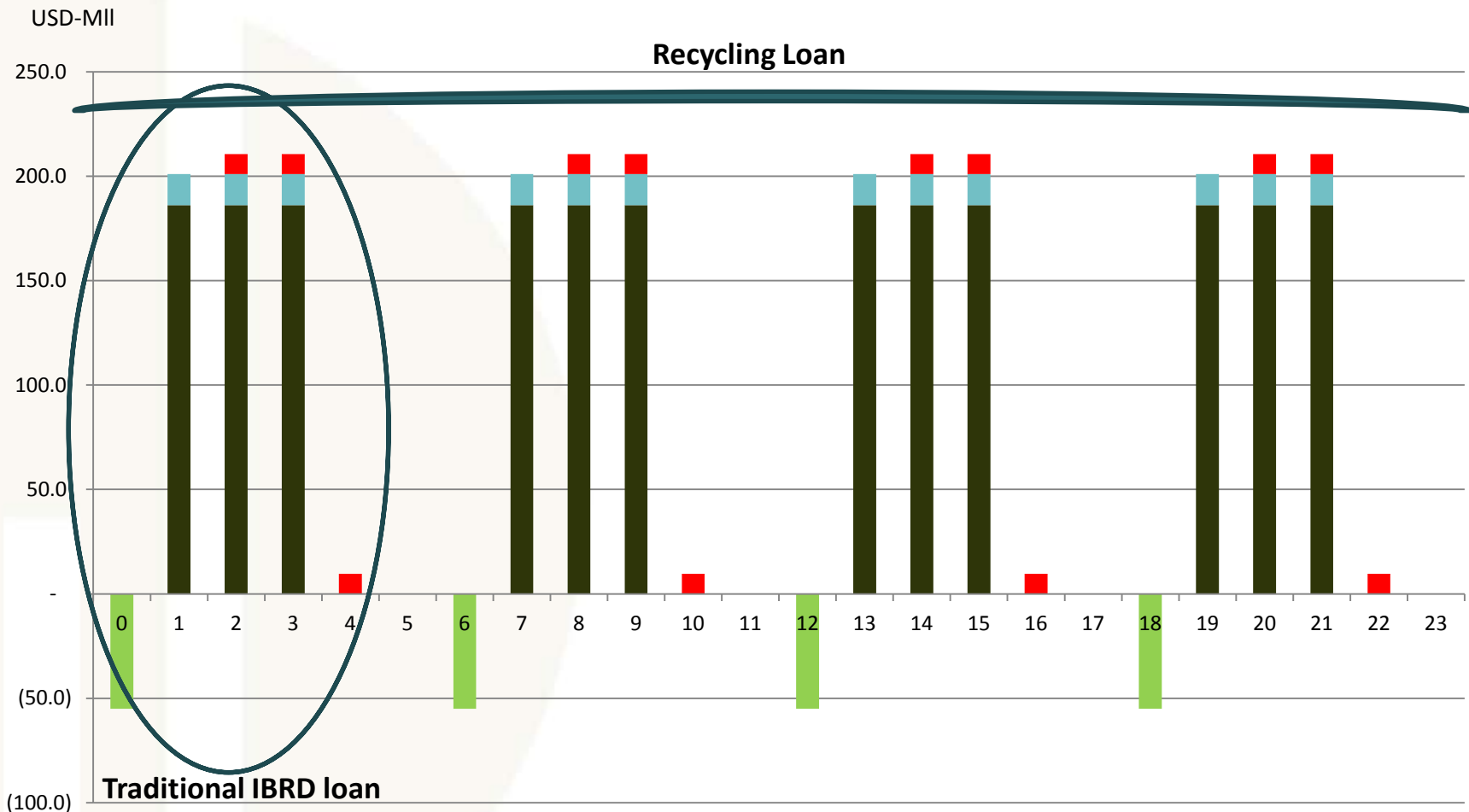
Financial Terms:

Amount : USD 220 million (in USD 55 million tranches)

Maturity : 5 years each tranche **Grace period:** 2 years

Bank's country exposure: 55 million USD

Recycling Loans for Energy Efficiency : CFL replacement



Investment Energy Savings Savings on Replacement of Old Bulbs CERs

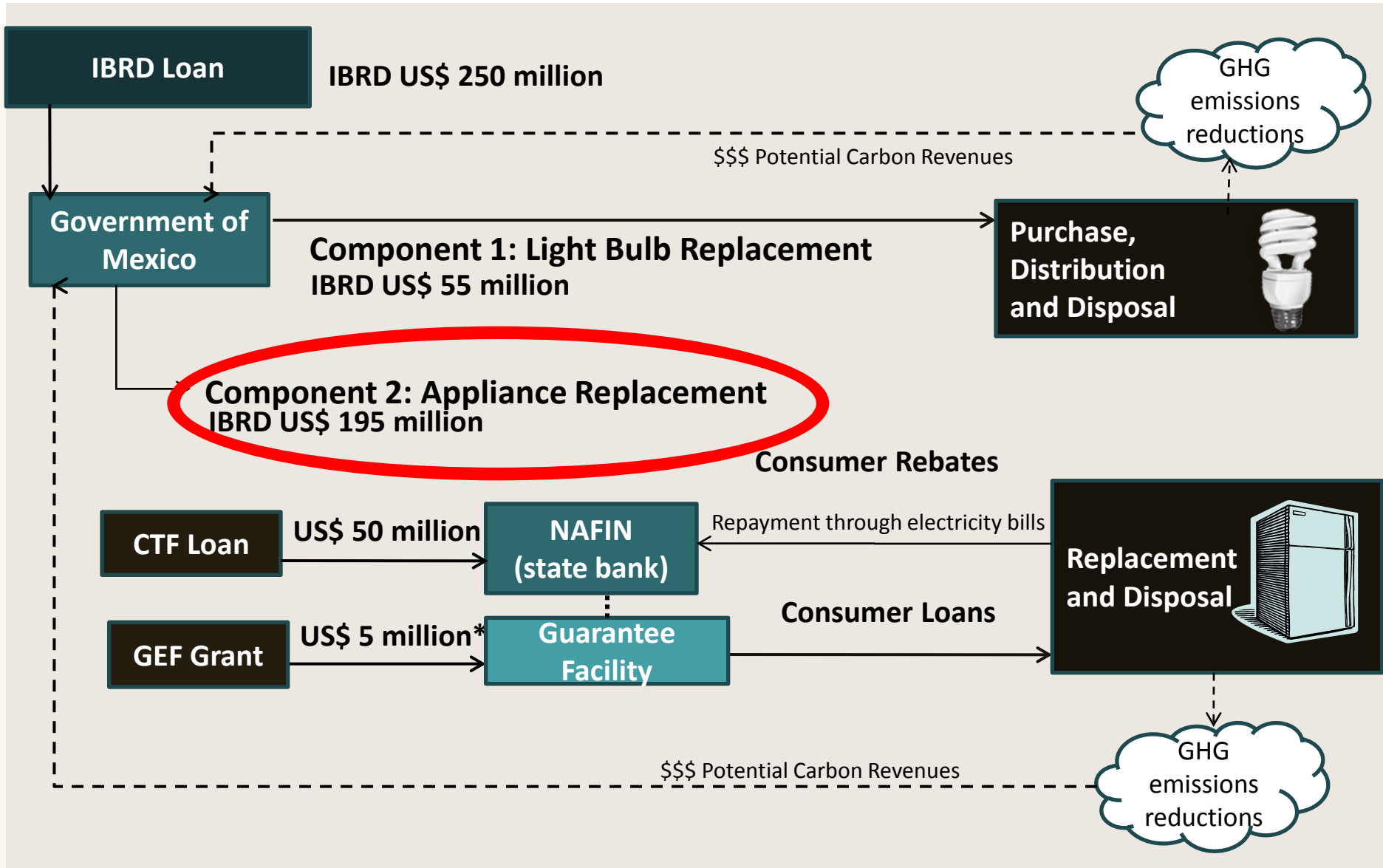
Traditional lending vs. Recycling loans for EE: CFL replacement



Totals(Million)	Traditional IBRD loan	New application: recycling loan	Difference: Recycling vs. Traditional
Investment	55	220 (in 55 m Recyclable Green tranches)	4 times
Number of CFLs Installed (million)	27.5	110.0	
Savings on Replacement of Old Bulbs	44.55	178.2	
Energy Savings	558.59	2,234.3	
CERs millions	2.9	11.5	
Reduction in peak demand ¹	250 (96.25 MW)	1,000 (385 MW)	

(1) Assuming a peak coincidence factor of 0.264% and a capacity of 53 W per replaced lamp. This decrease in demand allows for a permanent reduction in the expansion of the power generation capacity required to meet the demand of the country, compared with the base line.

Residential Energy Efficiency in Mexico: Financing Structure

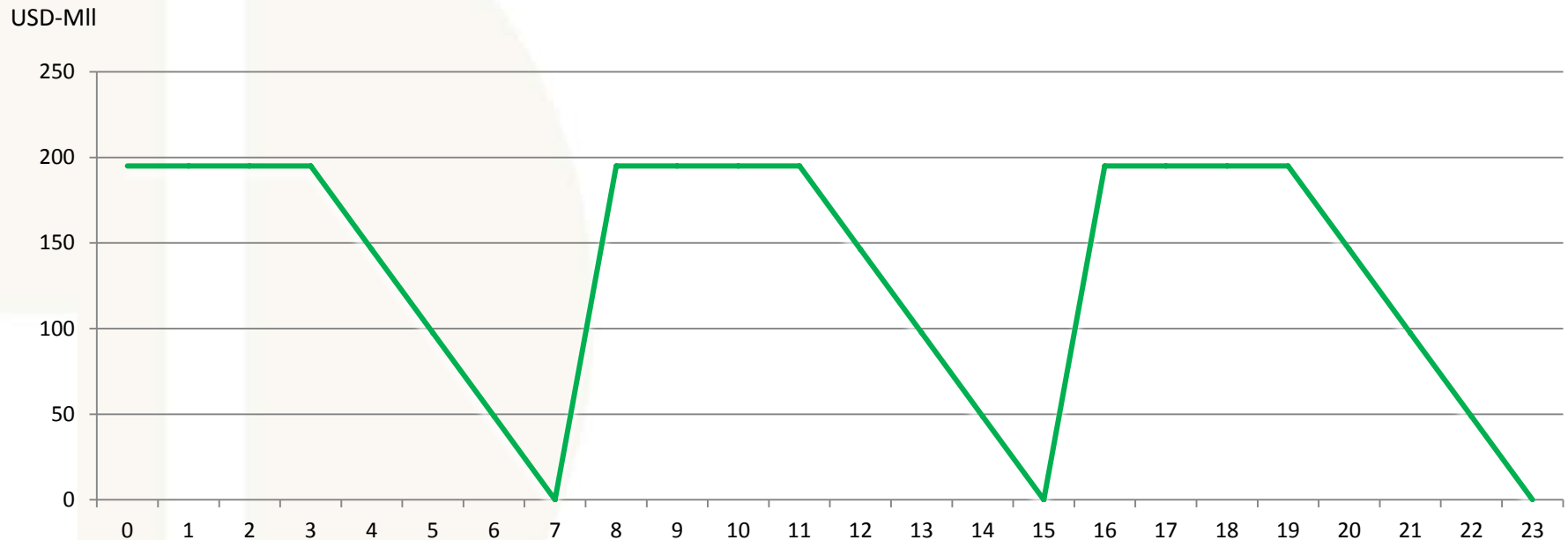


Optimizing Lending Terms for EE: Recycling Loan for appliances (ACs and Refrigerators)



Pay-back period Refrigerators = 4 years
ACs = 5.6 years

Loan outstanding for different tranches



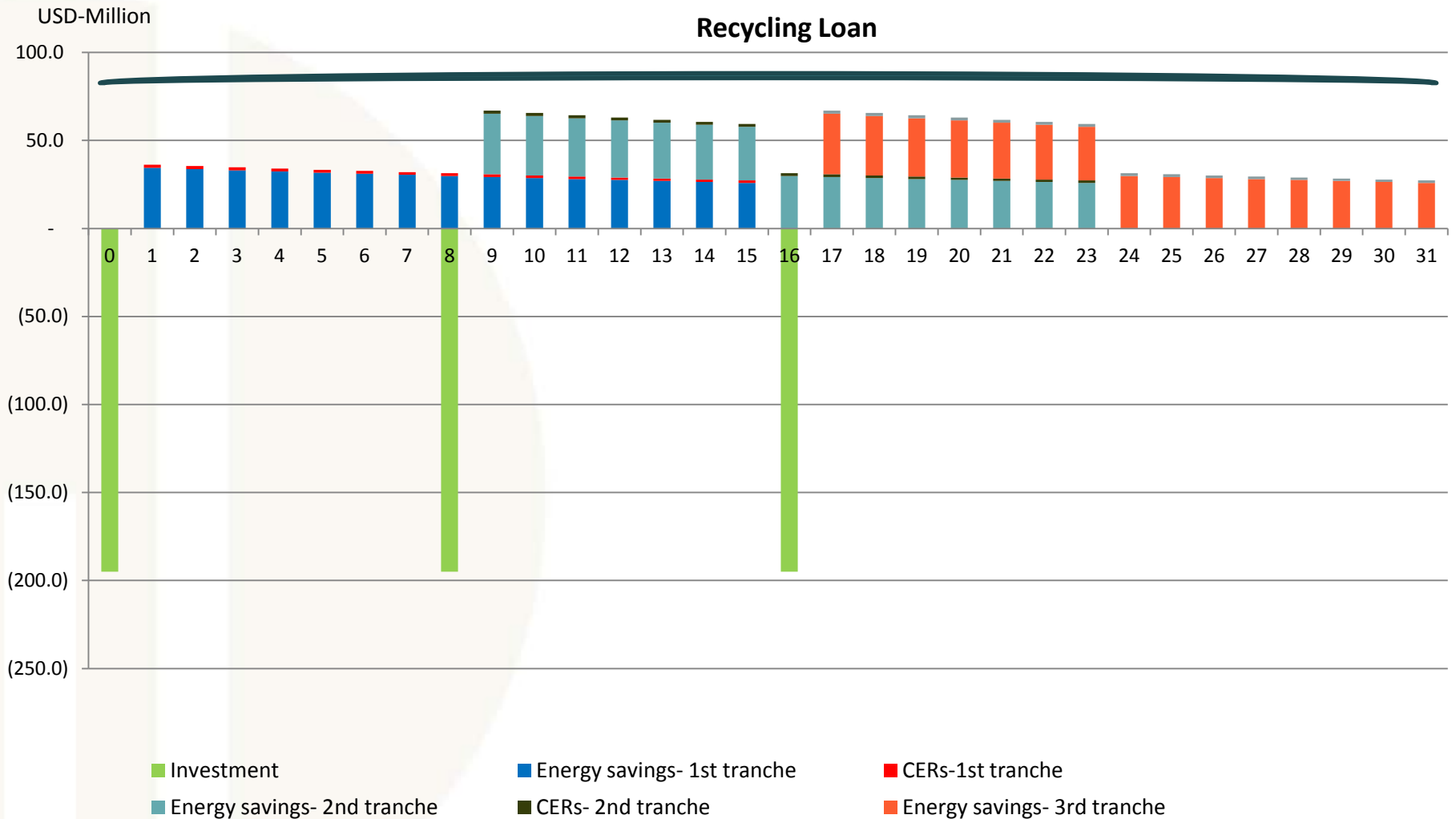
Financial Terms:

Amount : USD 585 million (in USD 195 million tranches)

Maturity : 7 years each tranche **Grace period:** 3 years

Bank's country exposure: 195 million USD

Recycling Loans for Energy Efficiency vs Traditional IBRD loan: Investment vs. Revenues



Traditional lending vs. Recycling loans for EE: Refrigerator replacement



Totals(Million)	Traditional IBRD loan	New application: recycling loan	Difference: Recycling vs. Traditional
Investment	\$195	\$585 (in \$195 mll Recyclable Green tranches)	3 times
Number of Refrigerators Installed	0.55	1.65	
Energy Savings	\$603.91	\$1,811.72	
CERs	3.10	9.31	
tCO₂e¹ (Montreal Protocol²)	0.78	2.34	
Reduction in peak demand³	287 (105.6 MW)	861 (317 MW)	

(1) Assuming that the replacement is done for more than 15 years old refrigerators with an annual leakage of 10 gr of CFC-12.. As a consequence of replacing refrigerators that use CFC-12 (GWP = 10,890) for HFC-143a (GWP =1430), there is a reduction by new appliance installed of 9,460 in GWP.

(2) Although these emission reductions (ER) can not be accounted for under the Clean Development Mechanism (CDM), due to the rules of the Kyoto Protocol concerning substances controlled by the Montreal Protocol, under the program they are avoided emissions that provide additional environmental benefits.

(3) Assuming a peak coincidence factor of 0.264% .This decrease in demand allows for a permanent reduction in the expansion of the power generation capacity required to meet the demand of the country, compared with the base line.

Traditional lending vs. Recycling loans for EE: Air Conditioning replacement



Totals(Million)	Traditional IBRD loan	New application: recycling loan	Difference: Recycling vs. Traditional
Investment	\$195	\$585 (in \$195 mll Recyclable Green tranches)	3 times
Number of ACs Installed	0.32	0.96	
Energy Savings	\$449.72	\$1,349.38	
CERs	2.31	6.94	
tCO2e¹ (Montreal Protocol²)	0.26	0.78	
Reduction in peak demand³	110 (40.6 MW)	330 (122 MW)	

(1) Assuming that the replacement is done for more than 15 years old ACs with an annual leakage of 200 gr of HCFC-22. As a consequence of replacing refrigerators that use HCFC-22 (GWP = 1810) for R410A (GWP = 1670), there is a reduction by new appliance installed of 140 in GWP.

(2) Although these emission reductions (ER) can not be accounted for under the Clean Development Mechanism (CDM), due to the rules of the Kyoto Protocol concerning substances controlled by the Montreal Protocol, under the program they are avoided emissions that provide additional environmental benefits.

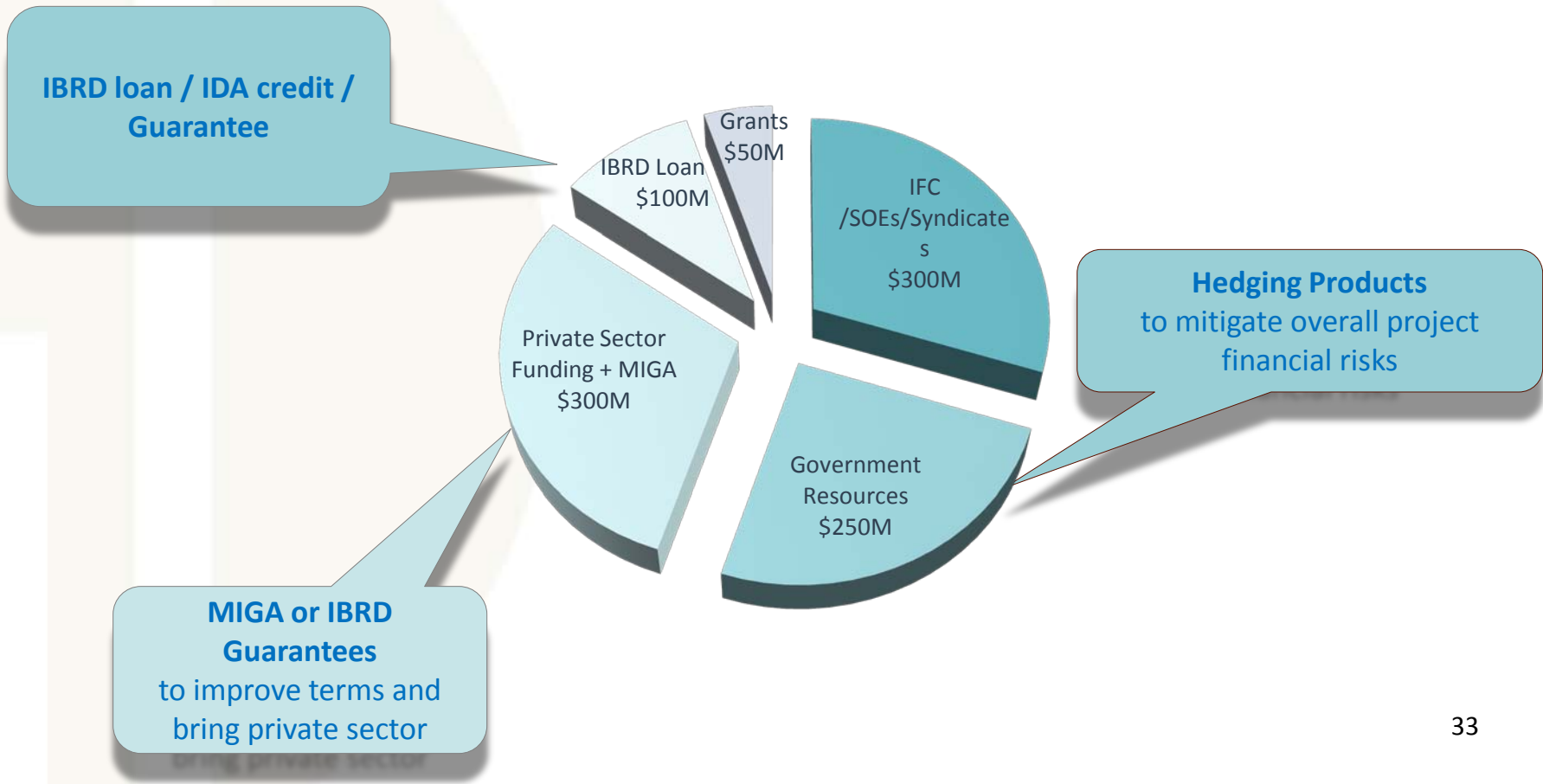
(3) Assuming a peak coincidence factor of 0.264% . This decrease in demand allows for a permanent reduction in the expansion of the power generation capacity required to meet the demand of the country, compared with the base line.

3- CONCLUSION

Energy Financing: How can Treasury help?

Objective: use the Bank's Balance Sheet and technical expertise to bring the best financial package possible, within exposure limits

Illustration: Total Project: \$1Billion



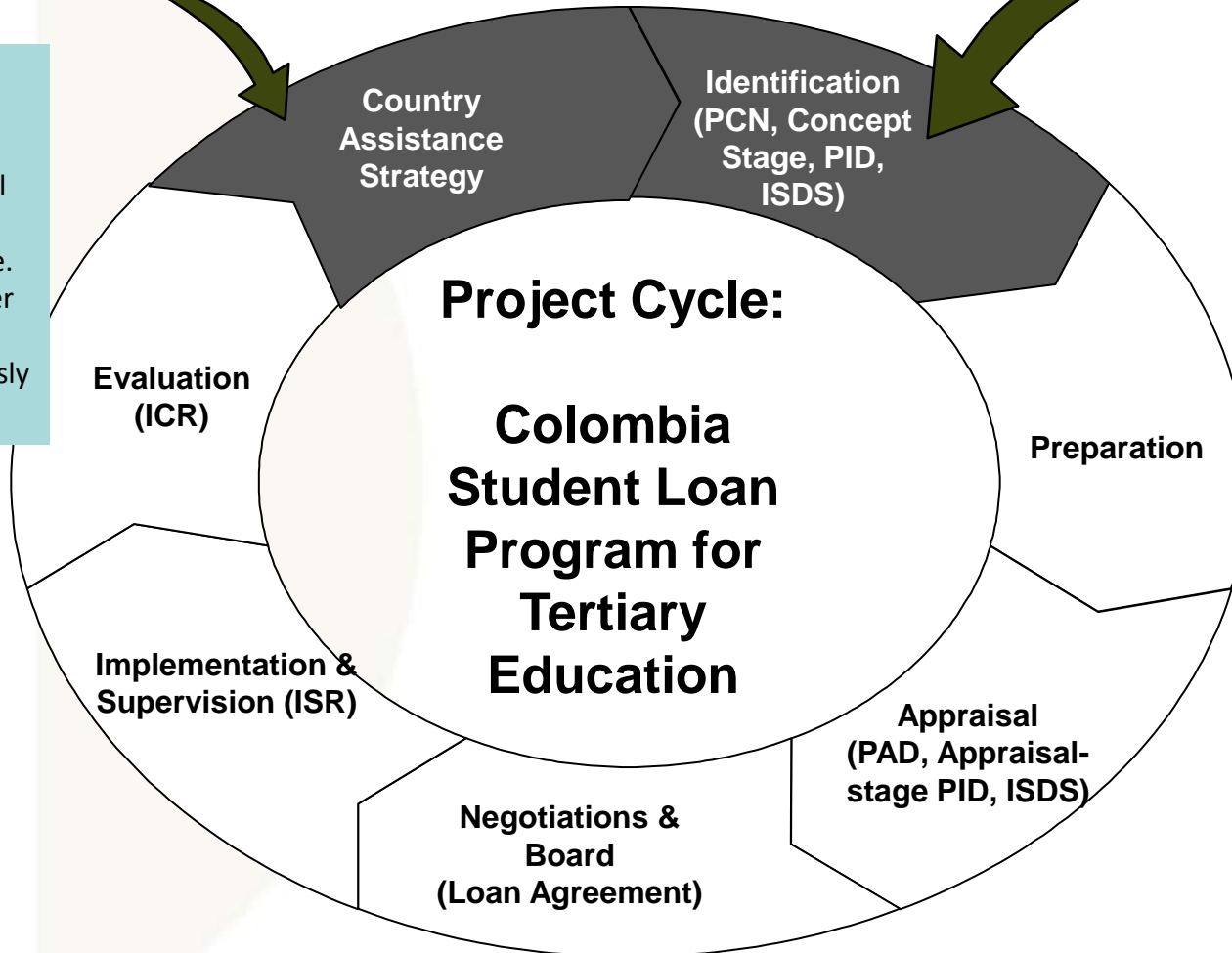
Project Cycle: Best practice

FABBK team members are involved in CAS/ CPS/ Sector/ Regional Strategies

Financial products are introduced at Project

TRE's involvement enabled:

Customized financial terms which exactly met clients needs i.e. local currency, longer maturity and grace period than previously offered by Bank.



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