

New Developments in Energy Efficiency Finance in China

**John MacLean, Energy Efficiency Finance Corp.
USAID ECO-Asia Clean Development & Climate Program
jmaclean@qwest.net
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China EE Finance: Policy Context

- Med. & Long-term Energy Conservation Policy (2005)
 - focus on EE in 1008 largest enterprises, heavy industry
- PRC has established target to reduce energy intensity of GDP by 20% in 2006-10 period
 - Per capita energy consumption still 1/5 of OECD
- Oct 2007 revised Energy Conservation Law
 - strengthens system of energy savings targets
 - Energy Savings targets devolving to provinces, cities, SOEs
- Dec. 2007 State Council Energy Policy update:
 - Promotes EE investment with **multi-channel financing**
- CBRC “green credit” bank regulation policy
 - Credit restricted for many heavy industries
 - Green projects exempted; seeking to include EE retrofits

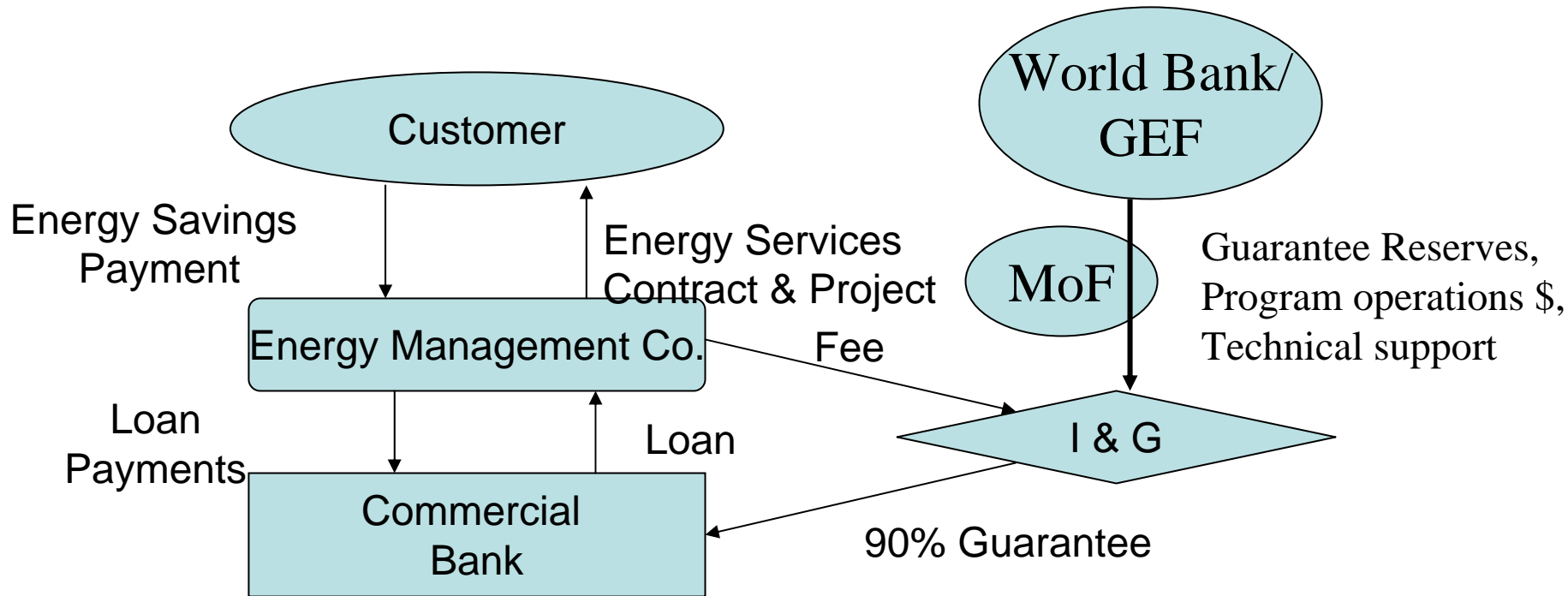
EE Finance Business Models

- EE Project Loan & Debt Funds
- Risk sharing & guarantee programs to support lending by local financial institutions (FIs)
- ESCO programs
- Government Energy Savings Funds
- City-based programs
 - Pooled procurements on behalf of similar end-users
- Equity investment funds
 - Corporate & project equity
- Utility-based programs

World Bank EE Finance Programs

- Phase I developed three energy management companies (EMCs) demonstrating business model
 - First EMCs sponsored by local governments & SOEs
- Energy Conservation Phase II, 2003 to present
 - Mobilize local bank financing for EMC projects; provide bank guarantee
 - China National Investment & Guarantee Company (I&G) is Guarantor with GEF monies for guarantee reserves
 - develop more EMCs on market basis, EMC Association;
- Energy Conservation Phase III, just starting
 - Long-term Credit lines for FIs for industrial EE projects
 - HuaXia Bank, China Ex-Im Bank, others t.b.d.
 - Technical assistance for FIs, both participating banks and other FIs

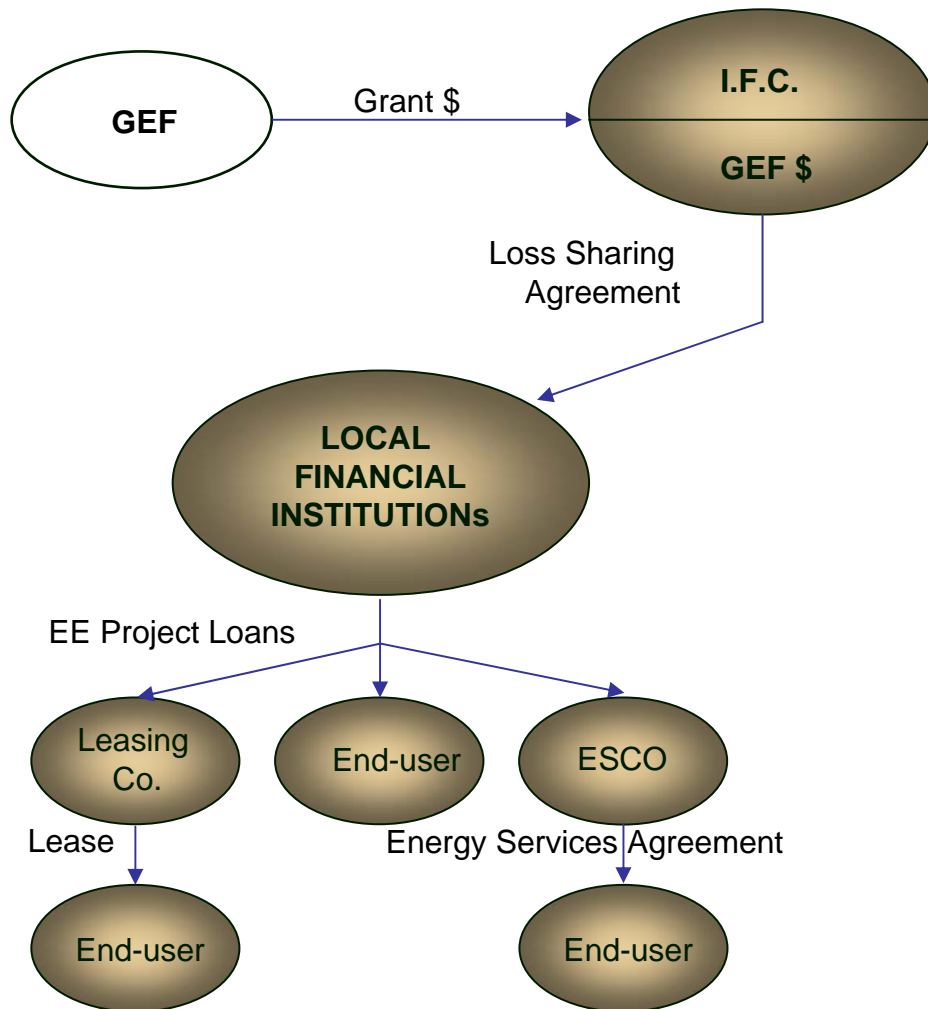
WB/GEF Phase II China EMC Loan Guarantee Program



Additional Points:

- EE project economics have typical payback in 2-3 years
- EMC business model proscribed by World Bank and demonstrated in prior program
- Banks are very risk adverse & interest rates regulated; creating effective security is key; project-based lending methods are needed.

IFC China E.E. Finance Program



Key Features:

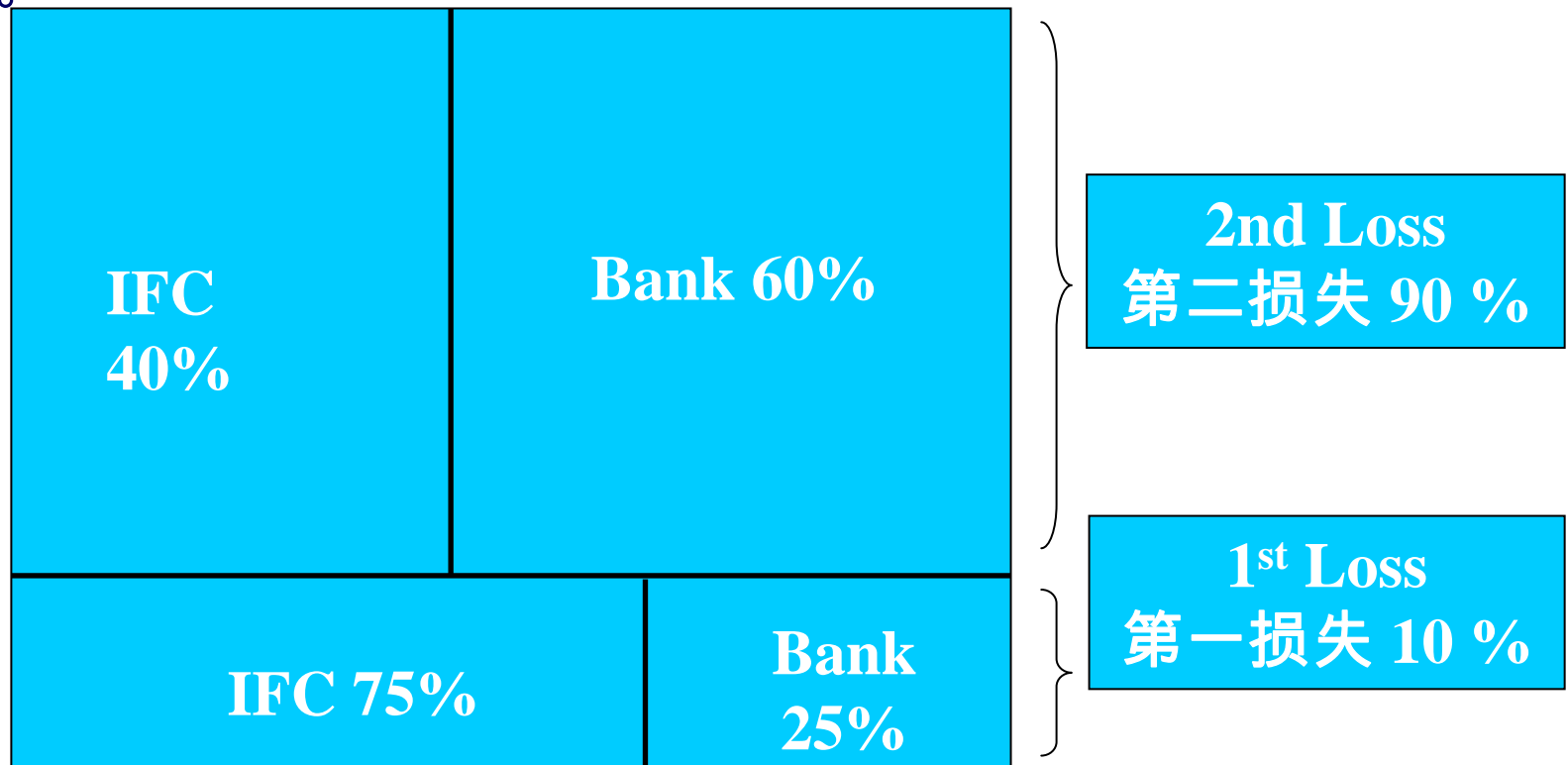
- \$16.5 million in GEF funding, used as reserves for Loss Sharing, leveraged with IFC investment
- Industrial Bank, Bank of Beijing & Shanghai Pudong Devel. Bank. May add leasing company
- Program start Fall, 2006, expanded Dec 2007 with additional \$200 million IFC investment
- Loss sharing on a portfolio basis; First Loss & Second Loss elements
- All types of EE projects supported; several financial products

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IFC 1st Loss & 2nd Loss Risk Sharing Facility: Initial Structure

第一损失第二损失风险分担

US \$50 million in risk sharing leverages US \$150 million in equipment financing for portfolio of approximately 400 projects 项目贷款总量为1.5亿美元，项目在400个左右，风险担保在5000万美元之间。



IFC China EE Finance Program

- Multiple marketing channels
 - EE equipment vendors, EMCs, bank customers
- Results through Dec 31, 2007
 - Supported 37 projects, loans totaling 636 M RMB
 - waste heat recovery, small scale renewables such as bio-gas, industrial process, boiler renovation, coal to natural gas
 - Very large pipeline of new projects under development, > \$600 million
- Partnership with gas utility, Xinao Gas
- Technical assistance to bank partners

ADB China Energy Efficiency

Multi-Project Financing Program

- Newly approved in concept, details under development
- Partial credit guarantees with Partner Banks
- Maximum ADB liability of 800 million RMB
- Technical Partner: key innovation
 - to provide technical due diligence for banks and project pipeline investment preparation services
 - Potential to be a “super ESCO” market organizer
- Technical assistance program for FIs
- Will use vendor finance program agreements with leading equipment vendors

China Bank Market Conditions:

General Points regarding Equipment Term Loans

- Plenty of liquidity in banking system
- Banks are generally risk adverse; require high levels of fixed asset collateral *independent* of new project
- Financing needed for end-users & EMCs; EMCs still capital constrained (debt & equity). Many potential borrowers with viable EE projects lack access to loans.
- Loan tenors short, 1-2 yrs; payment schedules are often interest only with balloon principal, like working capital loans
- Risk weighted pricing still rare
- Strong preference for larger borrowers & loans
- Need: 3-7 year term loans, underwritten based more on borrower/project cashflows, with installment principal payments & innovative credit structures, for range of borrowers

Typical Technical Assistance Services for FIs

- Assist structuring transactions & financial products
- Marketing:
 - establish relationships with marketing partners, e.g., utilities, equipment suppliers, ESCOs
 - Marketing: establish EE investment and market aggregation programs
- Engineering Services
 - independent engineering reviews of projects
 - engineering & project development services to bank clients
- Training
 - EE project appraisal methods
 - EE lending best practices & risk management
- FIs as carbon aggregators

ADB China

Energy Efficiency Power Plan (EEP) Program

- First program under development in Guangdong Province; sovereign loan, \$100 million from ADB
- Establish a special financing fund, implemented by Provincial Government fund manager. Detailed modalities under development.
- Targeting electricity savings projects, assemble portfolio with similar kWh & kW characteristics of 300 MW power plant
- Focus on industrial motors, lighting, transformers, appliances
 - Large/medium industrial and large commercial & institutional end-users
 - ESCOs also eligible borrowers
 - rigorous technical origination procedures

Government EE Incentive & Special Funds

- Aug 2007 NDRC & MoF create EE fiscal incentives:
 - incentive payment of 200-250 RMB per annual TCE energy savings = ~15-20% project capital cost typically
 - pmt made 60% on approved application, bal. on completion
- Multiple Special Energy Savings Funds formed and being formed at Provincial & City levels: e.g., Jiangsu, Guangdong, Hebei
- Share of project costs range from 10-30%
- Need to develop complementary commercial bank financing to finance balance of project
- Projects supported by Special Fund can represent deal pipeline for commercial banks
 - Technical reviews already completed
 - Projects supported by Special Fund can represent deal pipeline for commercial banks
- New national Government clean energy fund being set up with proceeds from CDM projects

City-based EE Programs

- City governments now adopting energy savings targets for their jurisdictions, public & private sectors
- Cities seeking solutions & ideas
 - Energy savings funds
 - Government sponsored ESCOs
- City-based EE finance programs can provide:
 - Ready access to adapted EE financing
 - Incentive programs
 - Technical assistance for project development
 - Marketing
 - Pooled procurements
- US example: Cambridge Energy Alliance

Clean Energy & Infrastructure Equity Funds

- Both corporate & project equity is needed
 - ESCOs in China are equity constrained
- Existing funds, both corporate & project equity
 - Tsinghua Venture Capital, China Environment Funds
 - Fondelec Clean Energy Fund
- New ADB clean energy private equity investment funds under preparation
 - UNEP Seed Capital Access Fund working in tandem for early stage clean energy companies
- New China Infrastructure & Carbon funds, e.g., HSBC & Camco International, will have EE components

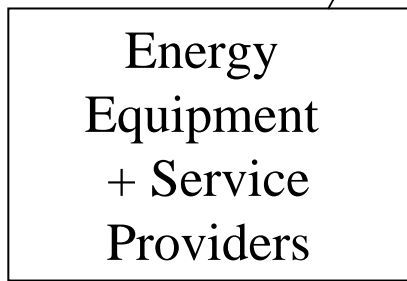
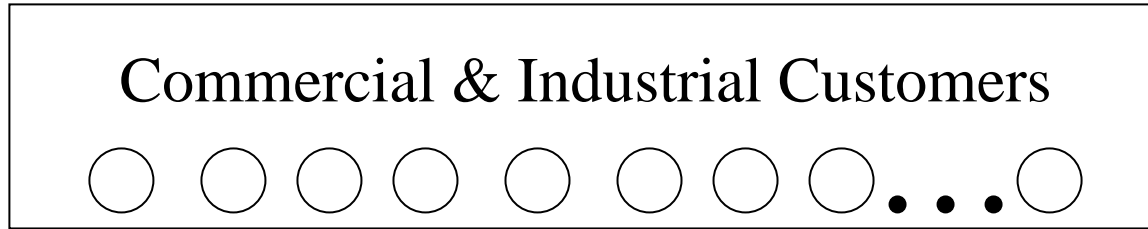
Utility-based Programs

- Big potential for electric power DSM, e.g., feasibility study for Jiangsu Province identified 12 GW potential, average cost of 15 fen per kWh, over 10 year program, mostly industrial motors
- Utility system benefit charges being adopted in some provinces to fund EE programs and incentive funds
- Programs tend to be led and implemented by governments rather than utilities
- IFC Xinao Gas program
 - Gas company as EE marketing partner
 - Builds load for gas utility

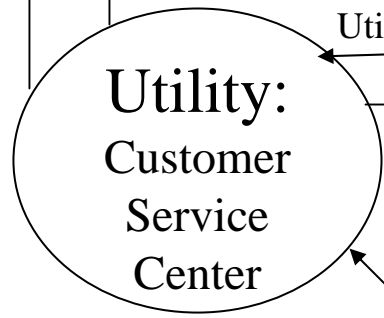
IFC China Utility-based EE Finance Program

Project steps

Marketing
 Energy Audit
 Feasibility Study
 Customer Decision
 Engineering
 Financing
 Installation
 Operations



Energy Equipment Projects+ Services
 EE Project Marketing+ Development
 Cooperation Agreement w/ qualified companies

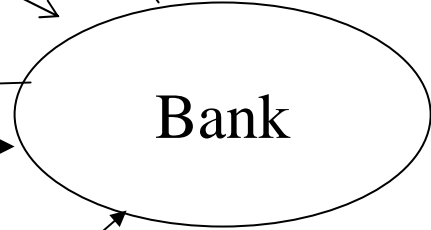


Gas/Electric Sales

Utility Gas/Electric Payments

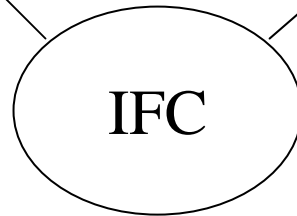
Integrated Utility + Loan payment

Loan Program Agreement



EE Project/ Equipment Loans

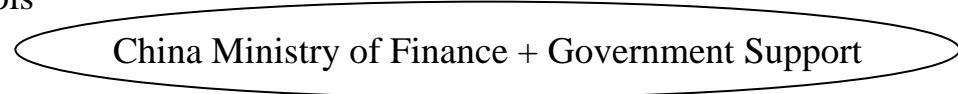
Loss Sharing Facility



Program Agreement

Support from IFC & GEF

- Program Design
- Program Operations Cost Share
- Technical Assistance support: for preparation of EE Projects
- Loss Sharing Facility



Typical Projects

- Boilers
- Cogeneration/Small Power
- Industrial Process
- Heating & Air Conditioning
- Refrigeration
- Compressors
- Lighting, Motors, Controls
- Engineering firms
- Installation Contractors
- Others...

Successful EE Finance Business Models: Themes

- Range of business models
- Plan to organize & aggregate the target market
 - market aggregation essential
 - build on existing capacities
- Credit structure, addressing institutional & credit characteristics of the target market, to mobilize FIs
- Often uses some concessional/public finance to leverage commercial finance & provide TA
 - Strong rationale for public support to develop EE markets
- Strong Project marketing & development plans required
 - identify market protagonists that will prosecute projects
 - Provide support through the full project cycle
- Programmatic approach is essential to meet challenges of replication & scale-up

Some Conclusions about China

- Serious momentum on EE finance underway due to Government policies
- MDB programs making key contributions, developing new business models, engaging commercial banks; more equity needed.
- Provincial and local governments assuming new market development roles & starting programs
- Multi-channel financing becoming a reality, with important new programs & financing channels under development. Stay-tuned.

Thank you!