International Partnership for Energy Efficiency Cooperation

CLEAN ENERGY SOLUTIONS CENTER

The International Partnership for Energy Efficiency Cooperation (IPEEC) - Clean Energy Solutions Center

Energy Efficiency Financing

27 September 2012

Amit Bando – Moderator

Dr. Jae Hoon LEE, Amit Kumar, Gudrun Gumb, Dr. Henrike Koschel - Panelists

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Agenda

- Welcome and Introductory Remarks
- Overview of the IPEEC – Energy Solutions Center collaboration
  - **Amit Bando**, Executive Director, IPEEC
- Energy Efficiency Financing – Panel Discussion
  - **Dr. Jae Hoon Lee**, Director Financial Support Dept., KEMCO
  - **Amit Kumar**, Associate Director GRID, Energy and Utilities, PwC-India
  - **Gudrun Gumb**, Principal Economist Strategy Division, KfW Bankengruppe
- Questions and Answers
- Discussion and Closing Remarks

IPEEC: a High-level International Forum

- Provides global leadership on energy efficiency (EE) by identifying & facilitating government implementation of policies & programs that yield high EE gains.
- Promotes information exchange on best practices and facilitates initiatives to improve energy efficiency.
- Reports to G20 Summit, Clean Energy Ministerial & others.
- Partners with industry to promote rapid deployment of energy efficient technology.

IPEEC is an Autonomous Entity

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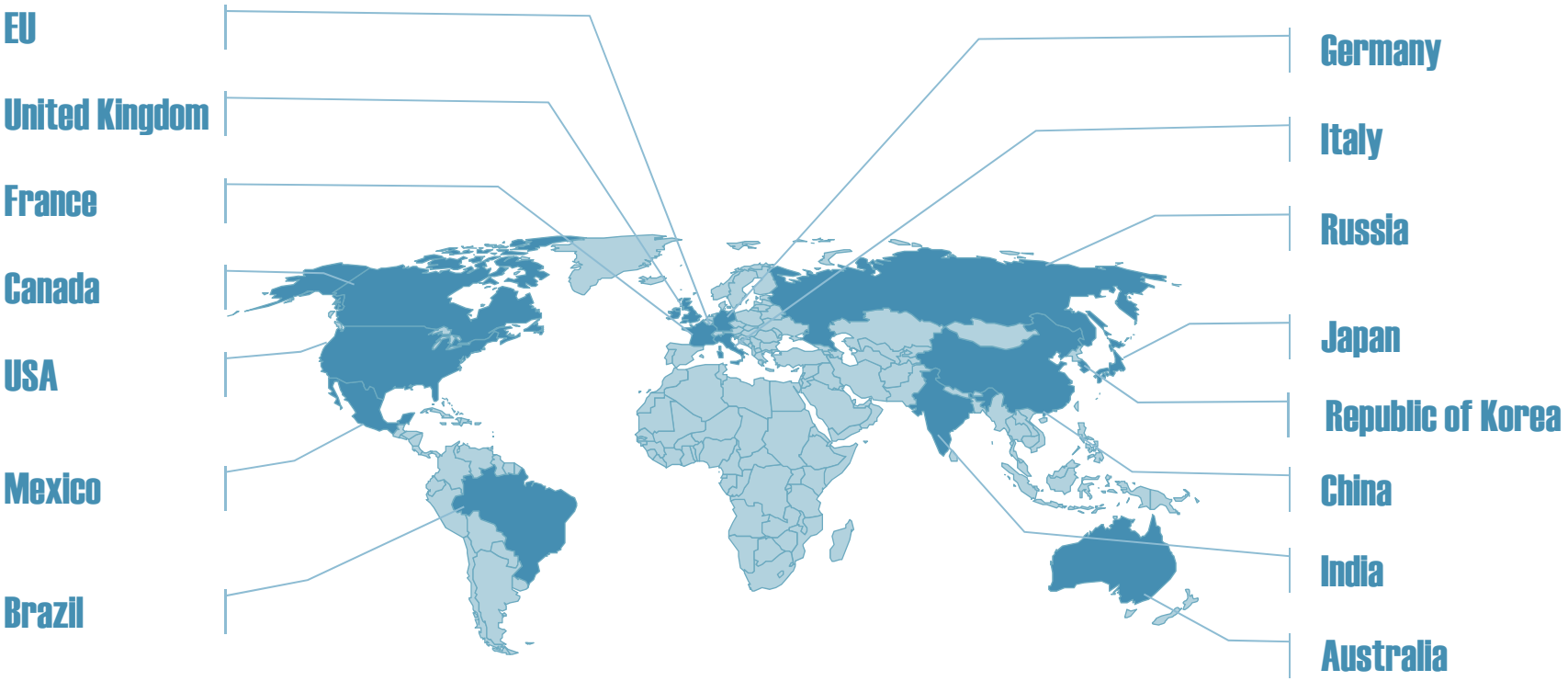
Members account for over 75% of world GDP and energy use.



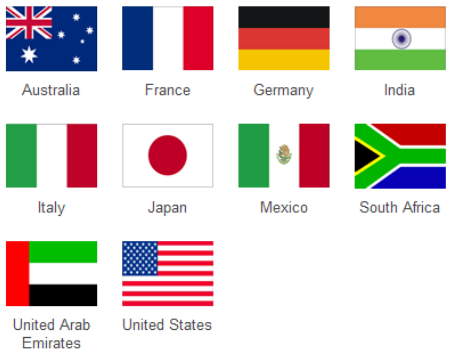
IPEEC was established in 2009 at the G8 summit in Italy

The IPEEC Secretariat is located in Paris, France

Clean Energy Ministerial & UN Partnership Supporting the Solutions Center

- Clean Energy Ministerial (CEM) launched the Clean Energy Solutions Center in April, 2011 for major economy countries
  - One of eleven CEM Initiatives
  - Led by Australia & U.S. with other CEM partners

- Partnership with UN-Energy is extending scope to support all developing countries
  - Enhance resources on policies relating to energy access, small to medium enterprises (SMEs), and financing programs
  - Offer expert policy assistance to all countries
  - Expand peer to peer learning and training



Clean Energy Solutions Center

http://www.CleanEnergySolutions.org

CLEAN ENERGY SOLUTIONS CENTER

Goals

- Serve as a first-stop clearinghouse of clean energy policy resources.
- Share policy best practices, data, and analysis tools across countries.
- Deliver dynamic services that will enable expert assistance, learning, and peer to peer sharing of experiences
- Foster dialogue on emerging policy issues and innovation across the globe.

Target Audiences

- Primary:
  - Energy policy makers and advisors
  - Analysts

- Secondary:
  - Private sector companies,
  - Energy entrepreneurs and investors
  - Non Governmental Organizations
  - Civil society
  - Others engaged in clean energy

Ask An Expert:
Our Experts in Action

We connect you to a global network of energy experts for personalized attention and quick response technical assistance on **strategies, regulations, standards, financial incentives, and deployment programs** for a broad range of clean energy sectors and technologies including:

- Energy Access
- Energy Efficiency
- Renewable Energy
- Smart Grid
- Transportation
- Utilities

Requesting Assistance:

Register on http://cleanenergysolutions.org/expert
http://www.ipeec.org/askanexpert.aspx

How You Can Get Involved

- Request expert assistance or tailored technical resources for your country
- Participate in webinars, training activities, and policy networks
- Offer advice and suggest resources to share
- Sign up for the newsletter
- Join conversations on the Policy Forum

Energy Efficiency Financing in KOREA

(Korea Energy Management Corporation)

Main Goals of KEMCO

❖ **Improve the efficiency of the funding procedure that supports more efficient use of energy.**

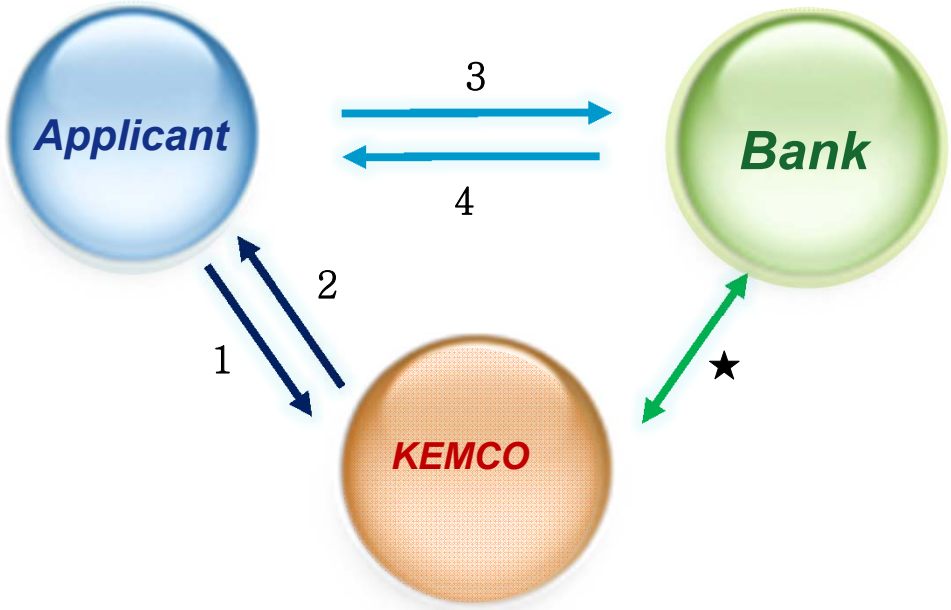
- **Strengthening financial assistance for exemplary energy-saving facilities**
- **Expanding financial assistance for small and medium enterprises**
- **Continuing search for exemplary energy-saving facilities**

Financial Assistance for Installing Energy-Saving Facilities

- **Eligibility: Any business or company seeking to install or adopt energy-saving facilities.**
- **Scope of assistance: up to 80% of the required funding.**
- **Interest rate: Quarterly variable rate (Treasury bond − 1.25%).**
- **Loan period: grace period of 3 years, and repayment in installments over the next 5 years.**

Funding Procedure

❖ Apply for KEMCO's recommendation and submit it to a financial institute.



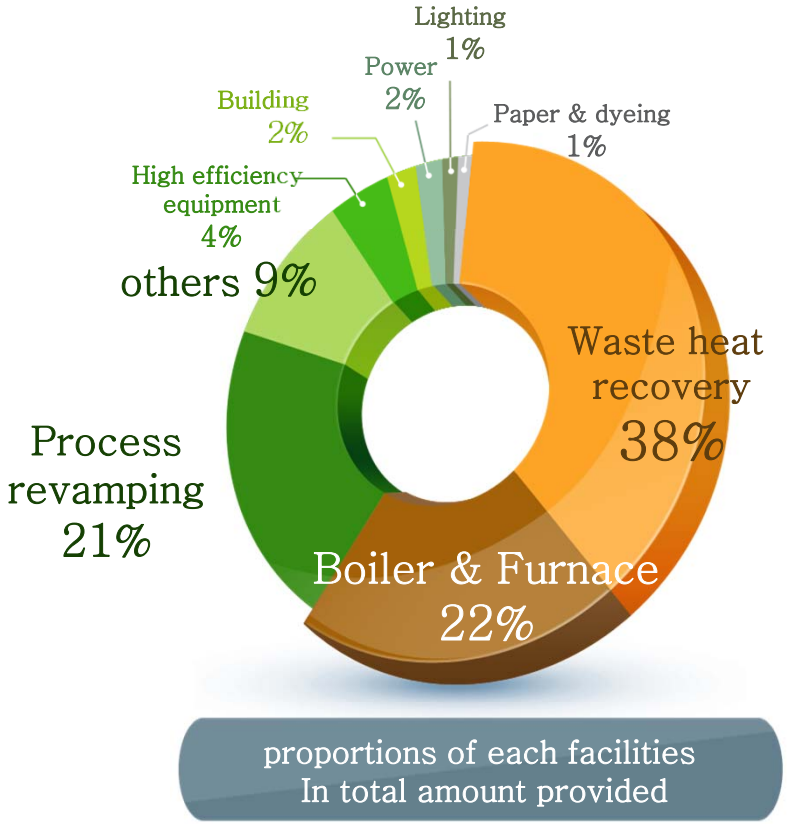
1. to apply
2. to recommend
3. to apply for the loan
4. to give the loan

★ lend agreement

✓ Applicants apply for recommendation to KEMCO.
✓ KEMCO decides whether applicants can get a recommendation or not.
✓ Applicants can use the recommended loan though the bank.
✓ There is a lend agreement between KEMCO and banks

Financial Assistance for Energy-Saving Facilities

❖ Amount Provided(1980~2011) : 8.6billion USD



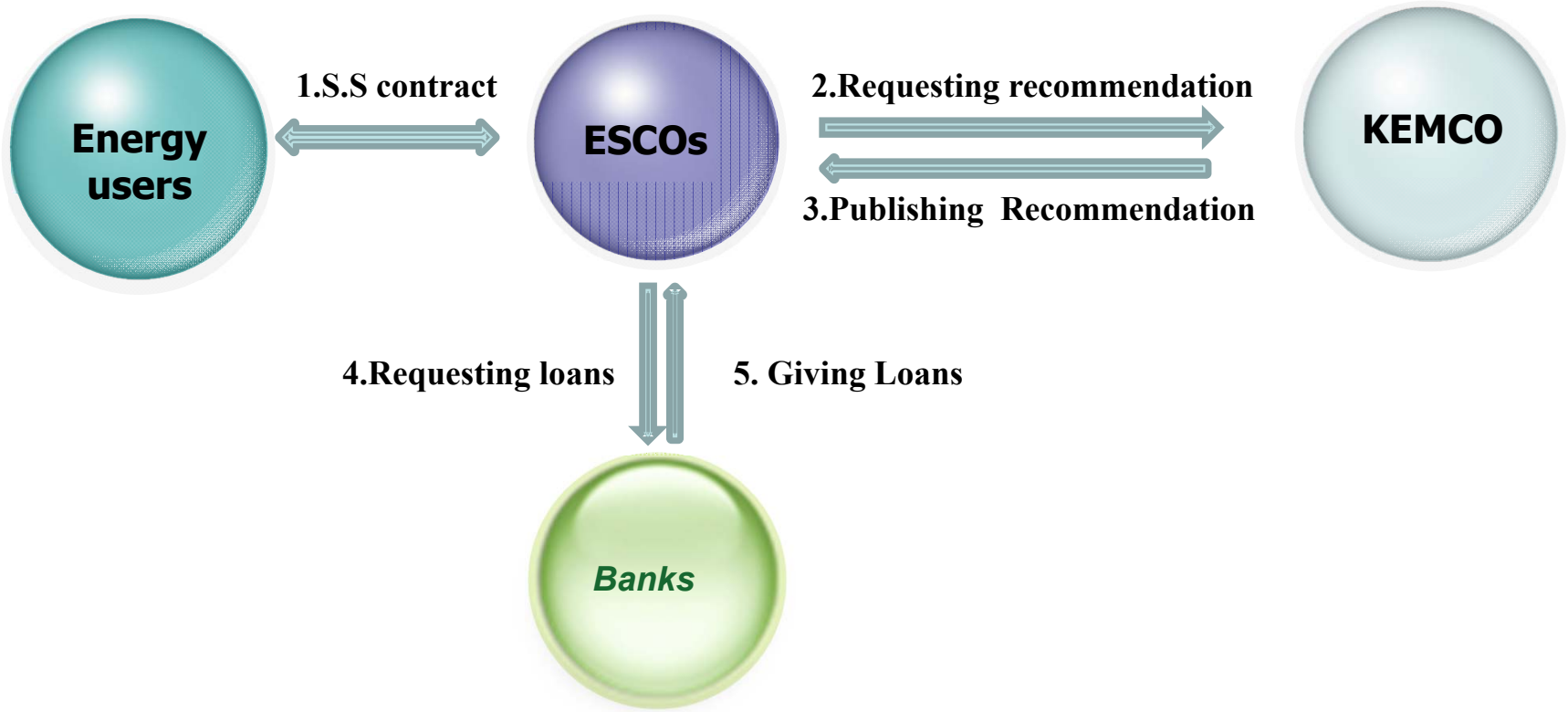
proportions of each facilities
In total amount provided

ESCO System in Korea

- ❖ **Launched in 1992**
- ❖ **226 ESCOs as of Sep. 2012**
- ❖ **ESCOs can use Energy Conservation Fund (Government budget)**
- ❖ **Korean Government announced “ESCO Activation Plan” to promote Korea’s ESCO market (2010.10)**

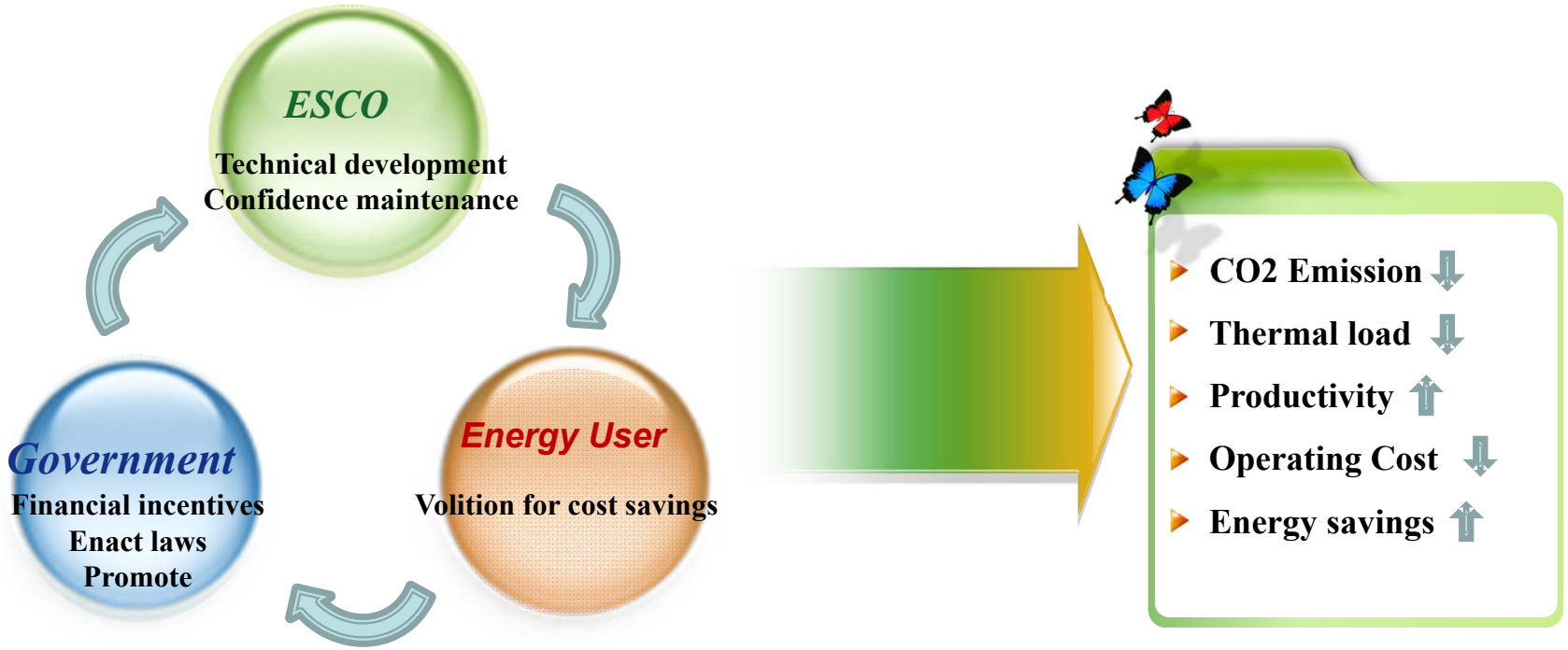
ESCO Project model

- **We have "Shared Savings model" & "Guaranteed savings model"**



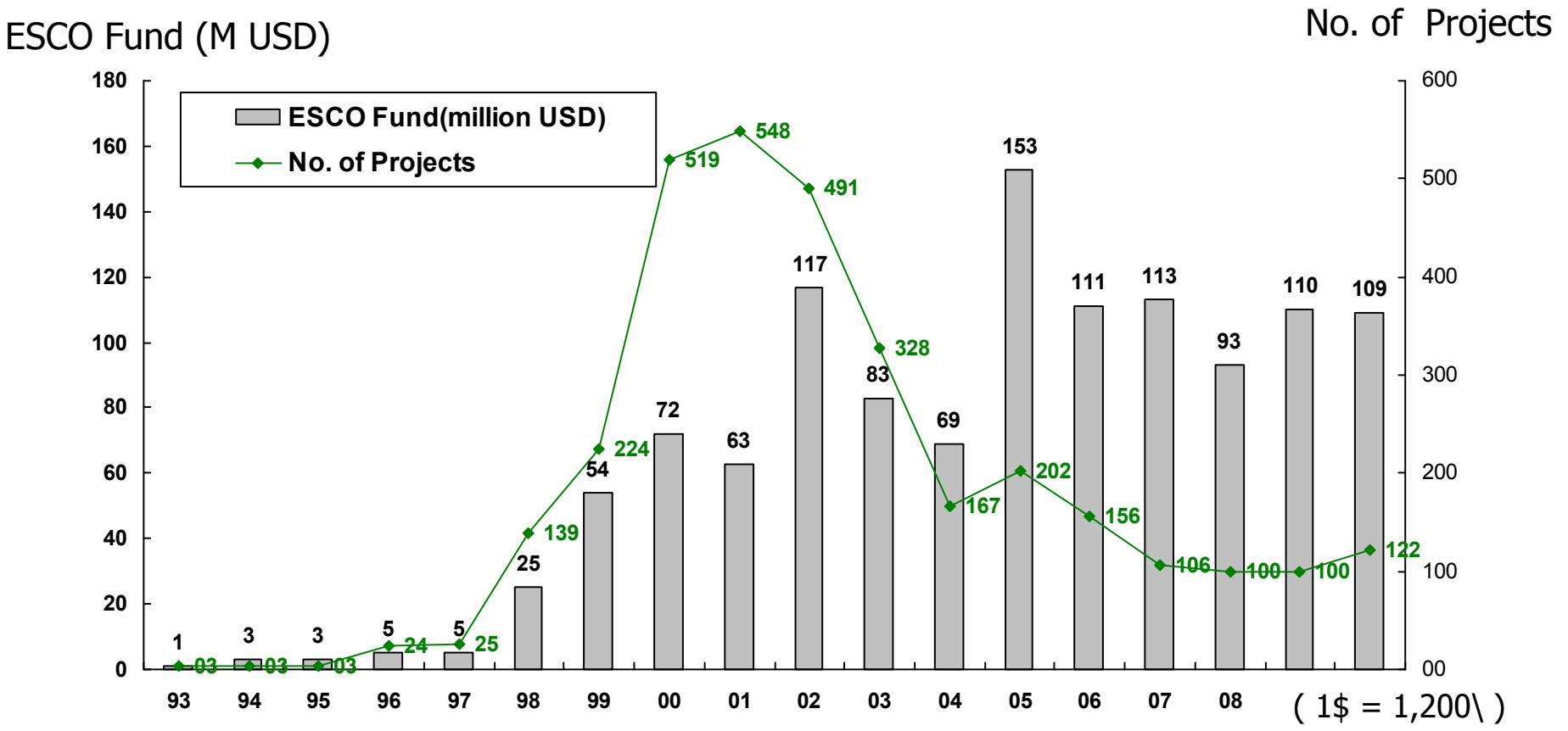
✓ Loan applicant for "Guaranteed savings" : Energy User
Guaranteed savings contract is not yet settled in KOREA's ESCO market

Why You Need ESCOs



- Energy efficiency is the first choice of policy planners trying to meet national mandates for greenhouse gas reductions.
- As with savings mandates, ESCO projects enable to meet greenhouse gas reduction mandates, which are not accompanied by capital budget increases to meet these mandates.

Yearly ESCO project record



Applied areas in ESCO

Waste Heat Recovery System

- Mechanical (Thermal) Vapor Re-compressor
- Heat exchanger for heating or cooling
- Heat Recovery Boiler

Process Improvement

- Replacement of old industrial kilns
- Alternative fuel-using facilities

Building

- **Boiler replacement**
- **LED Lighting installation**
- **Inverter**
- HVAC **system improvement**

Tax Incentive

❖ **Tax Incentives for energy efficiency investments**

- ✓ The replacement or installation of the facilities and equipment was qualified for 10 percent of income tax credit from 2005 to 2008.
- ✓ **20% tax deduction in 2009, 2010**
- ✓ **10% tax deduction in 2011**

❖ **Eligibility : Facilities defined by the tax laws such as industrial boiler**

❖ **Procedure : Investors reports application directly to the tax office**

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Assessment of Energy Efficiency Financing Mechanisms

International Partnership for Energy Efficiency Cooperation (IPEEC)

Amit Kumar | Associate Director – GRID, Energy and Utilities | PricewaterhouseCoopers (pwc.com)

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Agenda

- Objective of AEEFM Task
- Barriers in energy efficiency financing
- New innovative financial instruments
- Conclusion
- Future activities ….

Objective of AEEFM - IPEEC

The objective of the task group was to develop significant understanding of barriers associated with financing of energy efficiency, and identify strategies to overcome those barriers. This task would also focus on exploring the avenues available to national governments to promote financing of energy efficiency.

Activities Performed

Sub Task	Activities Performed
Sub-Task-1:	Survey of the best practices in elimination of barriers in energy efficiency financing
Sub-Task-2:	Study/ review of existing financial mechanisms and economic incentives programs in the participating countries
Sub-Task-3:	Identify new innovative financial instruments
Sub-Task-4:	Analyse policies and measures needed to significantly enhance investments in energy efficiency market among participating countries
Sub-Task-5:	Information dissemination workshop

EE financing mechanism

Energy Efficiency Financing (EEF) Mechanism is defined as the method through which funding is made available

Grant, Subsidy

Bank window, Low interest lending, Collateral free lending

Accelerated depreciation, Tax deductions, Tax credits, Tax reductions

CDM funding

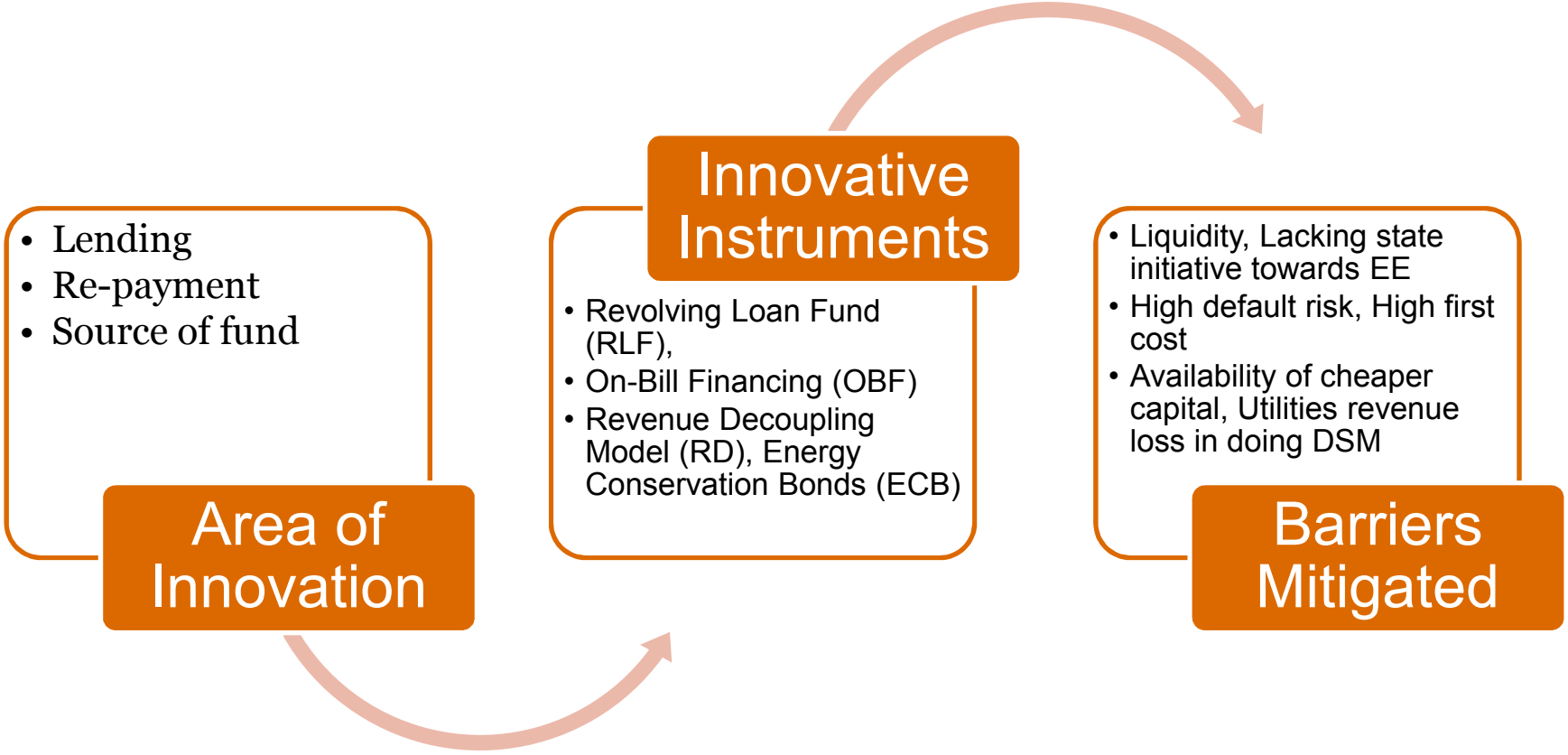
Guaranteed savings, Shared savings

Initiatives taken by participating countries

Financing Mechanism	Key Barriers in each Mechanism	Identified Mitigating Measures	Country Initiatives
Tax incentive	• Free riders, • High cost on the government budget	• Establishing a list of eligible technologies and equipments, • Collecting Public money through cess and dissipating • Careful drafting of policies and regulations	EE Lending – Japan, VAT reduction, Tax Credit – France, Interest rate buy down - US
Non Tax incentives	• Free riders, • High cost on the government budget ,	• Careful drafting and administration of policies, regulations and programs	Subsidy / Grant through ARRA fund– US
Lending programs	• High risk perception • High transaction cost • Collateral • Weak Repayment • Lack of knowledge and confidence in savings	• Risk guarantee funds for EE • Establishing a list of eligible technologies and equipments, • Innovative funds providing collateral free lending • Lien on meter or property & repayment through monthly utility bills • Standard project appraisal manual for knowledge and confidence building	PRGF, CGTMSE – India FOGIME – France On Bill Financing, Lien on meter– US
Performance contracting	• Creditworthiness of ESCO's • Lack of standard protocol for M&V • Split incentives	• Setting up of super ESCO • Accrediting ESCO's • Standard M&V protocol • Lien on meter or property & repayment through monthly utility bills	EESL - India IPMVP– US How$mart program - US
Carbon Financing	• High transaction cost • Availability of funds	• Program of Activities (PoA) • Cross – Financing	CDM – India Domestic CDM – Japan, RGGI - US

Innovative EE financing instruments

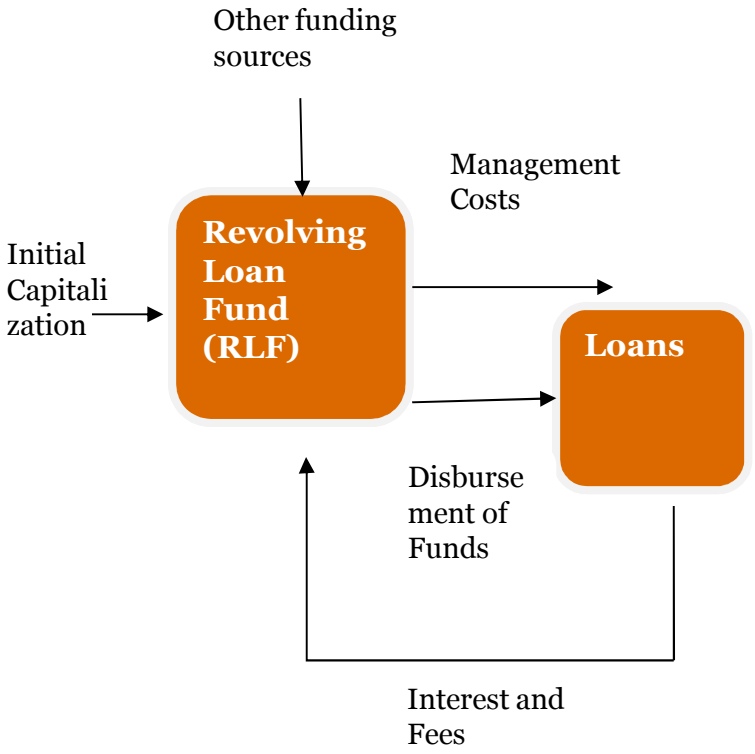
Innovative EE financing instruments are those new and/or successful financing models which are recently developed or in the process of development in the participating countries



Revolving Loan Funds (RLF)

Area	Barrier
Lending	Liquidity

Principle: RLF is a source of fund through which EE lending could be promoted in the state. Loans are made to borrowers consistent with standard prudent lending practices. As loans are repaid by the borrowers, the money is returned to the RLF to make additional loans.



Initial capitalization: The initial capital required for RLF could be arranged either from the central or the state government budget

Other Funding Sources: The other sources of capital could be any or combination of the following:
1. State Energy Conservation Bonds
2. Bank Capital (Public or Private)
3. Venture Capital or Private Investors Money
4. Electricity tax/ duty/ cess etc

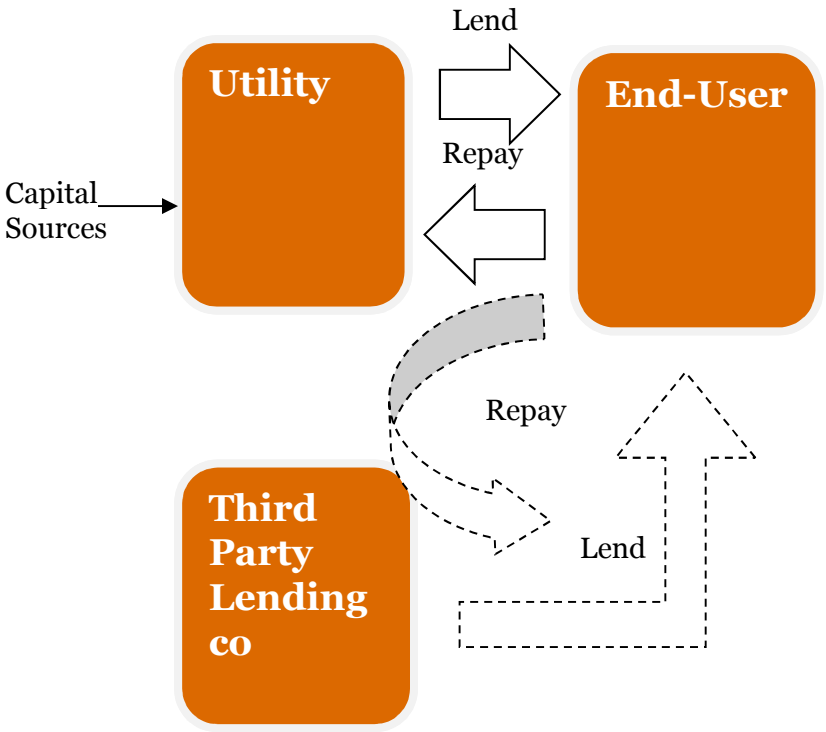
Management Cost: Management of RLF shall be the prime responsibility of the state Government.

Interest and Fees: The "*lending rate"* and the "*loan term"* shall be strategically chosen in a way to promote the basic objective of RLF.
Example : *Energy Conservation Fund*, France

On Bill Financing (OBF)

Area	Barrier
Repayment	Default risk

Principle: OBF generally refers to a financial instrument that is serviced by or in partnership with a utility company for EE improvements and repaid by the customer on its monthly utility bill.



Capital Sources The initial capital required for OBF could be arranged either from the central or the state government budget to promote EE and reduce carbon footprints.

Management Generally the management/ administration of such program is the responsibility of utility. The programs can also be administered by third party lending institution, state government energy office, third party service organization etc.

Lending & Repayment If utility lends the money directly to the borrower then it will recover the same through the monthly bill. But if the third party lender lends the money to the borrower then repayment would be through utility via monthly bill.

Example: *Midwest Energy, Inc. – How$mart*, USA

Revenue Decoupling (RD)

Area	Barrier
Source of fund	Utilities revenue loss in DSM

Principle: Decoupling breaks the link between Utility Revenue and kWh sold. This instrument if applied can align utility incentives with state goals.

Under decoupling, utilities receive differing rates (per kWh) depending on total electricity demand. If demand increases above a state-identified target, the rates fall; if demand decreases, rates rise.

Revenue Decoupling Model

From the Rate Case		Post Rate Case Calculations	
Target Revenues	$10,000,000	Number of customers	200,500
Test year unit sales	100,000,000	Target Revenue ($ 50* 200,500)	10,025,000
Price per unit	$0.10/ unit	Actual unit sales	99,000,000
Number of customers	200,000	Required total price	$0.101262/ unit
Revenue per customer (RPS)	$ 50	**Decoupling price "Adjustment"**	**$0.001262/ unit**

Till Date 14 states in USA, have adopted Decoupling

Energy Conservation Bonds (ECB's)

Area	Barrier
Source of fund	Availability of cheaper capital

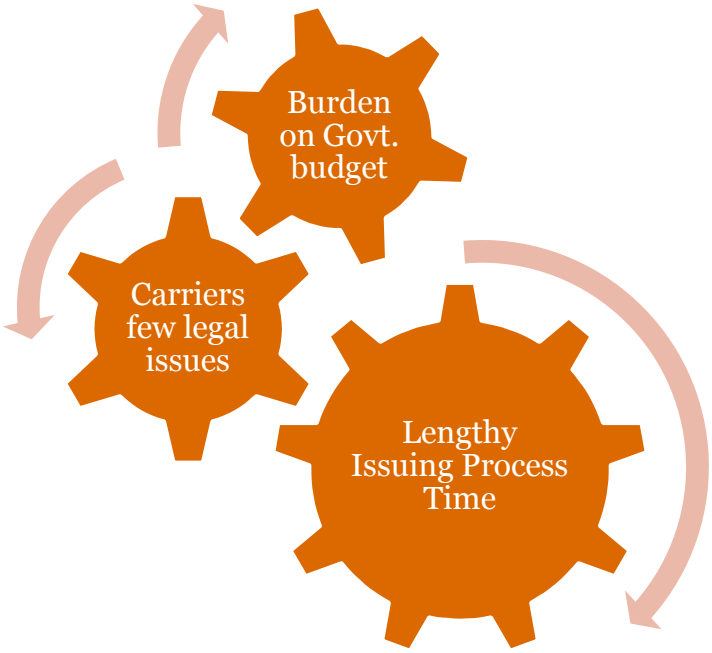
Principle : Bonds are debt instruments issued by a state or local government (or an eligible entity) that are either sold in the public market, placed with investors by an investment banking firm, or purchased directly by a bank.

Types of EC-bonds : Tax Exempt Bonds ; Tax Credit Bonds

Benefits of EC- Bonds

- Focused bonds for EE activities
- Rebate to the borrower in terms of tax credit or tax exempt
- Allow qualified central, state, local authority to issue debt at extremely low rates
- Engages private investors towards energy efficiency

Challenges in EC- Bonds



Example: *Qualified Energy Conservation Bond*, USA

Funds Securing Private Lending

Principle Rather than giving direct capital subsidy, which may increase the possibility of Gaming, federal / state funds are being utilised in creating innovative funds for the purpose of promoting EE financing. These innovative funds includes:

- Interest rate buy down fund - The interest rate is typically bought down by a dedicated federal/ state non-revolving fund. The lower interest rate offered by the private banker motivates borrower for energy efficiency projects.
- Partial Risk Guarantee / Loan loss recovery fund - The fund provides partial risk coverage to lenders meaning that the reserve will cover a pre-specified amount of loan losses.
- Venture capital funds – Would ease a significant barrier from the viewpoint of risk capital availability to the ESCOs

Example: *PRGF and VCF fund*, India

Conclusion & Way Ahead

Energy Efficiency policy initiatives and roadmap varies from country to country. Depending on the market maturity these policy interventions are designed and implemented. EE Financing mechanisms are different for different markets, as explained in table below:

I. Premature Market	II. Transforming Market	III. Mature Market
Grant, Subsidy	Performance contracting	Innovative Lending
Tax Incentives	Carbon financing	
Barriers Identified		
High first cost , High transaction cost, Liquidity	Recourse financing, Lack of std. M&V, Implementation	High perceived risk, Split incentives
Financing Tools		
Accelerated depreciation, Tax deductions, Tax credits, Tax reductions, Rebates, Subsidies	Guaranteed savings, Shared savings, Carbon financing , Collateral free lending, IPMVP	Interest rate buy down, Loan Loss reserve, Risk guarantee funding, On bill financing, Revenue Decoupling, Revolving loan funding, etc

Depending on local condition like consumer lending law, state legislation, political stability, institutional arrangement, degree of awareness, availability of technology etc, respective EE financing program is designed.

Future activities which should be taken up….

- Expand the reach to other willing countries.
- Join hands with other multilats/bilats agencies who have worked in this area to develop a comprehensive plan.
- Identify shortcomings in the current policies and programs in the participating (new) countries/regions
- Map best policies programs from 5 countries (participated in AEEFM task) on shortcomings
- Define country specific strategies specifically public policies and programs to overcome the shortcomings. These strategies could be amendments to current policies and programs or be new policies and programs altogether.
- Facilitate dialogue among international EE policy experts and national stakeholders including policy makers leading to implementation of these strategies.

Thank You

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Time for Q&A

Questions

Your Participation is Appreciated

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