

Energy Efficiency Financing (EEF)

By

Ms. Pornpilai Burasai
FVP Corporate Banking Division 5/1
BankThai Public Company Limited, Thailand
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Presentation Outline

- Basic information about BANKTHAI
- Principle and Rational to support Energy Efficiency Project (EE)
- Bank's roles in EE
- BankThai (BT)'s Experiences in Energy Efficiency Financing (EEF) in Thailand
- Credit Analysis / Risk Issues

Basic Information



BankThai Public Company Limited

- Medium-sized commercial bank
- Listed in Stock Exchange of Thailand
- Complete financial service provider
- 143 branches throughout the country



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Principles and Rational

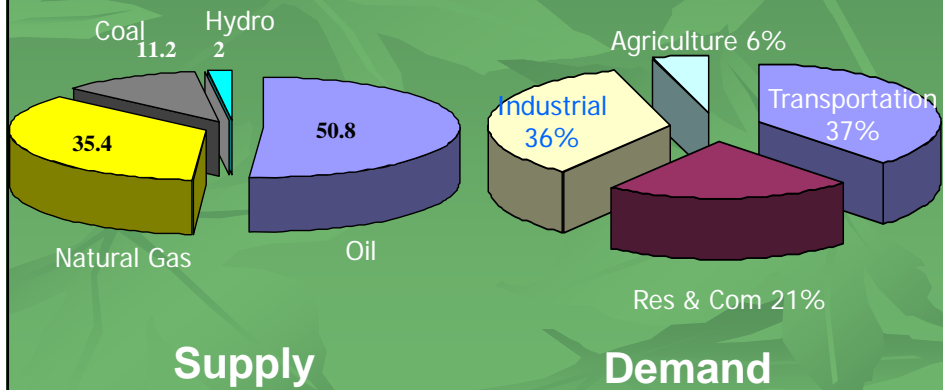


- Energy expenditure is one of the most significant costs for businesses
- Trend of higher energy cost in the future and needs for energy importation
- Lack of efficiency in energy consumption in the country
- To increase business competitiveness
- BT has realized the importance of EE Projects

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Thailand's Energy Outlook

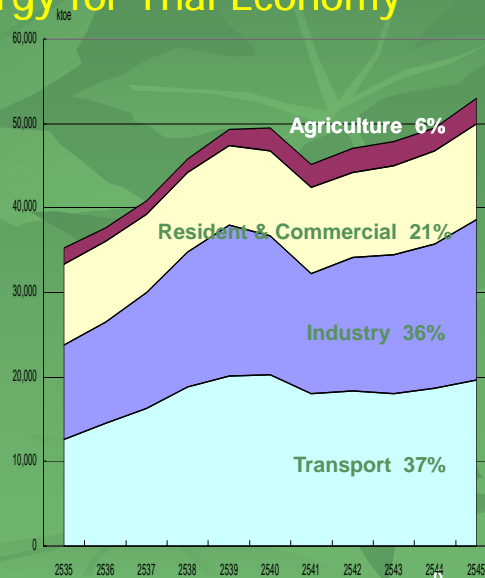
Thailand consumes energy about 1 mill barrels of oil per day
(0.75% of World energy consumption)



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Significance of Energy for Thai Economy

- Energy is basic factor of economic development
- In 2005, energy costs accounted to about 15% of GDP – over 35 billion USD
- 60% of commercial energy was imported or about 20 billion USD
- Still rooms for energy efficiency improvement



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Bank's Roles



- To increase customer's business competitiveness / repayment capability
- To cooperate with government agencies according to government policies
- To offer full services to the customers
- To increase business transactions with bank
- To respond to the National Policy by providing EE credit facilities

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BT Energy Efficiency Financing



- Cooperation with public and private sectors,
- BT Direct Loans

Year	Government Agency (DEDE)	Others (PTT)	BT Direct Loans
2001	ESCO Pilot Project		
2002	Revolving Fund Phase I		
2005	Revolving Fund Phase II		
2006		BT NGV	BT EEF

DEDE : Department of Alternative Energy Development and Efficiency

PTT : PTT Public Company Limited

NGV : Natural Gas for Vehicle (CNG, Compressed Natural Gas)

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ESCO Pilot Project

- Gas Turbine Cogeneration Power Plant
- Interest free from ECON Fund
- ESCO shares the responsibility in loan repayment
- EGAT - as the third party, performs as the Independent Auditor in helping BT to consider the project's technical and work progress
- BT gains confidence in lending to EE project

ESCO : Energy Service Company

EGAT : Electricity Generating Authority of Thailand

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ESCO Pilot Project



Bangkok Produce

Gas Turbine Cogeneration Power Plant

Investment	200	mill baht
Saving	49	mill baht/y
Payback	4.1	years

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Energy Efficiency Revolving Fund



Partnership of Government and Banking
Sector
For Energy Conservation

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Revolving Fund Program



- DEDE allocated budgets for the participating banks
- **Phase I** : Source of fund from ENCON Fund with Interest free
- **Phase II** : Source of fund from ENCON Fund with low Interest Rate at 0.50% p.a.
- DEDE provides technical support

ECON : Energy Conservation

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Work Process



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Revolving Fund Program



- Source of fund from ENCON Fund
- Technical assistance from DEDE
- Key conditions
 - ✓ Loan size \leq USD 1.2 mil / project
 - ✓ Interest rate \leq 4% (fixed rate)
 - ✓ Repayment in the defined time frame (7yrs)

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Revolving Fund Program

- Lending for Energy Efficiency Project
Phase 1 (supported by DEDE)
~ USD 12.23 mil. (Bt. 428 mil.)
- Direct lending from BT
~ USD 59.43 mil. (Bt. 2,080 mil.)

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Revolving Fund Program # 1

- Total Investment: USD 31 mil. (Bt. 1,085.2 mil.)
- Amount approved by DEDE: USD 12.23 mil. (Bt. 428 mil.)
- Saving cost: USD 14.22 mil./year (Bt. 497.7 mil./year)
- Total saving cost along machine life: USD 235.88 mil.
(Bt. 8,256 mil.)

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Revolving Fund Program # 1



Sector	No. of Project	Investment (MB)	Energy Saving/Yr. (MB)	Payback Period (Yr.)
Hospital	11	89.7	22.5	1.6-6
Electrical Wire Manufacturers	4	125.8	27.6	2.4-7
Glass Industry	1	39	135.4	0.34
Solar Cell Industry	1	30.0	5.6	5.3
Tapioca Industry	1	73.0	26.0	2.8
Weaving Industry	4	64.7	59.0	1.1
Food Industry	1	59	72.0	0.8
Electricity Producer	1	604	149.6	4.0

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Samples of Projects



Bangkok Cable

High EE Machinery

Investment 25 mill baht
 Saving 10 mill baht/y
 Payback 2.5 years

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Samples of Projects



Viphavadee Hospital

Demand Control, Building Automation System

Investment 18 mill baht
Saving 3 mill baht/y
Payback 6 years

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Samples of Projects



Mungchareon Green Power

**Small Power Producer 9.9 MW
Renewable Energy-rice hush**

Investment 580 mill baht
IRR 15%
Payback 8 years

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Achievements

EE
Investment

Stimulate
Banks

Environment
Benefits

Oil Imports
Reduction

Reduce oil imports of over 380 million liter per year
Reduce Power Demand over 80 MW



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BT's NGV Supporting Program

ไทยพาณิชย์
BANKTHAI

- Source of fund from PTT at 0.50% p.a. interest rate
- BT supports customers who want to install NGV equipments for vehicles
- Fixed interest rate :
 - Corporate customer $\leq 4.0\%$ p.a.
 - Retail customer $\leq 5.0\%$ p.a.

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Natural Gas for Vehicle



Natural Gas for Vehicle comprising of 2 forms :

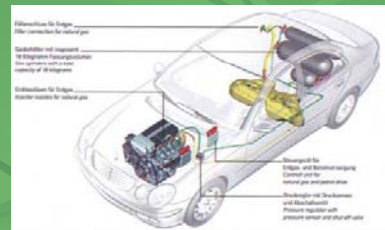
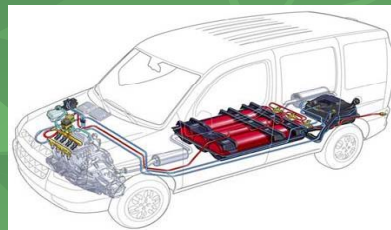
- CNG : Compressed Natural Gas
- LNG : Liquefied Natural Gas

Using of NGV with automobile



To replace benzene

- Dedicated NGV
100% NGV Using
- Bi-Fuel
2 options using
benzene or NGV



Using of NGV with automobile

To replace diesel

- **Dedicated NGV**
100% NGV Using
- **Diesel Dual Fuel (DDF)**
Dual fuel between NGV & Diesel
or 100% Diesel using

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Conversion / Installation Cost and Payback period

Automobile Type	Cost (Bt. '000)	Km. / Day	Payback period (Month)
1 Benzene	38 – 65	100	8-14
2. Diesel			
2.1 Van / Pick-up (DDF)	38 - 50	100	14-19
2.2 Trailer/Truck/Bus			
- DDF	125 – 250	300	4-8
- Dedicated (Modify)	450-600	300	6-10
- Re-powered	1,000-2,000	300	15-31



BT's NGV Supporting Program



- NGV cost only Bt. 8.50 / Kg.
- Benzene / Diesel = Bt. 30 / Litre
- **Save Energy Cost up to 60%**

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BT Direct Loan



- For EE Projects
- Baht 1 Billion (USD 25 Mil.)
- Special low interest rate
 - First 2 yrs. Interest rate \leq MLR - 1 % p.a.



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Credit Analysis Process

1. Identify the Purpose of Finance
2. Identify the Source of Repayment

Energy Saving ➡ Ability to Pay

3. Risk & Mitigation
4. Loan Repayment Capability
5. Facility Requirement & Collaterals

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Credit Analysis

Project Details

- Details of Investment
- Objectives of Investment
- Investment value
- Technical Analysis and Investment Analysis
- Return on Investment & Benefit
 - IRR
 - NPV
 - Payback Period
- Monitoring & Verification

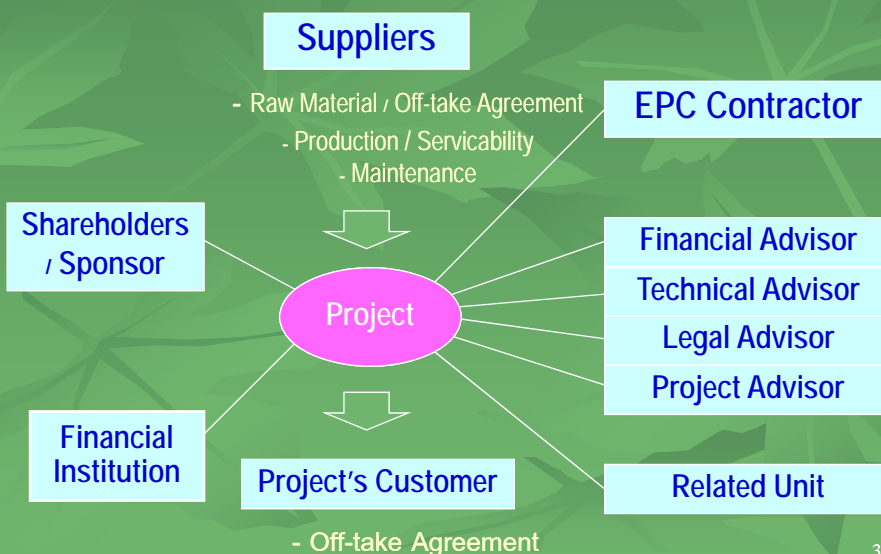
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Credit Analysis

- Overview of the barriers and / or risks affecting investment in EE projects
- Risk / Return analysis to assess each major risk and the means to mitigate its potential impact on the project
- Financial risk management instruments currently supporting EE projects and those that could be developed to reduce uncertainty as barriers

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Related Parties in the project



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Risk Assessment of Project Finance (Vary from period of Time)

Construction period

- Construction Risk
- Machinery Installment Risk
- Environmental Risk
- Governmental
- Regulation/Permission Risk

Operation period

- Fuel Supply Risk
- Off-take Agreement
- Production / Servicability Risk
- Maintenance Risk

Risk that must be continually monitored

- Interest rate
- Foreign Exchange
- Change of Regulations / Laws
- Supporting from Sponsors
- Force majeure
- Insurance

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BT has learning curve with EE financing

Advantages

- EE project can reduce costs and increase profits to enhance repayment ability
- Helping businesses increase competitiveness in the long run
- In the project where ESCO is involved, ESCO guarantees the saving amount of the project investment

Disadvantages

- Return on investment is unclear in the short run

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BT's Viewpoints over EE Project



- To increase business competition in the market
- To help business obtain better cash flow
- To increase loan repayment capability
- To offer full and differentiated products
- To help firms get sources of fund with low interest rate
- To promote bank image in the market
- To help the country earn benefits eventually

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Thank you 

Email : pornpilai.burasai@bankthai.co.th

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