

Energy Efficiency and Renewable Energy Financing Measures: Thailand



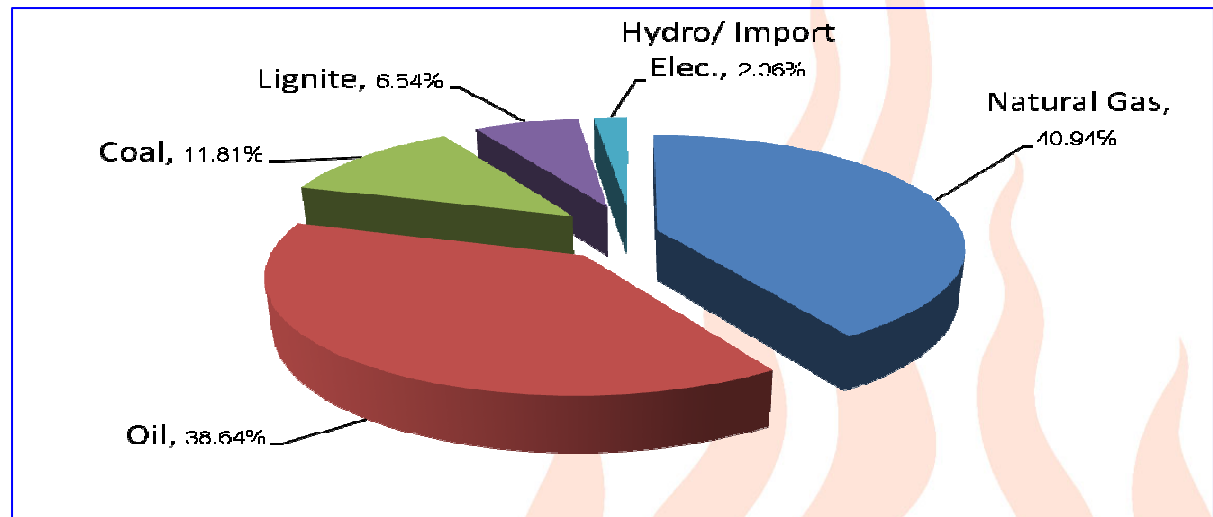
Prasert Sinsukprasert

Director of Planning Division
Dept. of Alternative Energy Development and Efficiency
prasert_s@dede.go.th

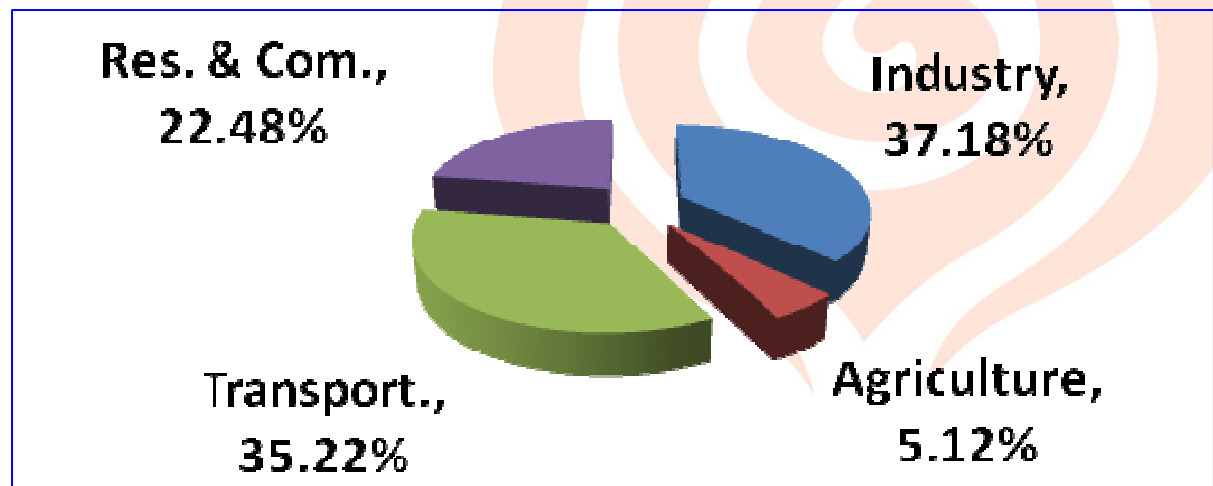
Energy Consumption in 2009

In 2009, Energy Expenses 47 billion USD (import 58%)
Total Commercial Energy Use 1.656 million barrels (oil equivalent) of per day

Commercial Energy Consumption by fuel

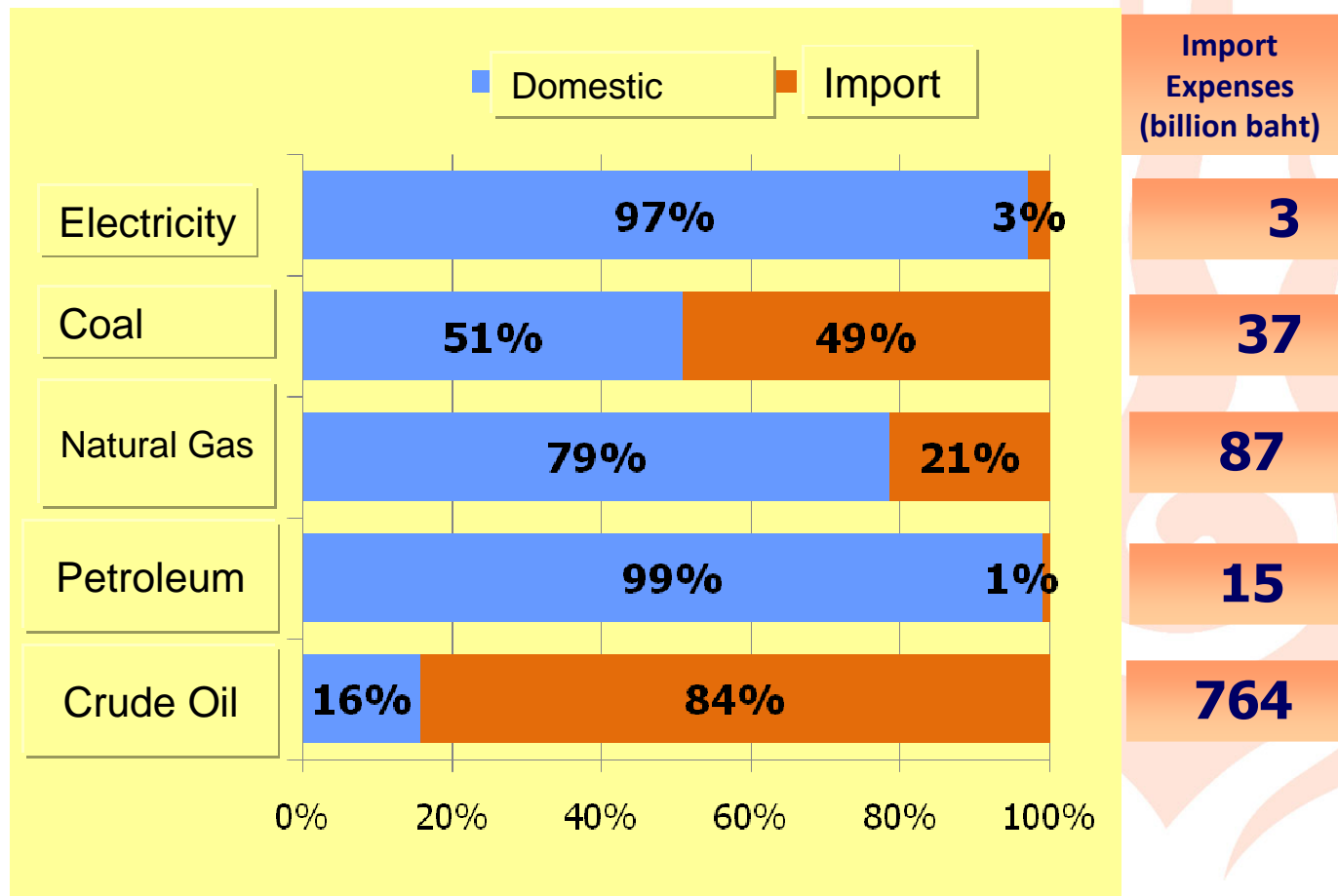


Energy Use by sector



Energy Import Dependence 2009

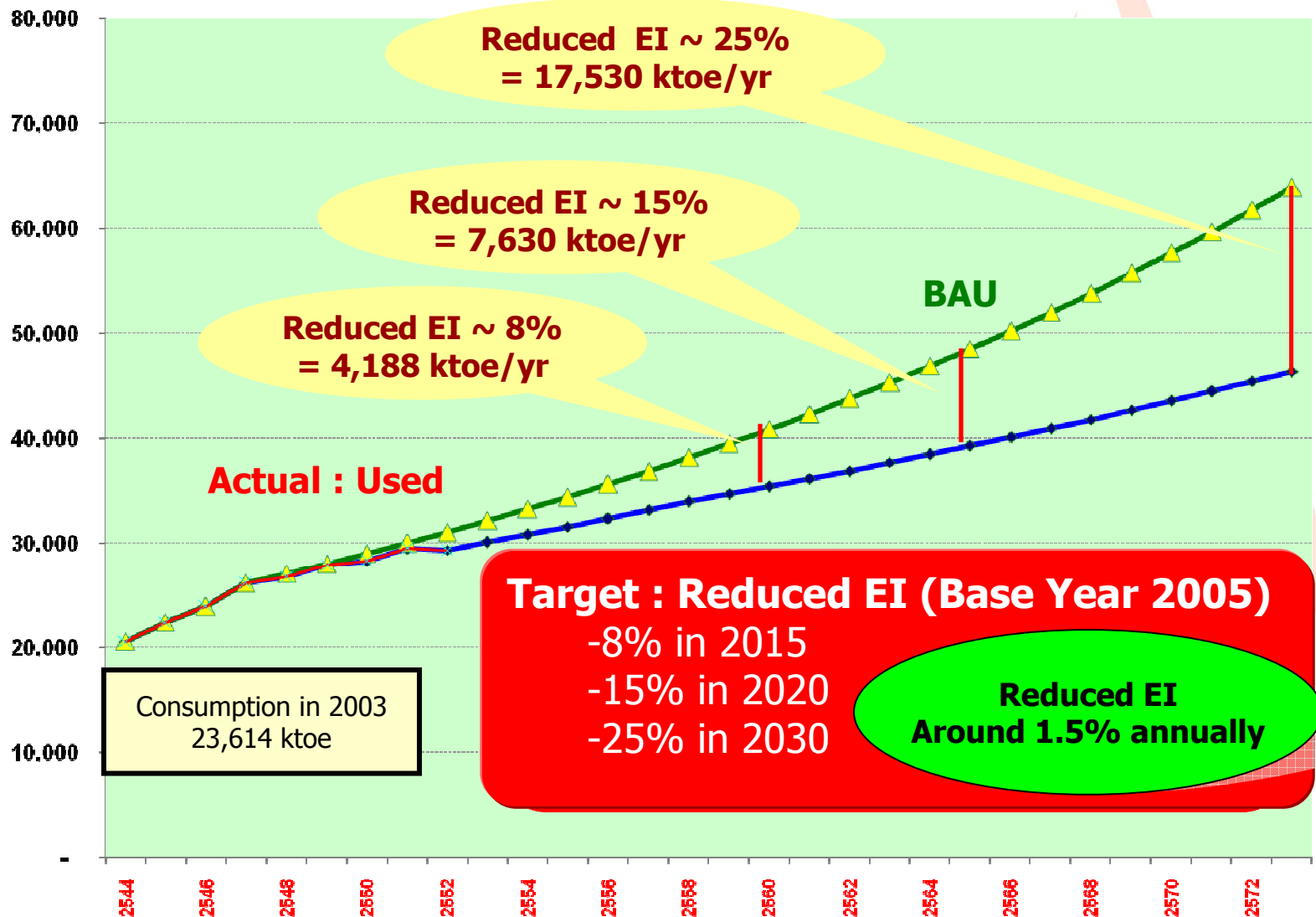
Domestic to Import Ratio



EE Plans and Targets

Industrial and Commercial Sectors

Energy Consumption (KTOE/yr)



Thailand Renewable Energy Development

Committed to the development of low-carbon society

Government Funding On R & D & D Activities

15 years RE-Development Plan

Encouraging Private-Led Investment

Target 20.3 % of RE in Total Energy Consumption By 2022

Solar + Wind

1,300 MW

Small + Mini Hydro

320 MW

Bio Energy

Biomass

4,000 MW

Biogas

160 MW

MSW

120 MW

Biofuels

- Ethanol
- Biodiesel

20% Oil substitution

Supporting Schemes

- Feed-in Premium ("Adder") on top of regular tariff
- BOI Tax incentives scheme (8 yr. Tax holiday)
- Some direct subsidy (10-30%) on Biogas,MSW,Solar-hotwater projects
- Soft Loans for RE+EE investments
- Government Co-investing scheme ("ESCO Fund")

- Abundant Supply
- Market driven
- Pricing Strategy to promote high-RE-Fuels (E10,E20,E85 and B5)

RE EE Measures/Strategies

- Regulation
- **Financing**
- Capacity building
- Infrastructure
- Awareness and Information Campaign
- Knowledge Management



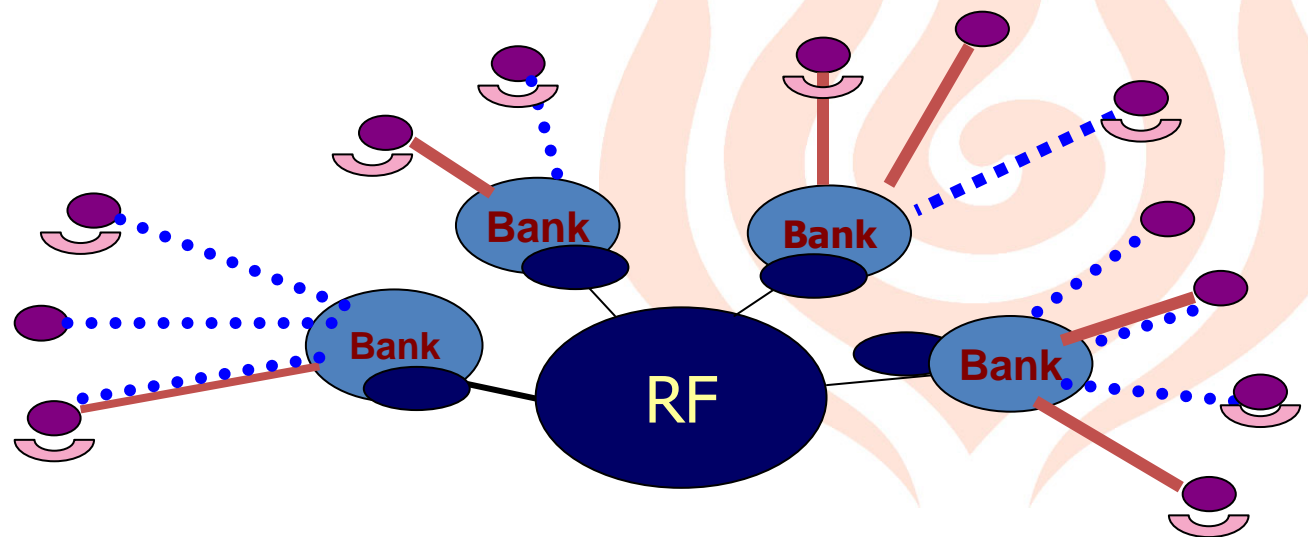
EE/RE Financing Measures

- Revolving Fund – soft loan program
- ESCO Fund – coinvestment program
- Adder (Feed-in premium)
- Tax Incentives

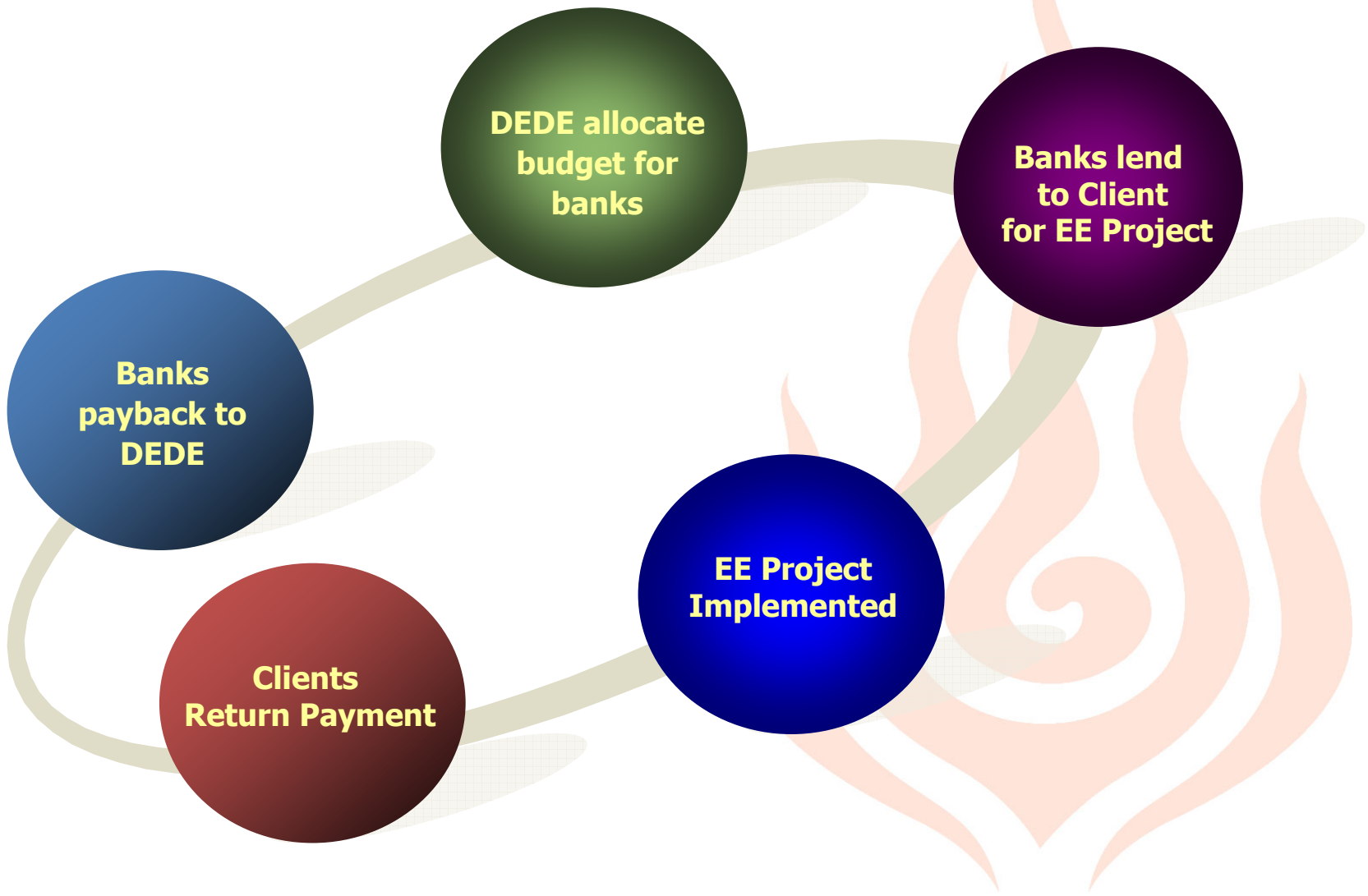


Revolving Fund

- stimulate interests among banking communities
- provide low-cost capital to EE&RE market
- commercial lending: through commercial banks
- minimize government intervention
- Jan 2003 – present: **budget of 210 mill USD**



RF Work Process



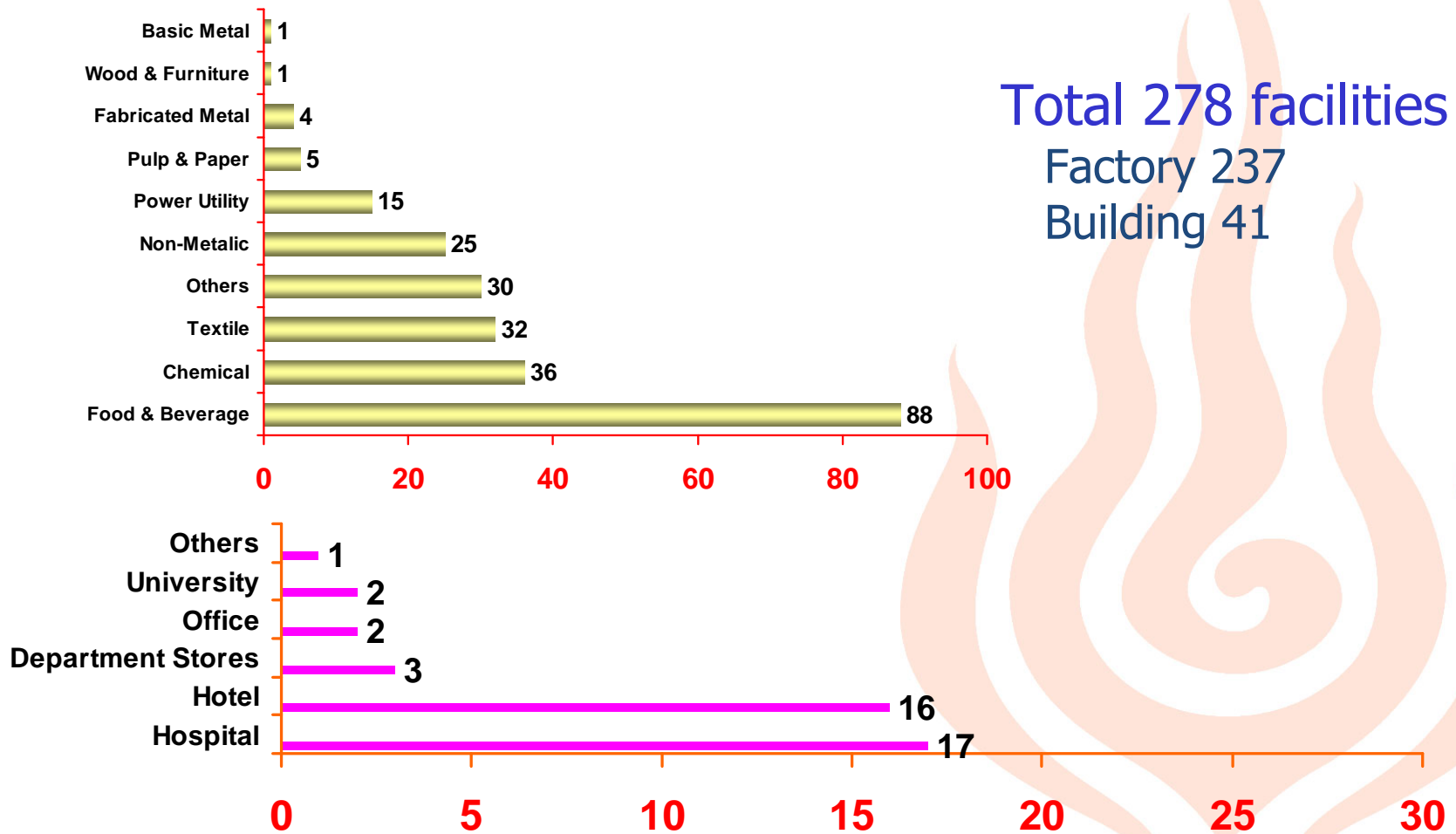
11 Participating Banks

- Bangkok Bank (BBL)
- Bank of Ayudhya (BAY)
- Bank Thai (BT)
- Thai Military Bank (TMB)
- Siam City Bank (SCIB)
- Siam Commercial Bank (SCB)
- Thai Farmers Bank (TFB)
- Exim Bank (Exim)
- Krung Thai Bank (KTB)
- SME Bank (SME)
- UOB



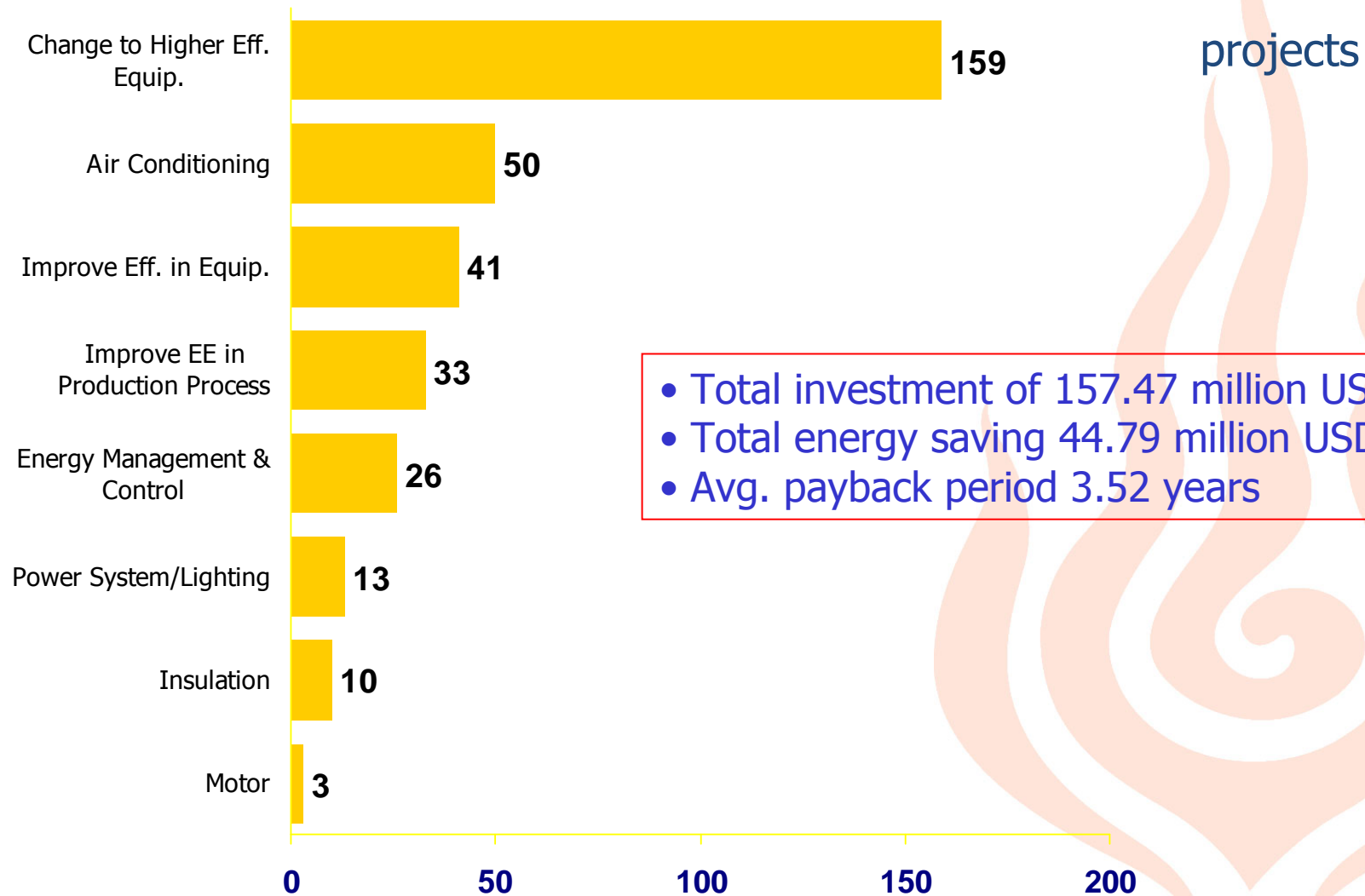
Facilities received funding

April 2010



EE Measures Implemented

April 2010

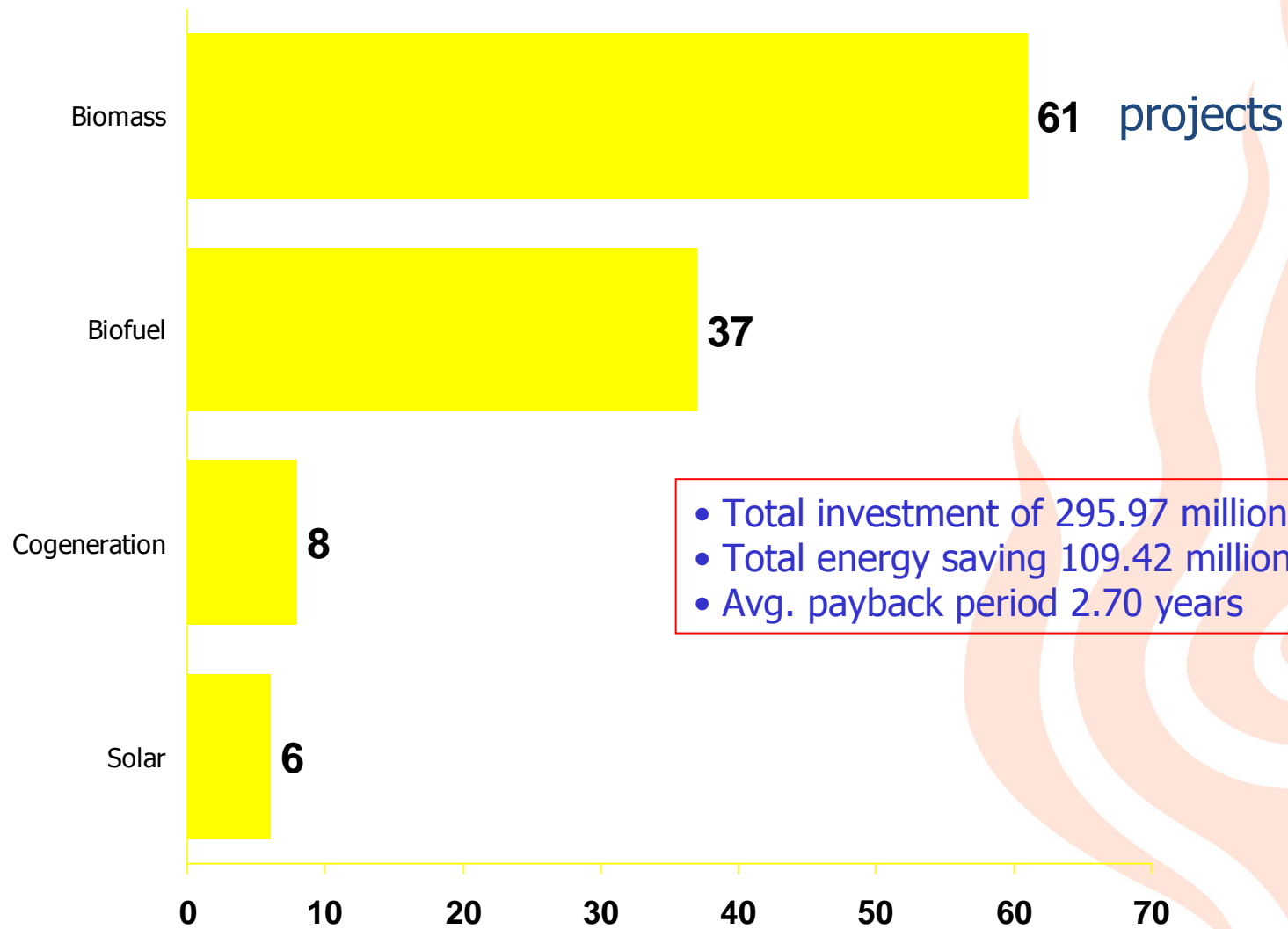


- Total investment of 157.47 million USD
- Total energy saving 44.79 million USD/year
- Avg. payback period 3.52 years



Alternative Energy Projects

April 2010



- Total investment of 295.97 million USD
- Total energy saving 109.42 million USD/year
- Avg. payback period 2.70 years



RF Program Results

(Jan 2003 – April 2010)

- Leverage 453 million USD of EE/RE investment
- 335 EE projects, 112 RE projects
- Energy Savings over 154 million USD/y
- Average payback ~ 3 years



ESCO Fund

Objective to promote investment in energy conservation and alternative energy and facilitate carbon market

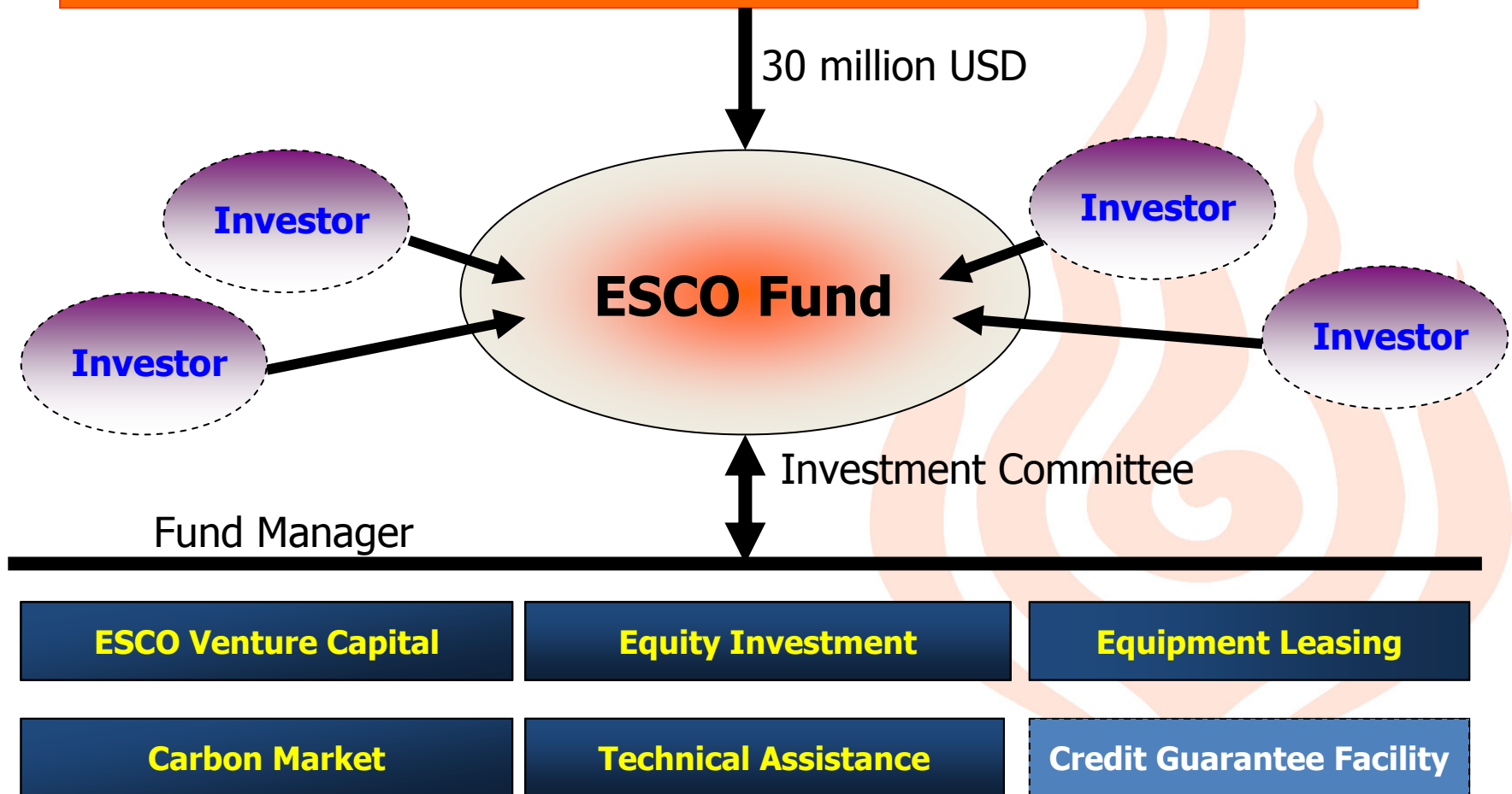
Description Coinvestment Fund for EE and RE projects
Equity Finance, Venture-Capital, Leasing
Carbon Market Investment, Tech Assistance

Budget 30 million USD

Launched October 2008

Targeting SMEs

Energy Conservation Promotion Fund



Investment Committee

Role

- Set investment policy and criteria
- Approve project investment and exit
- Supervise the program implementation

Component

- Dept. of Alternative Energy Development and Efficiency (DEDE)
- Energy Policy and Planning Office (EPPO)
- Dept. of Industrial Works (DIW)
- Federation of Thai Industry
- Energy and Finance Experts

ESCO Fund Manager

Role

- Marketing and Project Development
- Appraise projects, Due diligence
- Coordinate with financial institutes, Funds, other investors
- Sign contractual agreements
- Advice project clients
- Portfolio and Risk Management

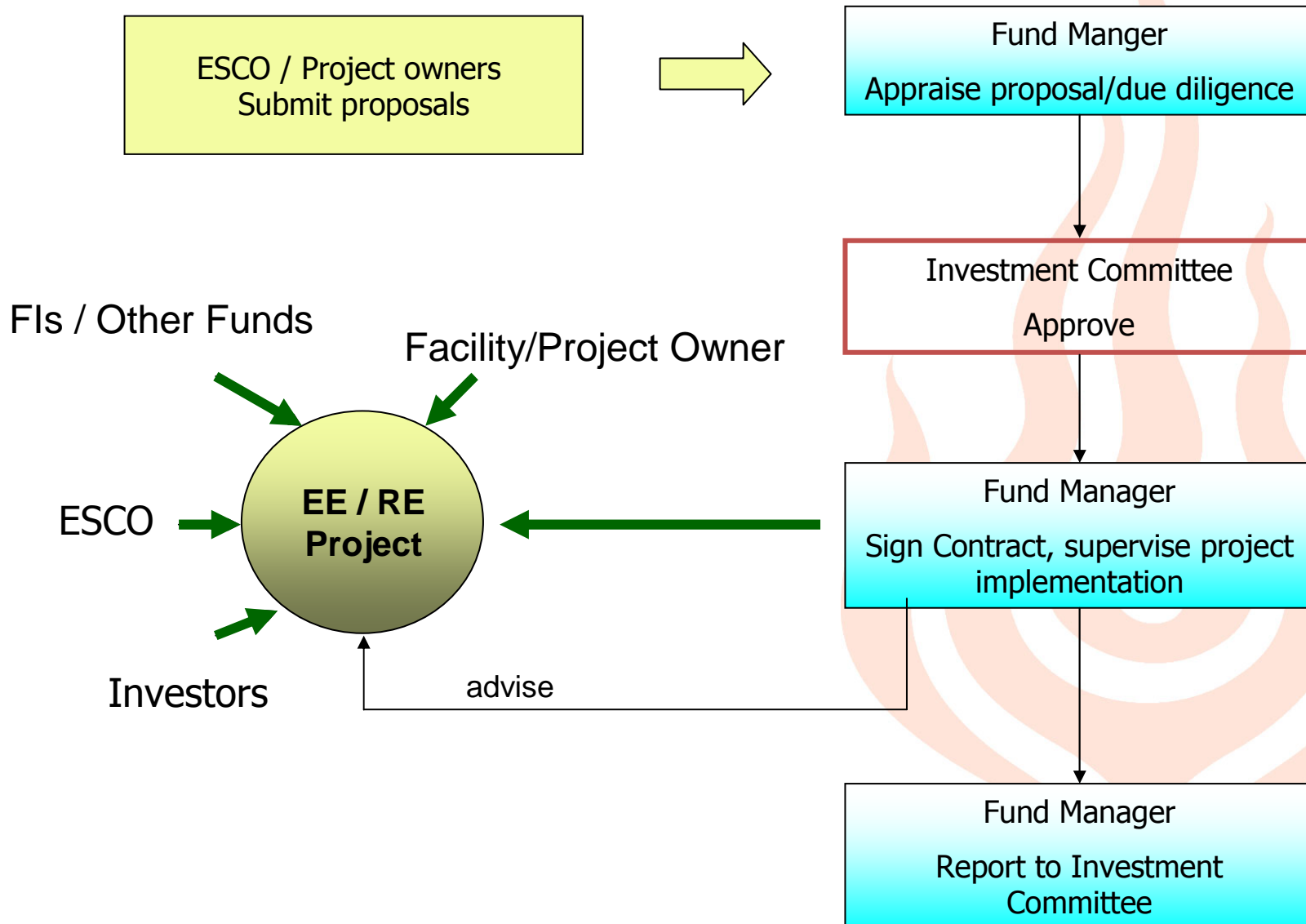
Component

- Manager
- Technical staff
- Finance staff
- Legal / Accounting
- Marketing team

Contracted Fund Managers

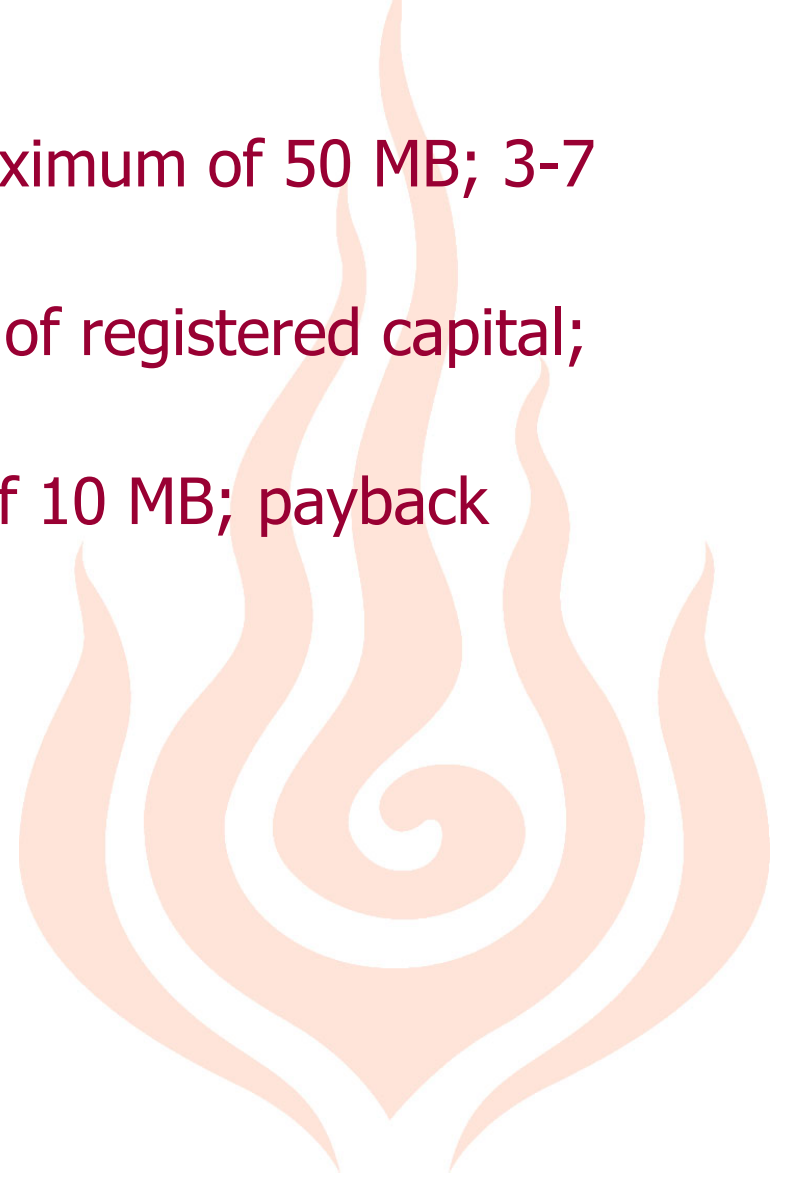
Energy for Environment Foundation
Energy Conservation Center Foundation

Typical Work Flow



Investment Criteria

- Equity Investment; 10-50 % maximum of 50 MB; 3-7 years
- ESCO Venture Capital; 10-30 % of registered capital; maximum of 50 MB; 3-7 years
- Equipment Leasing; maximum of 10 MB; payback within 5 years
- Carbon Credit;
- Technical Assistance;
- Guarantee Facility



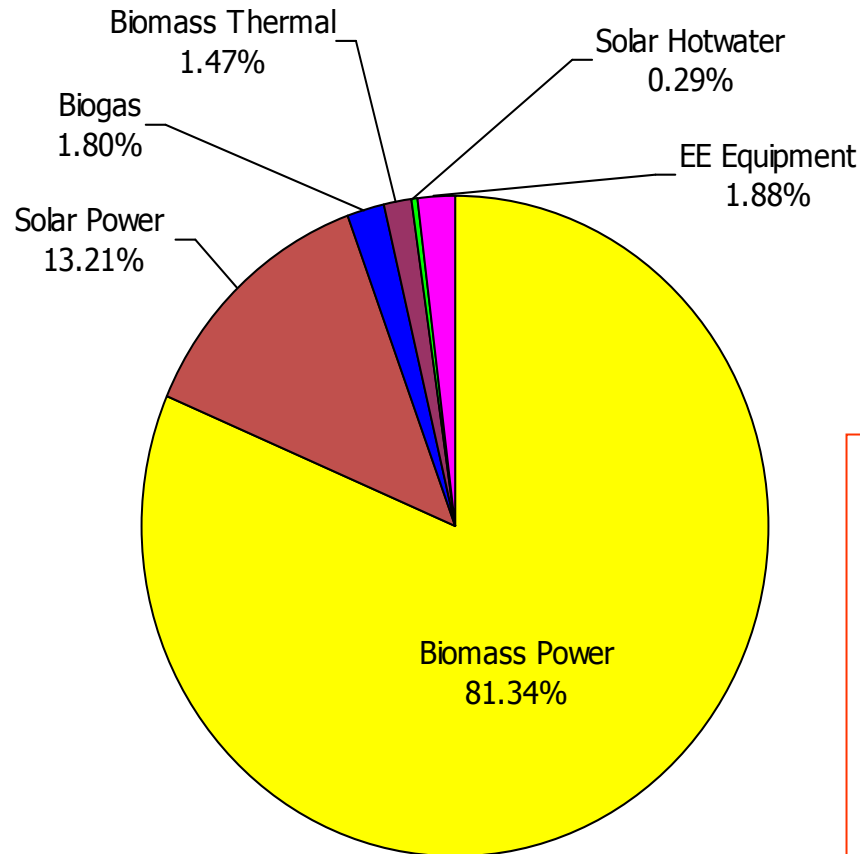
Appraisal Issues

- In line with Investment Policy
 - Target Groups
 - Technologies
 - Investment size
 - ESCO
- Opportunity and Risks
 - Technical
 - Management
 - Financial and Market/Industry trends
- Exit strategies

**To Support (not commercial minded)
Self Sufficiency Financially**

ESCO Fund Program Results

April 2010



26 projects approved (EE 12, Biomass 9)
Total Investment of 145 million USD
ESCo Fund co-invest 12 million USD
Energy Saved 32 KToE / y
(18 million USD /y)

Investment by Technology
Total Investment of 145 mill USD

“Adder” : Feed-in Premiums

- provide incentives to boost power generation from renewable energies (on top of base tariff 3 b/kwh)
- additional money will be paid to private power producers for every kwh produced from RE the amounts of adder depend on type of RE; size of project; location – reviewed every two years
- EGAT recover the adder costs from Fuel Adjustment Mechanism (FT) – paid by all consumers.

“Adder” : Feed-in Premiums

Fuel	Adder (B/kwh)	Special adder * (B/kwh)	Special adder in 3 southern provinces (B/kwh)	Supporting period (B/kwh)
<input type="checkbox"/> Biomass - Installed capacity <= 1 MW - Installed capacity > 1 MW	0.50	1.00	1.00	7
	0.30	1.00	1.00	7
<input type="checkbox"/> Biogas (all categories of production sources) - Installed capacity <= 1 MW - Installed capacity > 1 MW	0.50	1.00	1.00	7
	0.30	1.00	1.00	7
<input type="checkbox"/> Waste (community waste, not hazardous industrial waste, and inorganic waste) - Fermentation system or land fill - Thermal Process	2.50	1.00	1.00	7
	3.50	1.00	1.00	7
<input type="checkbox"/> Wind power - Installed capacity <= 50 kw - Installed capacity > 50 kw	4.50	1.50	1.50	10
	3.50	1.50	1.50	10
<input type="checkbox"/> Mini and micro hydropower - Installed capacity 50 kw - < 200 kw - Installed capacity < 50 kw	0.80	1.00	1.00	7
	1.50	1.00	1.00	7
<input type="checkbox"/> Solar power	8.00	1.50	1.50	10

TAX Incentives

- Exemption of import duties – for equipment related to RE/EE
- Exemption of corporate income tax for 8 years for EE/RE manufacturers or businesses
- Reduction of corporate income tax for business that improve their EE or utilize RE up to 70% of investment costs.

Tax Incentive Results

- 19 ESCO projects approved for corporate tax exemption -- investing 185 mill USD and potential energy savings of 48 mill USD
- 24 projects approved for import duty exemption – worth 64 mill USD resulting to 22 mill USD energy saved
- Over 50 EE/RE projects are in the pipeline for tax privilege approval.

Lesson Learned and Next Steps

Lesson Learned

- Financial Institutes are still defensive, especially for SMEs, small projects.
- Information and knowledge about ESCOs/RE technologies must be provided for bankers.
- Non-economic barriers need to be addressed

Next Steps

- Create Credit Guarantee Facility
- Explore carbon market opportunities – **programmatic CDM**

Committed for All

“มุ่งมั่น ตั้งใจ เพื่อไทยทุกคน”



กระทรวงพลังงาน
MINISTRY OF ENERGY