



Romanian Energy Efficiency Fund

Appropriate Lending for Project Sponsors' Financing Needs
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Panel 2


“Delivery of targeted building renovation investment through stakeholder engagement”
”Energy efficiency: A priority in combating energy poverty and providing access to affordable energy services for all”

Bucharest International Energy Charter Forum

Romanian Chairmanship of the Energy Charter Conference
Ministry of Energy Ministry of Foreign Affairs

June 07th, 2018

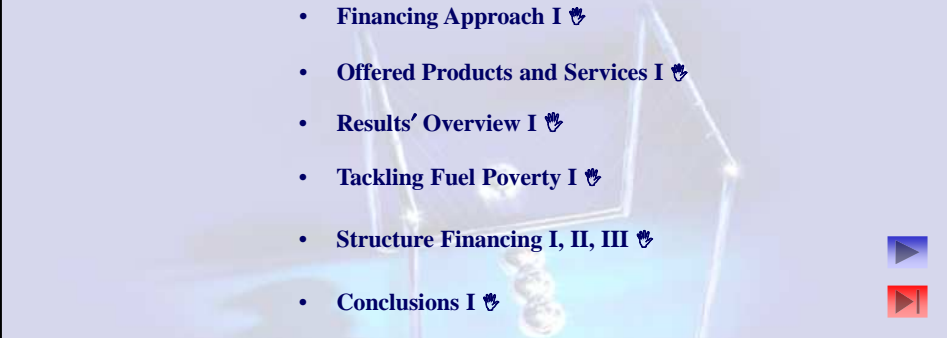
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Financing Approach

FREE revolves (US\$ M8) with interest and principal payments flowing back into it for additional loans (US\$ M22.853 €).


Disbursements and Repayments in US\$ denominated local currency.

Client's Creditworthiness - based Loans. Floating Interest Rates & Commission (Libor_{3M})

Good to know

Investments whose energy savings generate positive cash flows, partially used to repay loans.

Borrowers with good growth prospects FREE doesn't subsidize loans for any borrowers.




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Offered Products and Services

- **Cash-flow based Term Loans** : made directly to end users (either based upon cash flow of the project plus the creditworthiness of the end user or on projected cash flow alone);
- **Cash flow-based loans** : made to energy service companies ("ESCOs") on a project-by-project basis;
- **"Performance" Loans** : partners with a supplier and offers a total project package including engineering, equipment and financing.
- **Promoters** .



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Results' Overview

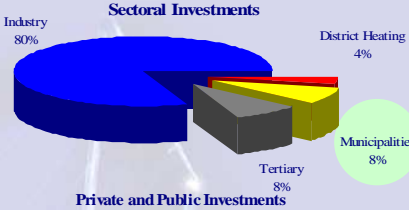
US\$ 74 million invested (out of US\$ 342 million);

**US\$ 1 yields to 0.8 koe/year Energy Savings or
2.3 kg/year of CO₂ Emission Reduction;**

**US\$ 1 yields to US\$ 0.28* Annual Benefits
+ additional Benefits Emission Trading.**


* quotation: equivalent of USD 48/barrel against the current USD 64.83/barrel

Sectoral Investments










Industry 80%
District Heating 4%
Municipalities 8%
Tertiary 8%


Private and Public Investments



Private 90%
Public 10%

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Tackling Fuel Poverty

Move from Consumer to Prosumer

District Heating

Public Lighting






Building Management Systems

Building Local Heating

Building Renovation

Working with Eligibility Criteria

Payback Time ≤ 5 years ($\eta = 20\%$)	Lending ≤ US\$ 1 million
Sponsor Share ≥ 20%	Environmental Permit
Benefits from Energy Savings ≥ 50% out of Benefits overall	

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Structure Financing I

Total Size of Investment = **Annual Financial Benefits** × **5Y** (η=20%)

Gross Payback

Commissioning

Implementation


Gross Payback

Operation

Life Span

Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9
Financial Benefits	Financial Benefits	Financial Benefits	Financial Benefits	Financial Benefits	Financial Benefits	Financial Benefits	Financial Benefits	Financial Benefits

The financing gap is filled by originating transactions, by combining expertise in energy efficiency analysis, structured finance and credit analysis, and by attracting commercial co-financing.



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Structure Financing II

Sponsor Share (20%)

Loan (80%)

Total Size of Investment

Debt Service

Y1 rate	Y2 rate	Y3 rate	Y4 rate	Y5 rate	Y6 rate	Y7 rate
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Principal **Interest**

For technically robust and bankable projects meeting the eligibility criteria, actions for structuring financing are taken.

Due diligence to identifying any co-financing alternatives in accordance with the type of investment;


Sizing of the requested loan; Risks assessment and sharing.

Disbursements **Repayments**

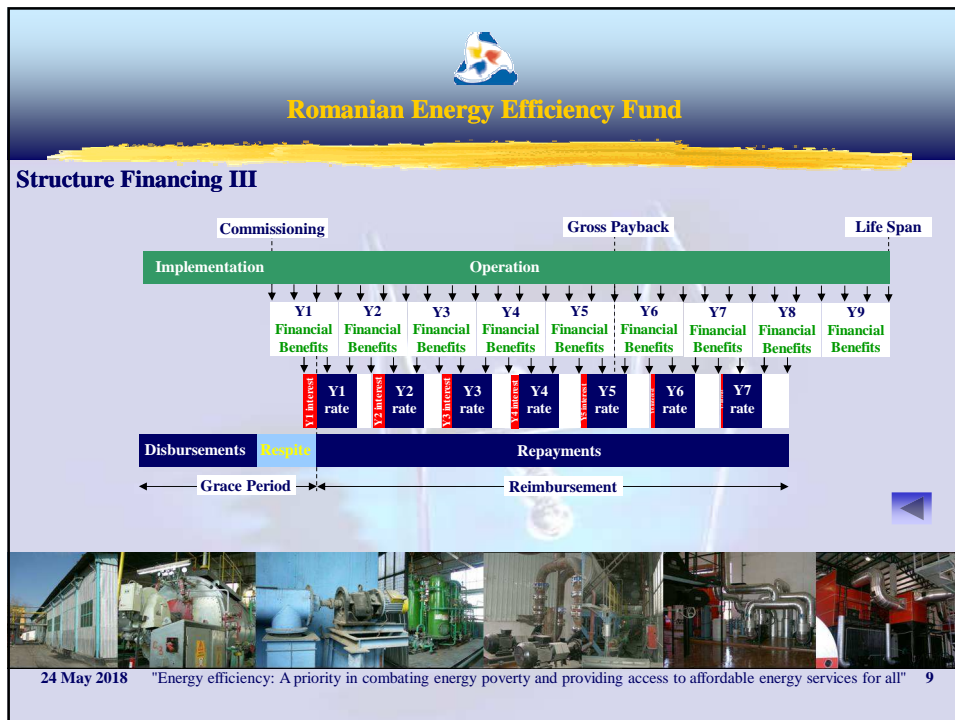
Grace Period Reimbursement

1st Repayment

Y1 interest	Y1 rate	Y2 interest	Y2 rate	Y3 interest	Y3 rate	Y4 interest	Y4 rate	Y5 interest	Y5 rate	Y6 rate	Y7 rate
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Crediting **Intelligent Consumption**


<http://www.free.org.ro/>

Romanian Energy Efficiency Fund

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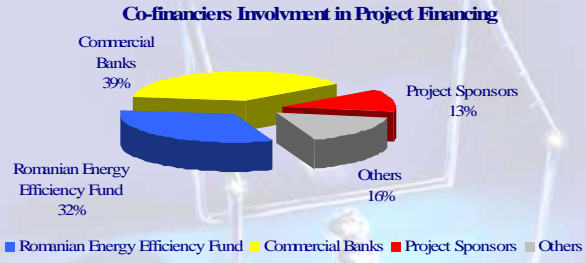


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Energy Efficiency Investments: Structure Financing

Co-financiers Involvement in Project Financing



Co-financier	Percentage
Commercial Banks	39%
Romanian Energy Efficiency Fund	32%
Others	16%
Project Sponsors	13%

■ Romanian Energy Efficiency Fund ■ Commercial Banks ■ Project Sponsors ■ Others



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National Project Portfolio



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Machinery Building Industry

Beneficiary	UNIO S.A. Satu Mare
Project Type:	<i>Replacement of Air Compressors</i>
Investment Size (USD)	290,000
Loan (USD)	130,000
Maturity (years)	3.0
Payback Time (years)	2.6
Net Present Value (USD)	264,000
Internal Rate of Return (%)	37
Annual Energy Savings (toe)	440
Annual Reduction of CO ₂ emissions (tonnes)	- 1,530




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District Heating (Geothermal)

Beneficiary	Transgex S.A. Oradea
Project Type:	<i>5 Thermal Substations Connection to the Geothermal Plant</i>
Investment Size (USD)	1,178,474
Loan (USD)	425,000
Maturity (years)	3.0
Payback Time (years)	2.5
Net Present Value (USD)	1,140,000
Internal Rate of Return (%)	39
Annual Energy Savings (toe)	5,800
Annual Reduction of CO ₂ Emissions (tones)	- 14,300




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District Heating (Fossil Fuel)

Beneficiary	CET S.A. Iași
Project Type:	<i>Modernization of 3 Thermal Substations and related Networks</i>
Investment Size (USD)	1,250,000
Loan (USD)	980,000
Maturity (years)	2.0
Payback Time (years)	6.0
Net Present Value (USD)	377,000
Internal Rate of Return (%)	17
Annual Energy Savings (toe)	937
Annual Reduction of CO ₂ emissions (tones)	- 2,831




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Food Industry (Biomass)

Beneficiary	Ulerom S.A. Vaslui
Project Type:	<i>Installation of a new Sunflower Husks fired Boiler</i>
Investment Size (USD)	560,000
Loan (USD)	448,000
Maturity (years)	4.0
Payback Time (years)	4.3
Net Present Value (USD)	400,000
Internal Rate of Return (%)	23
Annual Energy Savings (toe)	621
Annual Reduction of CO ₂ Emissions (tones)	- 1,487




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Pulp and Paper Industry

Beneficiary	SOMEȘ S.A. Dej
Project Type:	<i>Energy Monitoring System; Paper Mill Steam - Condensate System Modernization</i>
Investment Size (USD)	940,000
Loan (USD)	752,000
Maturity (years)	4.0
Payback Time (years)	1.7
Net Present Value (USD)	2,939,000
Internal Rate of Return (%)	60
Annual Energy Savings (toe)	1,130
Annual Reductions of CO ₂ emissions (tones)	- 2,807




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Machinery Building Industry

Beneficiary	UNIO S.A. Satu Mare
Project Type:	<i>Installation of an Industrial Local Heating System</i>
Investment Size (USD)	257,000
Loan (USD)	206,000
Maturity (years)	2,5
Payback Time (years)	1.1
Net Present Value (USD)	1,264,000
Internal Rate of Return (%)	87
Annual Energy Savings (toe)	957
Annual Reductions of CO ₂ Emissions (tones)	- 2,911



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Glass Industry

Beneficiary	ARC S.R.L. Dorohoi
Project Type:	<i>Modernization of Technological Equipments</i>
Investment Size (USD)	514,000
Loan (USD)	400,000
Maturity (years)	4.0
Payback Time (years)	1.7
Net Present Value (USD)	1,552,500
Internal Rate of Return (%)	60
Annual Energy Savings (toe)	898
Annual Reductions of CO ₂ Emissions (tones)	- 2,218




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Crude Oil Refinery

Beneficiary	'Steaua Română' Refinery
Project Type:	<i>Installation of a new Saturated Steam Boiler</i>
Total Size (USD)	580,000
Loan (USD)	460,000
Maturity (years)	3.0
Payback Time (years)	2.1
Net Present Value (USD)	1,814,000
Internal Rate of Return (%)	49
Annual Energy Savings (toe)	1,368
Annual Reductions of CO ₂ Emissions (tones)	- 3,257




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Health (Biomass)

Beneficiary	Oradea County Hospital
Project Type:	<i>Installation of two Wooden Pellets fired Boilers</i>
Investment Size (USD)	405,000
Loan (USD)	324,000
Maturity (years)	4.0
Payback Time (years)	5.6
Net Present Value (USD)	159,000
Internal Rate of Return (%)	17
Annual Energy Savings (toe)	187
Annual Reduction of CO ₂ Emissions (tones)	- 445








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Romanian Energy Efficiency Fund

Crude Oil Refinery

Beneficiary	'Steaua Română' Refinery
Project Type:	<i>Modernization of Atmospheric Distillation Installation Boiler</i>
Total Size (USD)	179,000
Loan (USD)	143,000
Maturity (years)	3.0
Payback Time (years)	1.9
Net Present Value (USD)	363,000
Internal Rate of Return (%)	53
Annual Energy Savings (toe)	233
Annual Reductions of CO ₂ Emissions (tones)	- 555

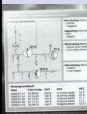










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Pulp and Paper Industry (Micro Hydro I)

Beneficiary	Omnimpex Hârtia S.A. Bușteni
Project Type	<i>Power Generation in new Micro Hydro Units for covering own Electricity Demand</i>
Investment Size (USD)	1,869,000
Loan (USD)	990,000
Maturity (years)	5.0
Payback Time (years)	4.4
Net Present Value (USD)	1,273,000
Internal Rate of Return (%)	22
Annual Energy Savings (toe)	1,012
Annual Reduction of CO ₂ Emissions (tones)	- 2,409

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Delivery of Energy Services in Meat Processing Industry

Beneficiary	ENEAS S.R.L. București
Project Type:	<i>Installation and Operation of a Cogeneration Unit to a Third Party</i>
Total Size (USD)	623,000
Loan (USD)	499,000
Maturity (years)	4.5
Payback Time (years)	4.2
Net Present Value (years)	254
Internal Rate of Return (%)	20
Annual Energy Savings (toe)	462
Annual Reductions of CO ₂ Emissions (tones)	- 1,101



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Chemical Industry (Cogeneration I)

Beneficiary	CHIMCOMPLEX S.A. Borzești
Project Type:	Installation of a Cogeneration Unit (GT)
Total Size (USD)	8,147,000
Loan (USD)	2,000,000
Maturity (years)	4
Payback Time (years)	2.8
Net Present Value (USD)	8,151,183
Internal Rate of Return (%)	33
Annual Energy Savings (toe)	13,509
Annual Reductions of CO ₂ Emissions (tones)	- 32,151




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Pulp and Paper Industry

Beneficiary	A6 IMPEX S.A. Dej
Project Type:	Installation of a Wooden Waste fired Steam Boiler
Total Size (USD)	13,464,090
Loan (USD)	1,594,000
Maturity (years)	4
Payback Time (years)	5.1
Net Present Value (USD)	6,111,000
Internal Rate of Return (%)	19
Annual Energy Savings (toe)	7,743
Annual Reductions of CO ₂ Emissions (tones)	- 40,192



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Brick Industry

Beneficiary	3FAN CONSTRUCT S.R.L. Alba Iulia
Project Type:	Refurbishment of the Bricks Manufacturing Line
Total Size (USD)	2,578,000
Loan (USD)	1,000,000
Maturity (years)	4.0
Payback Time (years)	6.1
Net Present Value (years)	567
Internal Rate of Return (%)	15
Annual Energy Savings (toe)	684
Annual Reductions of CO ₂ Emissions (tones)	- 1,788




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Pulp and Paper Industry (Micro Hydro II)

Beneficiary	Omnimpex Hârtia S.A. Bușteni
Project Type	<i>Power Generation in new Micro Hydro Units for covering own Electricity Demand</i>
Investment Size (USD)	1,199,000
Loan (USD)	959,000
Maturity (years)	4.0
Payback Time (years)	4.6
Net Present Value (USD)	868,000
Internal Rate of Return (%)	22
Annual Energy Savings (toe)	688
Annual Reduction of CO ₂ Emissions (tones)	- 1,688



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Romanian Energy Efficiency Fund

Chemical Industry (Cogeneration II)

Beneficiary	CHIMCOMPLEX S.A. Borzești
Project Type:	Installation of a Cogeneration Unit (GT)
Total Size (USD)	15,030,000
Loan (USD)	2,000,000
Maturity (years)	3.25
Payback Time (years)	2.7
Net Present Value (USD)	16,657,000
Internal Rate of Return (%)	36
Annual Energy Savings (toe)	8,999
Annual Reductions of CO ₂ Emissions (tones)	- 20,338




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Delivery of Energy Services in Furniture Industry

Beneficiary	ENERGY SERV S.R.L. București
Project Type:	<i>Installation and Operation of an ORC Bottom - Cycle and Cooler to a Third Party</i>
Total Size (USD)	783,000
Loan (USD)	620,000
Maturity (years)	7.0
Payback Time (years)	4.8
Net Present Value (years)	222
Internal Rate of Return (%)	18
Annual Energy Savings (toe)	1,678
Annual Reductions of CO ₂ Emissions (tones)	- 3,827



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