Opportunities and Challenges: ESCOs in Romania- a solution to a wider accessibility to energy efficiency measures especially in poor areas"

ESCO Development Best Practice

Questioning the Appropriateness of the ESCO Best Practice and Model for Scaling-up EE in ***the Municipal Sector and Social Housing***

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ESCO and Financial Mechanisms

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Structure of the Presentation:

1. Basic Requirements to Meet and Preconditions toward ESCO development in the municipal sector
2. Best Practice: EPC EE Projects Implementation Stages and Constraints
3. Standard EPC Projects Financial Analysis
4. Need for a New EPC Model in Social Housing
5. New EPC Modality Financial Analysis and Modeling
6. Conclusion and Discussion

Section 1

1. Basic Requirements to Meet and Preconditions toward ESCO development in the municipal sector

Basic Requirements to Meet and Preconditions:

General Requirements

- Municipality's willingness and decision-making ability and capacity;
- Investment protection legal framework;
- Technical capacity and defining the contractual counterpart..

Cont'd :
Basic Requirements to Meet and Preconditions:

Basic Key Instruments and Institutional Tools

Legal (National EE Law) and a clear regulation framework:

- The promulgation of a national EE Law: *EE Sector-based targets; involvement of ESCO and the use of EPC, etc…*
- Municipal budgeting constraints: *standing budget provision (budget line)*

Circular or sub-regulation dealing with:

- ESCO Accreditation Procedure: *transparent*
- EPC Modality: *flexible*
- Stakeholders' role and responsibility: *limitation and definition: (i) ESCO; (ii) Municipality; (iii) Financial Institutions; (iv) Energy End-users*

Cont'd :
Basic Requirements to Meet and Preconditions:

Enabling Requirements

The most successful EE programmes in the building sector are usually found in countries which have been able to define and/or achieve:

- The strict minimal energy performance requirements;
- Good level of absorption of innovative know-how (financing and technical);
- Effective Stakeholders and Policy-Makers EE awareness;
- Sufficient level of financial resources to support EE investments

Cont'd :
Basic Requirements to Meet and Preconditions:
At the Municipal and National levels:

- Clear understanding (decision makers) of the ESCO business model and EPC modality: *(i)pros and cons; (ii) investment cost and transaction cost;*
- Strong political will for supporting the approach: Mayor and Municipal Council: *a clear policy*;
- ESCO's investment project framework and contract are secured: *by decision of the municipal council*;

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Cont'd:
At the Municipal and National levels:

- EPC legal framework: National regulation: (*Romania: 2005 and Nat'l Action Plan 2008*)
- EE national law(s): *inclusive of EE target and priorities (Energy Efficiency Directive); and requirement for* ***adequate regulatory instruments (financing and EE verification).***
- *Empowerment of parties: municipal decision-makers approving authority in line with transparent procurement procedures and regulations*
- *proven technical capacity (Municipality) to manage and evaluate EE measures and savings verification*

Cont'd
Basic Requirements to Meet and Preconditions:
Outside the Municipal Framework

- ESCO: *Proven Solvability, and Financial Analysis and Technical Capacity of the private contracting party;*
- Financial Institution(s): *Internal Expertise of Local Banks to evaluate EE projects;*
- EE Project Financing: *availability and enabling conditions (grant and conditions)*

When the enabling conditions have been met, the next step is to implement the Business Model

Section 2

Best Practice: EPC EE Projects Implementation Stages and Constraints

EPC Implementation Best Practice

This requires a strong methodology based on the following 3 Stages brokendown in 9 Steps:

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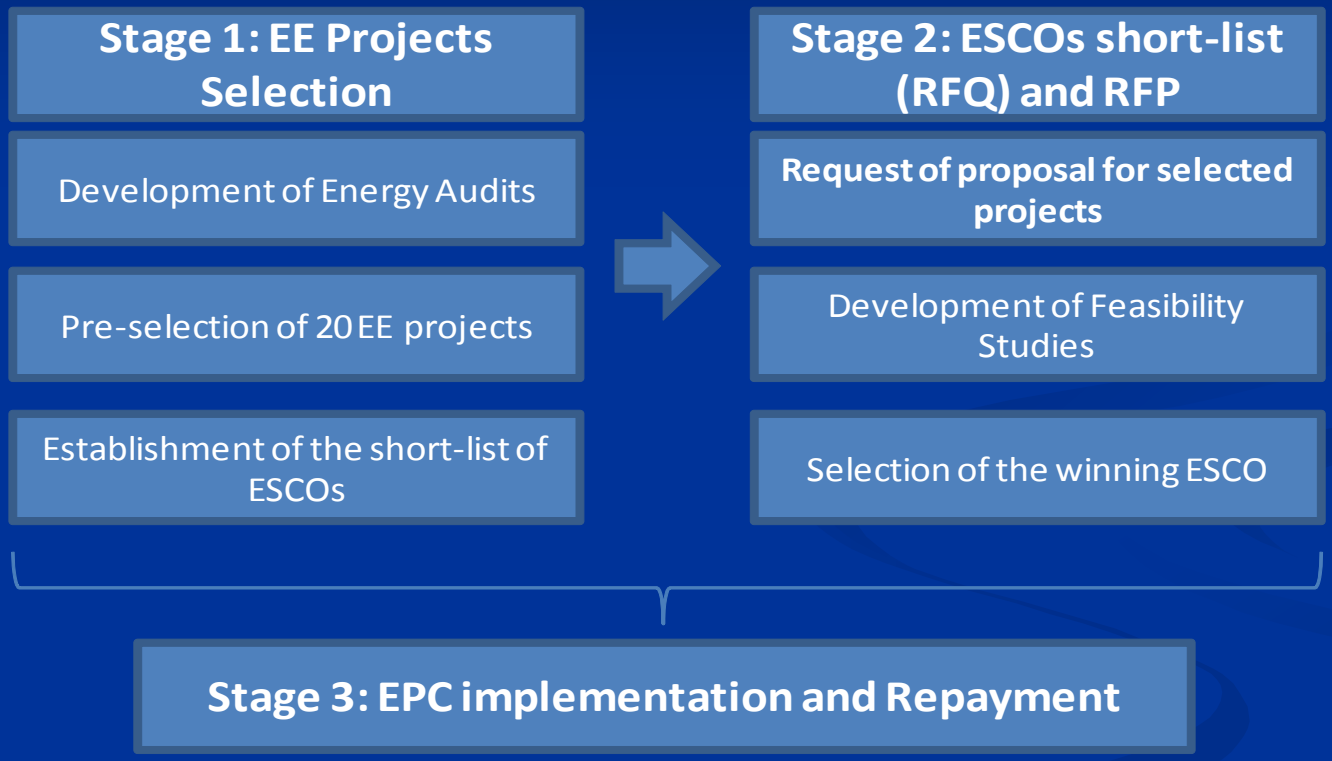
EPC Implementation Best Practice



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EPC Implementation Best Practice
Stage: Stage 1: EE Projects Selection

- **EE Measures identification**: *target EE measures;*
- **EE Projects Analysis:** *Energy Audits (EA): cost covered by the municipality: more sites than required (double) by the investment program*
- **EE Projects Selection:** *The municipality selects a minimum of* ***xx*** *EE projects.*
- ***ESCOs pre-qualification***: *Request for Qualification transparent procedure*

Cont'd
EPC Implementation Best Practice
Stage: Stage 2: RFP and Notification

- **RFP and Selection**: *by lots of 4 or 5 EE projects. Priority given to financial criteria (ESCOs that have the highest annual monetary savings). As a component of the RFP material, the draft EPC model must be made available by the municipality.*
- **Notification:** *The selected ESCO(s) is notified. Having been notified, the selected ESCO(s) will prepare the bankable documents to be submitted to the FI (project partner) and other financial partners (national EE fund in a position to provide a grant).*

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EPC Implementation Best Practice

Stage: Stage 3: EPC implementation and Repayment

- **Project Financing:** Project financing agreement is duly signed by the FI
- **The EPC Contract**: EE Projects implementation final approval by the Council and EPC is duly signed between ESCO and the municipality. The ESCO carries out the following tasks among others:
  - Equipment installations and EE improvements.
  - EE Project Commissioning (site-based) by municipality and the Equipment ownership is transferred to municipality (possible VAT issues).
  - Simplified M&V Protocol: One Year M&V (or 2 heating season) and quarterly reports.

Stage: Stage 3: EPC implementation and Repayment

- **<u>Investment repayment and M&E Phase</u>**: Stream of Payments to ESCO done by the municipality via the partner bank according to EPC payment schedule and agreed energy savings (flexible: degree-days).

  After the project commissioning, parties agree on a set quarterly payment by the municipality (directly to FI) based on the agreed savings during the first year and later on adjusted by taking into consideration variables mentioned in the EPC.

EPC Implementation in the Bldg Sector: MAJOR CONSTRAINTS

- Long payback : *can be mitigated by a tight selection of EE measures.*
- EE narrow margin: *trade-off among EE measures and no "side" financial interest.*
- Position of Risk (client) and Perception of Risk (technical and timeframe): *mitigated when the contract counterpart is the municipality and limited EE measures.*
- EE Project Scale: *can be mitigated by using the EE project bundling approach*
- Contractual complexity: *Cannot be easily mitigated when using the "standard EPC".*

The diagram below gives a simple overview of the 5 main contract areas and 5 project stakeholders actively involved) in addition to an ESCO.

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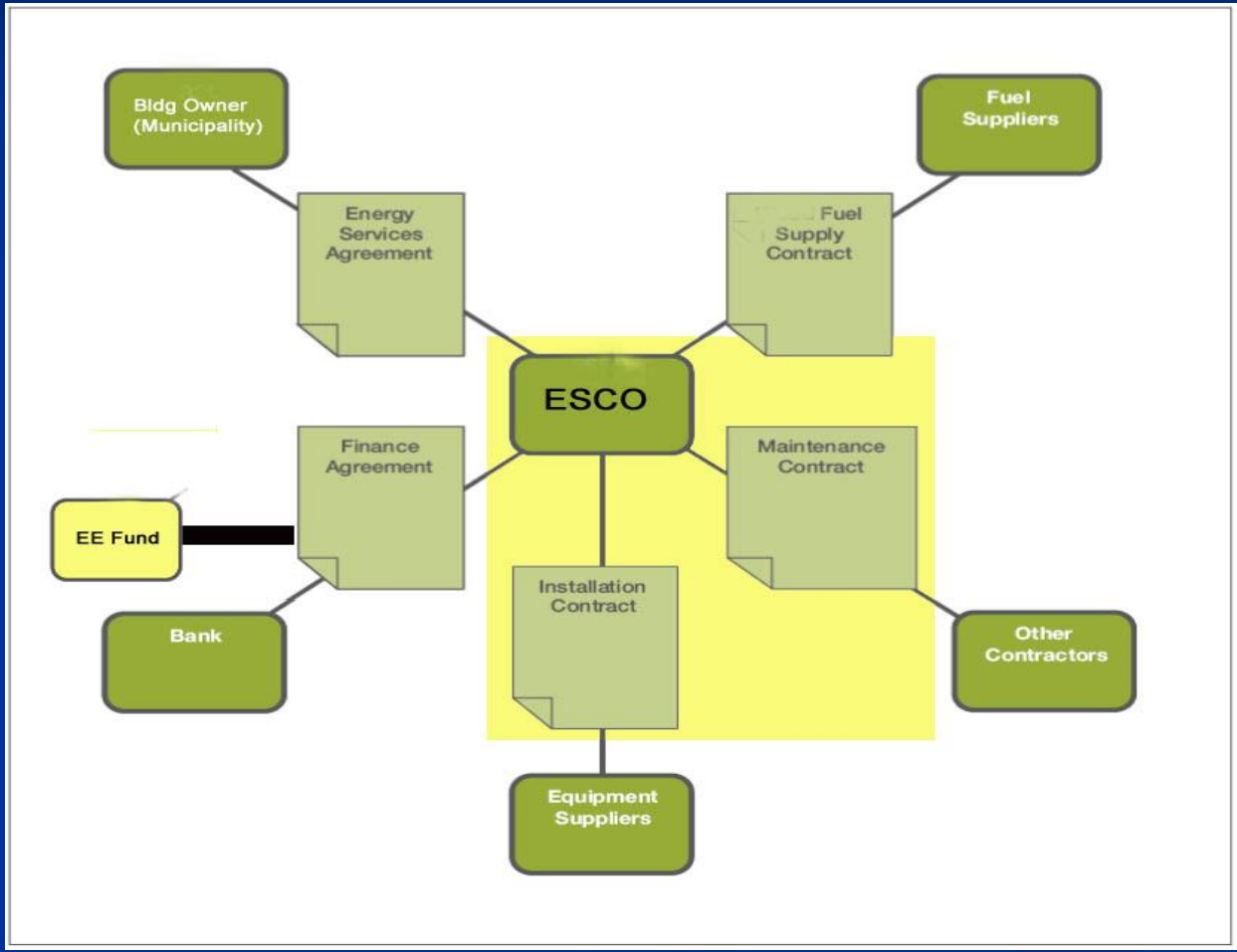
MAJOR CONSTRAINTS: Complexity



Section 3

Standard EPC Projects Financial Analysis

Key Questioning:

- Does the ESCO Best Practice Model work for Social Housing?

  The "Road Test" is the Financial Analysis of the EPC modality

Cont'd Standard EPC Projects Financial Analysis

Modeling 1: Project Specifications and Financial Features:

- Total investment (out of transaction cost): 200k$: doors-windows and heating systems
- Apartment building: 24 tenants
- **Grant: 0$**
- Payment schedule: yearly
- Commercial Loan: 7%
- M&E allover the Payback Period
- Energy Savings: 40%

Grant 0% and Yr Payment / Commercial Loan 7% / M&V over the PBP / 40% Energy Saving				
Annual Payment	**Modeling**	**Estimated PBP 3 to 10 years**		
Cost Breakdown Structure	3 years	4 years	5 years	10 years
Installation Costs Guaranteed Loan (100%):	3	4	5	10
Total Project Cost out of Grant	270 600 $	280 000 $	289 500 $	341 000 $
Total Transaction cost: financing and soft costs	70 600 $	80 000 $	89 500 $	141 000 $
%Transaction Cost on Project Cost including Grant	35%	40%	45%	71%
Annual Payment by Municipality (Target Yearly savings)	90 200 $	70 000 $	57 900 $	34 100 $
Typical Apartment-based Cost Analysis				
24 Tenants Apartment Bldg: Estimated Money Saving	90 200 $	70 000 $	57 900 $	34 100 $
Estimated ex-ante Energy Supply Cost	225 500 $	175 000 $	144 750 $	85 250 $
(assumption 40% energy saving)				
Apartment-based: ex-ante Annual energy supply Cost	9 396 $	7 292 $	6 031 $	3 552 $

Cont'd: Standard EPC Projects Financial Analysis

Modeling 2: Project Specifications and Financial Features:

- Total investment (out of transaction cost): 200k$: doors-windows and heating systems
- Apartment building: 24 tenants
- **Grant: 50% or 100k$**
- Payment schedule: yearly
- Commercial Loan: 7%
- M&E allover the Payback Period
- Energy Savings: 40%

Grant 50% and Yr Payment / Commercial Loan 7% / M&V over the PBP / 40% Energy Saving				
Annual Payment	**Modeling**	**Estimated PBP 3 to 6 years**		
	3 years	4 years	5 years	10 years
Installation Costs Guaranteed Loan (100%):	3	4	5	10
Total Project Cost out of grant	138 000 $	144 000 $	150 000 $	180 000 $
Total Transaction cost: financing and soft costs	38 000 $	44 000 $	50 000 $	80 000 $
%Transaction Cost on Project Cost including Grant	19%	22%	25%	40%
Annual Payment by Municipality (Target Yearly savings)	46 000 $	36 000 $	30 000 $	18 000 $
Typical Apartment-based Cost Analysis: baseline				
24 Tenants Apartment Bldg: Estimated Money Saving	46 000 $	36 000 $	30 000 $	18 000 $
Estimated ex-ante Energy Supply Cost	115 000 $	90 000 $	75 000 $	45 000 $
(assumption 40% energy saving)				
Apartment-based: ex-ante Annual energy supply Cost	4 792 $	3 750 $	3 125 $	1 875 $

First Conclusion Drawn

- The EPC "Classic" (heating systems, doors and windows, and perhaps walls insulation) needs strong financial support (grants and soft financial conditions in order to be realized).
- Even with 50% grant the EPC "Classic" is perhaps not affordable in Social Housing

  Let's consider some other options through the NEW EPC Models

Section 5

Need for a New EPC Model in Social Housing

What should be the NEW EPC Model ?

The aim of the New EPC modality is to scale-down the Transaction Cost and the Financing Cost, and to open up EPC to more target groups by meeting their specific requirements, such as Social Housing.

- Over the last 5 years many Research Institutions and Forums have performed research and advocacy on topics related to a new EPC approach and modality in line with the ESCO Business Model.

  e.g.: European PPP Expertise Center (Think Tank in Luxembourg); European Energy Service Initiative (EESI:); EU ESCO Association in Brussels; Financing Energy Refurbishment for Social Housing (FRESH Project Think Tank in France)

"EPC plus" – EPC with comprehensive refurbishment

"EPC plus" extends the service of the ESCO to comprehensive structural measures on the building shell like insulation or window replacement. These services are usually not part of the classical EPC because of overly long payback periods. The contractual arrangement contains special financing conditions. Usually the building owner has to pay a share of the investment through a grant or via a combination of EPC and subsidy programmes. EPC plus is very suitable in buildings with high needs for renovation (as is typically the case in the Social Housing sector). The combination of both structural renovation and energetic optimisation leads to high energy savings up to 50%.

"Integrated Energy Contracting (IEC)"

The Integrated Energy Contracting Model combines the objectives of reduction of energy demand through the implementation of energy efficiency measures focussing on an efficient energy supply (boiler) and distribution (pipes and radiators) in the building. The ESCO take over implementation and operation of the energy service package in accordance with the IEC. In return, the ESCO will get remuneration for the useful energy delivered, depending on the actual consumption (before and after based on the cost per gigajoule delivered) as well as a flat rate service remuneration for operation & maintenance, including quality assurance. IEC is a combination of elements of ESC (Energy Service Contract) and EPC "classic".

EPC light" – energy management with guaranteed elements

With EPC light energy savings are mainly achieved through organisational measures with low or no investments in technical equipment. The ESCO acts as external energy manager taking over the responsibility to operate and optimise the energy related installations (heat boilers, building automation, lighting control). Since payback of high investments on hardware is not necessary in EPC light, the contract duration is short (2-3 years). In this model the energy saving is still guaranteed by the ESCO. This model is very interesting for customers with low capacities or no resources for sustainable energy management.

New Model Financial Modeling

Modeling 3: Project Specifications and Financial Features:

- Total investment (out of transaction cost): 200k$: doors-windows and heating systems
- Apartment building: 24 tenants
- **Grant: 0%**
- Payment schedule: Monthly
- Commercial Soft Loan: 3.5%
- No need for M&E
- Energy Savings: 40%

NEW EPC Model: Investment 200k$				
Grant 0% and Yr Payment / Soft Loan 3.5% / No M&V / 40% Energy Saving / 0% LGF cost				
Monthly Payment	Modeling	Estimated PBP 3 to 10 years		
Cost Breakdown Structure	3 years	4 years	5 years	10 years
Installation Costs Guaranteed Loan (100%):	3	4	5	10
Total Project Cost out of Grant	244 800 $	252 000 $	252 000 $	276 000 $
Total Transaction cost: financing and soft costs	44 800 $	52 000 $	52 000 $	76 000 $
%Transaction Cost on Project Cost including Grant	22%	26%	26%	38%
Annual Payment by Municipality (Target Yearly savings)	81 600 $	63 000 $	50 400 $	27 600 $
Typical Apartment-based Cost Analysis				
24 Tenants Apartment Bldg: Estimated Money Saving	81 600 $	63 000 $	50 400 $	27 600 $
Estimated ex-ante Energy Supply Cost (assumption 40% energy saving)	204 000 $	157 500 $	126 000 $	69 000 $
Apartment-based: ex-ante Annual energy supply Cost	8 500 $	6 563 $	5 250 $	2 875 $

New Model Financial Modeling

Modeling 4: Project Specifications and Financial Features:

- Total investment (out of transaction cost): 200k$: doors-windows and heating systems
- Apartment building: 24 tenants
- **Grant: 50%**
- Payment schedule: Monthly
- Commercial Soft Loan: 3.5%
- No need for M&E
- Energy Savings: 40%

NEW EPC Model: Investment 200k$				
Grant 50% and Yr Payment / Soft Loan 3.5% / No M&V / 40% Energy Saving / 0% LGF cost				
Monthly Payment	**Modeling**	**Estimated PBP 3 to 10 years**		
Cost Breakdown Structure	3 years	4 years	5 years	10 years
Installation Costs Guaranteed Loan (100%):	3	4	5	10
Total Project Cost out of Grant	122 400 $	123 600 $	126 000 $	136 800 $
Total Transaction cost: financing and soft costs	22 400 $	23 600 $	26 000 $	36 800 $
%Transaction Cost on Project Cost including Grant	11%	12%	13%	18%
Annual Payment by Municipality (Target Yearly savings)	40 800 $	30 900 $	25 200 $	13 680 $
Typical Apartment-based Cost Analysis				
24 Tenants Apartment Bldg: Estimated Money Saving	40 800 $	30 900 $	25 200 $	13 680 $
Estimated ex-ante Energy Supply Cost (assumption 40% energy saving)	102 000 $	77 250 $	63 000 $	34 200 $
Apartment-based: ex-ante Annual energy supply Cost	4 250 $	3 219 $	2 625 $	1 425 $

Second Conclusion Drawn

- Even by using the New model and a drstic reduction of the transaction cost, soft loan and no M&E, the EPC is still not affordable in Social Housing.
- The alternate way is to scale down the EE Investment and focus on the key priority, that is to say the heating systems and some other low cost EE improments

New Model Financial Modeling
Low Cost Investment

Modeling 5: Project Specifications and Financial Features:

- Total investment (out of transaction cost): **50k$**: (heating systems)
- Apartment building: 24 tenants
- **Grant: 50%**
- Payment schedule: Monthly
- Commercial Soft Loan: 3.5%
- No need for M&E
- Energy Savings: **30%**

NEW EPC Model: Investment 50 k$: Heating Systems only				
Grant 50% and Yr Payment / Soft Loan 3.5% / No M&V / 30% Energy Saving / 0% LGF cost				
Monthly Payment	Modeling	Estimated PBP 3 to 10 years		
Cost Breakdown Structure	3 years	4 years	5 years	10 years
Installation Costs Guaranteed Loan (100%):	3	4	5	10
Total Project Cost out of Grant	30 030 $	30 630 $	30 750 $	33 750 $
Total Transaction cost: financing and soft costs	5 030 $	5 630 $	5 750 $	8 750 $
%Transaction Cost on Project Cost including Grant	10%	11%	12%	18%
Annual Payment by Municipality (Target Yearly savings)	10 010 $	7 658 $	6 150 $	3 375 $
Typical Apartment-based Cost Analysis				
24 Tenants Apartment Bldg: Estimated Money Saving	10 010 $	7 658 $	6 150 $	3 375 $
Estimated ex-ante Energy Supply Cost (assumption 40% energy saving)	33 333 $	25 499 $	20 480 $	11 239 $
Apartment-based: ex-ante Annual energy supply Cost	1 389 $	1 062 $	853 $	468 $

Conclusion:

EPC modality supported by the ESCO business model is appropriate in Social Housing at the following conditions

- Low Investment
- Low Transaction Cost
- Significant Grant
- Payback period shorter than 5 years

CONCLUSION - FINANCIAL ANALYSIS : EPC project in Social Housing	
New EPC Model	Standing Payments based on the FS
Expected Savings	30%
Investment per Aparment Bldg	50 000 $
Grant	50%
Soft Loan	3.5%
LGF (100%) Cost	0%
No M&E	Payments in accordance with the FS
Monthly Payments	Standing Payments
Payback Period Note #1)	5 years

Note 1:	Can be 10 years if the ESCO is a Municipal ESCO
	In such a situation the investment can be 150k$

Section 6

Thank you all

Your comments are welcome

……Discussion……