
Greening Energy Market and Finance

# RECs case study Group 1b

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Project website: http://grenfin.eu

With the support of the Erasmus+ Programme of the European Union

# Introduction: Why Egypt?

- Belongs to the global sun-belt → advantageous position with solar energy
- Renewables could cost-effectively provide up to a quarter of Egypt's total final energy supply in 2030(IRENA,2018)
- PV 22 percent objective by 2022 : The private sector is expected to deliver most of this capacity
- Rapidly expanding Solar Panel industry: Benban Solar Park (4th largest solar power plant in the world)



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# Our case


- Private School located in new residential compound (MILS in New Cairo, rooftop area 3050 $m^2$)
- 20 km from the capital
- New residential communities
- New and modern design of houses (unique design in most of cases)
- Solid infrastructure that promotes sustainable solutions
- New life style that enable residents adapt quickly to smart solutions
- Complete set of facilities: shopping malls, cinemas, supermarkets, sports areas, etc. (→ many potential consumers)

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# Potential consumers


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# Case 1: base prices

1 medium industrial consumer: 100 MWh/year

20 consumers that consume the remaining capacity

(65 MWh in the first year)

| Tariffs | €/MWh | goal €/MWh |
|---|---|---|
| Main Prosumer | 150 | 140 |
| Small Consumer | 200 | 100 |
| Medium or Industrial Cons | 130 | 120 |
| | | |
| **Costs for Investor** | | |
| PV Plant | 650 | per kW installed |
| Fee to grid manager | 40 | per MWh |
| Fee to system manager | 24000 | per year |
| Fee to system O&M&I | 24000 | per year |

NPV (10y) € 150,749.11

IRR (20y) 21%

Savings:

Prosumer €6,607/yr

Small Consumer €300/yr

Medium Consumer €1000/yr

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# Case 2: Egypt prices

| Tariffs | €/MWh | goal €/MWh |
|---|---|---|
| Main Prosumer | 46.5 | 43.4 |
| Small Consumer | 62 | 31 |
| Medium or Industrial Cons | 40.3 | 37.2 |
| | | |
| **Costs for Investor** | | |
| PV Plant | 820 | per kW installed |
| Fee to grid manager | 12.4 | per MWh |
| Fee to system manager | 6000 | per year |
| Fee to system O&M&I | 6000 | per year |

NPV (10y): -€ 212,099.48

the issue: 820 € per KW installed

needed price for positive NPV: 355€/KW → 465€/KW subsidy

even *without savings for any consumer*, 385€/KW subsidy needed

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