Greening Energy Market and Finance

REC Implementation Design – Case Study in Italy

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Project website: http://grenfin.eu

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

Assumptions

- Medium-sized consumer: Bar 100 MWh per year
- 20 small-sized consumers: approximately 5 MWh per year per residence
- The prosumer consumes 80% of the total production and 20% is distributed.
- Implementing PV in Italy implies on average a reduction of 0,36 Kg of CO_2 per KWh produced

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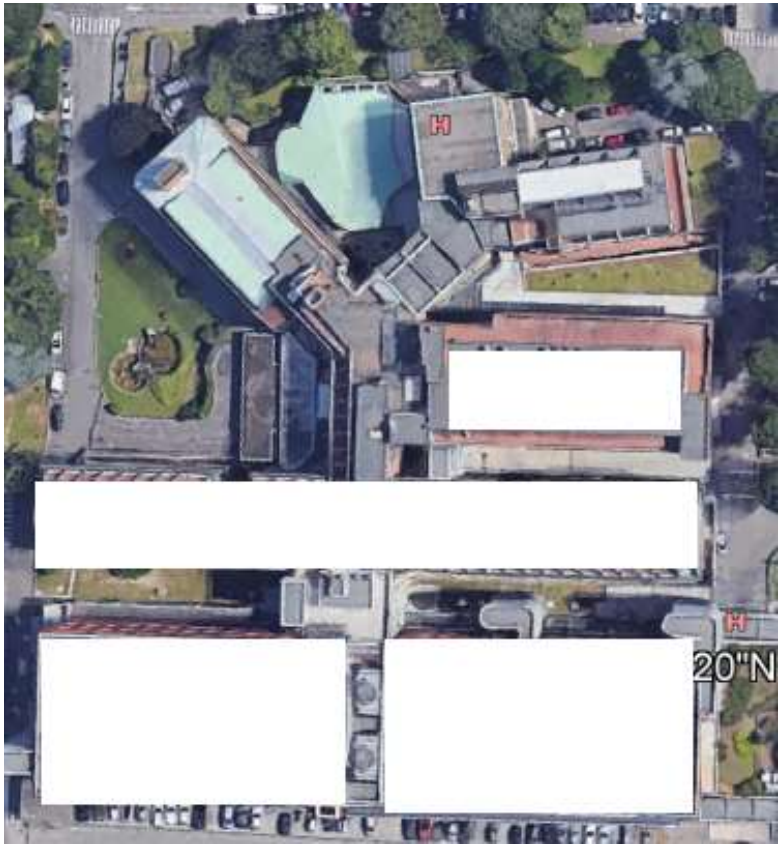
1° scenario



Policlinico s. Orsola Malpighi

Via Giuseppe Massarenti, 9,
40138 Bologna BO, Italy.

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1° scenario

- Area: 5200 m^2
- Azimuth: 200 degrees north, 20 degrees south
- Power of the plant: 780 kW
- Initial investment: 507000 (crystalline silicon) 585000 (monocrystalline)

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1° scenario: results

Silicon crystalline technology

Total NPV 10 years	Hospital's total savings NVP 20 years	Msc's total savings NVP 20 years	Residentials' total savings NVP 20 years
125 091,78 €	105 282,74 €	13 590,33 €	127 303,58 €
IRR 20 years			
16,45%			

CO2 reduction 10 years (tonnes)	Average CO2 reduction per year over 20 years (tonnes)
3524,79	347,26

Monocrystalline technology

Total NPV 10 years	Hospital's total savings NVP 20 years	Msc's total savings NVP 20 years	Residentials' total savings NVP 20 years
95 937,98 €	110 179,61 €	13 590,33 €	139 545,76 €
IRR 20 years			
14,86%			

CO2 reduction 10 years (tonnes)	Average CO2 reduction per year over 20 years (tonnes)
3688,73	363,41

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2° scenario

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2° scenario

- Area: 7000 m^2
- Azimuth: 200 degrees north, 20 degrees south
- Power of the plant: 1050 kW
- Initial investment: 682500 (crystalline silicon) 787500 (monocrystalline)

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2° scenario: results

Silicon crystalline technology

Total NPV 10 years	Hospital's total savings NVP 20 years	Msc's total savings NVP 20 years	Residentials' total savings NVP 20 years
297 543,18 €	141 726,76 €	13 590,33 €	218 413,64 €
IRR 20 years			
20,16%			

CO2 reduction 10 years (tonnes)	Average CO2 reduction per year over 20 years (tonnes)
4744,90	467,47

Monocrystalline technology

Total NPV 10 years	Hospital's total savings NVP 20 years	Msc's total savings NVP 20 years	Residentials' total savings NVP 20 years
258 297,68 €	148 318,70 €	13 590,33 €	234 893,50 €
IRR 20 years			
18,04%			

CO2 reduction 10 years (tonnes)	Average CO2 reduction per year over 20 years (tonnes)
4965,60	489,21

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Final Considerations

- The project overall has a positive environmental impact: significant reduction in the emission of CO2.
- It has a positive social impact: creation of new jobs, reduction in energy price for the prosumer/consumers.
- The project is financially viable in every scenario presented: 10 year NPV and 20 Year IRR goals are satisfied.
- The economic performance can even be increased if we take into account the possible subsidies which are common throughout Europe.

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Proje

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