2nd PV Financing Workshop - "*How to develop PV in Europe: Implementation Guidelines – procedures and examples*"
Brussels – October, 18th 2016

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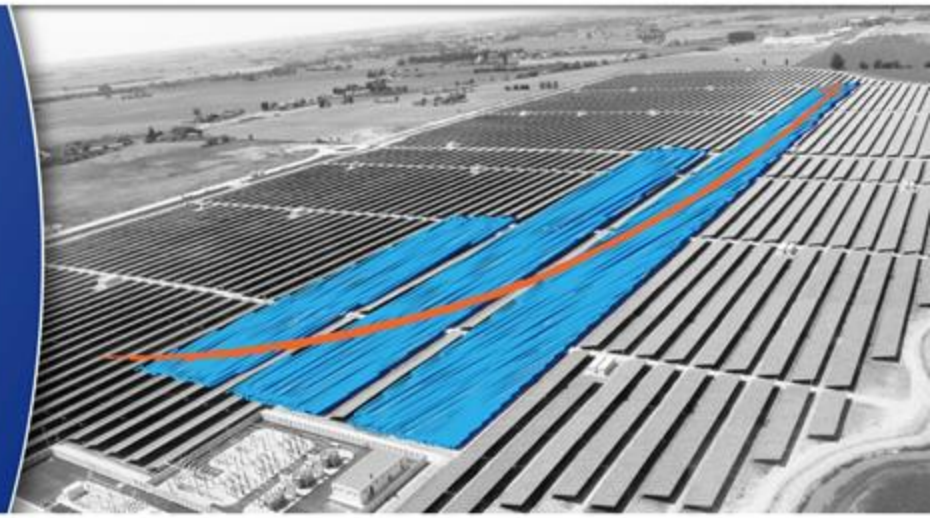
Power Purchase Agreement for PV in Italy: Opportunities and barriers



Riccardo Battisti , Ambiente Italia

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 646554

- Private consultancy company in the energy and environment field
- 20 years of activity
- More than 1,500 local, national and international projects
- 30 experts and 4 offices

- Role in PV Financing: National Implementation Partner for Italy

CONCLUSIONS

- PPA is a promising business model in Italy…
- …Especially for some sectors (public buildings, large industrial or commercial plants)

- The Italian PV market is composed mainly by small residential plant (no PPAs)…why?
- New model, not very well known by the banks
- So they decide on the basis of the investor financial solidity…
- …Or combining PV with lower PBT energy efficiency measures
- Risks due to the future consumption level of the user

PPA LEGISLATION IN ITALY

PPA LEGISLATION

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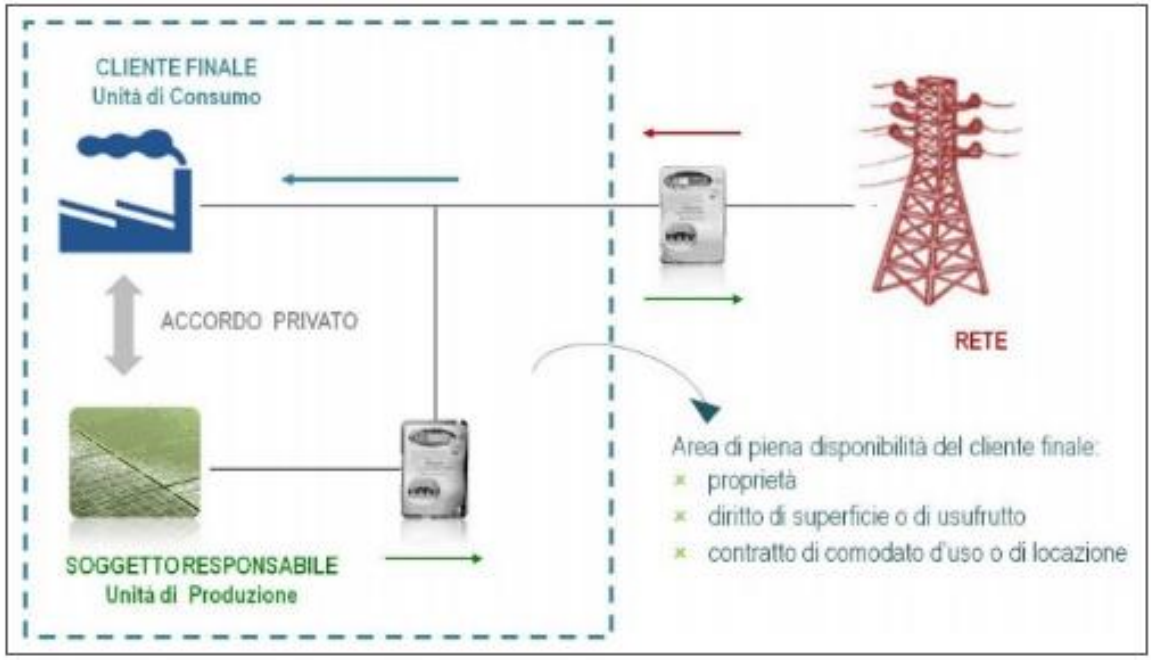
- PPA = SEU (Sistemi Efficienti di Utenza)
- Up to 20 MW
- Also with more than one production plant
- Managed by the same producer
- Using renewable energy (or high efficiency cogeneration)



PPA LEGISLATION

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- System costs are paid on only 5% of self-consumed share
- That is true only for the variable part of such costs (risk of shifting towards the fixed part)
- An exception is the small PV plant (lower than 20 kW_p) with a "scambio sul posto" scheme, for which variable system costs are not applied at all to the self-consumed quota

PPA LEGISLATION

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- **Main barriers:**
  - The PV plant should be installed in an area owned (or managed) by the customer
  - Only one final user, thus excluding many market segments (commercial centres, airports, industrial parks, office buildings and multi-family houses)
  - Given the current (and, probably, also future) remuneration levels from “scambio sul posto” and from selling PV electricity to the grid, it relies on a high self-consumption rate

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PROFITABILITY ANALYSIS

CASH FLOWS

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- Out:
  - Annual cost of debt financing (if any)
  - O&M costs
  - Insurance costs
- In:
  - Selling price of the kWh in self-consumption (10÷20% savings)
  - Selling electricity to the grid (remuneration from “scambio sul posto” if the plant size allows this possibility)
  - Asset amortisation (for instance 4% in 25 years)
  - Depending on the reform of the electricity market, additional revenues from grid services given by the PV plant

Residential sector
Single-family houses

- PPA (SEU) not used
  - Low investment costs (2,000 €/kW_p)
  - 50% tax reduction incentive
- 40% self-consumption…or more

Residential sector
Multi-family houses

- Plant cost: 1,800 €/kW_p
- Plant size: 20 kW_p
- Yield: 1,275 kWh/kW_p (installation site: Central Italy)
- Self-consumption rate: 30% (only for common loads!)
- Not easy to increase it
- Grid electricity price: 0.22 €/kWh
- PPA price: 0.17 €/kWh (23% savings)
- Remuneration by "scambio sul posto": 0.10 €/kWh

- PBT = 13 years
- IRR = 8%

Office buildings and commercial centres

- Different users sharing the same building: Same limitations as the previous case
- Single user: SEU for self-consumption is possible
- Profitability depends then on the self-consumption rate

Public buildings (e.g. schools)

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- Positive points:
  - Attractiveness for the Public Body managing the building
  - Reliability of the consumer

- PBT = 13 years
- IRR = 8%

- With a lower self-consumption (for instance 30% instead of 60% due to summer closing):
  - PBT = 15 years
  - IRR = 6.5%

Industrial

- Not parks with multiple users

- Plant cost: 1,000 €/kW_p
- Plant size: 1,000 kW_p
- Self-consumption rate: 90%
- PPA price: 0.14 €/kWh (18% savings compared to 0,17 grid electricity)
- No remuneration by “scambio sul posto”
- 70% debt financing with a 7 years loan (interest rate: 7%)

- PBT = 8 years (low…but also for the decision-maker time horizon?)
- IRR = 17%

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EXAMPLES

L'OREAL INDUSTRIAL PLANT

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- 3 MW_p PV plant
- Expected yield: 3,600 MWh/year
- Specific yield: 1,200 kWh/year per kW_p
- Self-consumption rate: 100%
- PV output: 30% of the total demand

Source: Qualenergia.it

L'OREAL INDUSTRIAL PLANT

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- Investment: 3,000,000 € (about 1,000 €/kW_p)
- Balance sheet finance, no debt financing

- 20 years contract, including a "take or pay" provision
- 10% savings with respect to grid price
- Investor also broker for the additional energy demand of the factory

Source: Enersol

ARESE SHOPPING CENTRE

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- 50% of the common loads covered by PV (1.4 MW_p)
- Lighting and space cooling through heat pumps
- Also 2 cogeneration units

Source: Qualenergia.it

ARESE SHOPPING CENTRE

- Expected yield: 1,500 MWh/year
- Self-consumption rate: almost 100%

Source: Qualenergia.it

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WHAT COULD HAPPEN AFTER?

WHAT COULD HAPPEN AFTER?

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- PPAs for multiple users…almost no hope
- Reform of the electricity market (under consultation): PV plants could get revenues from additional grid services (interruption of the energy flow from and to the grid, voltage management through storage, etc.)
- Shifting system costs to the fixed quota of the electricity bill to the variable one

WHAT COULD HAPPEN AFTER?

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- Reform of the bill for non-domestic customer should be ready by the end of 2016
- Non-domestic customers: 75% of the total consumption

- 5 scenarios under consultation: 3 of them drastically negative for PV (estimated cut of 4.5 billion investments until 2030)
- The Energy Authority seems to be oriented towards the 2 «positive» ones (estimated market decrease: 7÷12%)

QUESTIONS…FOR YOU

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- How to handle the project risks:
  - We (and banks also…) need best practices of careful risk assessment for such projects: Are transparent data available?
  - «Take or pay» provision: Can it help or should we think about PV plants in a more “flexible” way, a “removable” asset easily transferable to a different user if the energy consumption stops?

- Do you have any answers…
- …Or, of course, additional questions for me?

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Thank you for your attention!

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Contacts:
Email: riccardo.battisti@ambienteitalia.it
Website: www.ambienteitalia.it
Linkedin and Facebook: Ambiente Italia S.r.l.
Twitter: @AI_AIP