

**Developing successful solar
PV projects in Italy**

Andrea Ferrato

Country Manager Italy at ATA
Renewables





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Country Manager Italy.

9 years' experience in the Solar industry.

Focused on Technical Due Diligence services in Italy, UK and Australia.

ATA RENEWABLES

We supply independent technical services in Renewable Energy Sources (RES) with highest quality advisory, engineering, construction supervision for PV Solar, CSP and Wind Power Plants.

- Advisory Services (TDD, LTA, Tests on site, Performance analysis, EYA)
- Engineering Services (OEs, Design Review, Construction monitoring)

Global success with Local expertise

50

countries

70

expert engineers

5

offices

80 GW

worldwide experience

500

RES projects
successfully financed

renewables

PNIEC

The Integrated National Energy and Climate Plan (PNIEC) is the energy transition manifesto for next decade.

The Plan sets a new trajectory that must be targeted with new RES projects. Target for solar is 30 GW to be built in 10 years.

+ 1.5 GW / year

OBSTACLES

- Authorization Procedures
PV Procedures on average of 18 months
- Price of energy (COVID-19)



Mitigate risks and optimize LCOE during Agricultural PV Project Development

- Site Selection
- Grid Connection
- Tech & Design

SITE SELECTION

- Environmental Constraints Analysis
 - Unesco Sites
 - Culturally relevant buildings
 - Areas of particular public interest
 - Coastal areas, lakes, rivers, waterways, woods, caves and archaeological sites

- Terrain Evaluation
 - Presence of obstacles
 - Buried cables / gas pipelines
 - Topography
 - Orography (Far Shadings)
 - Soil preliminary assessment



SITE SELECTION

Topography

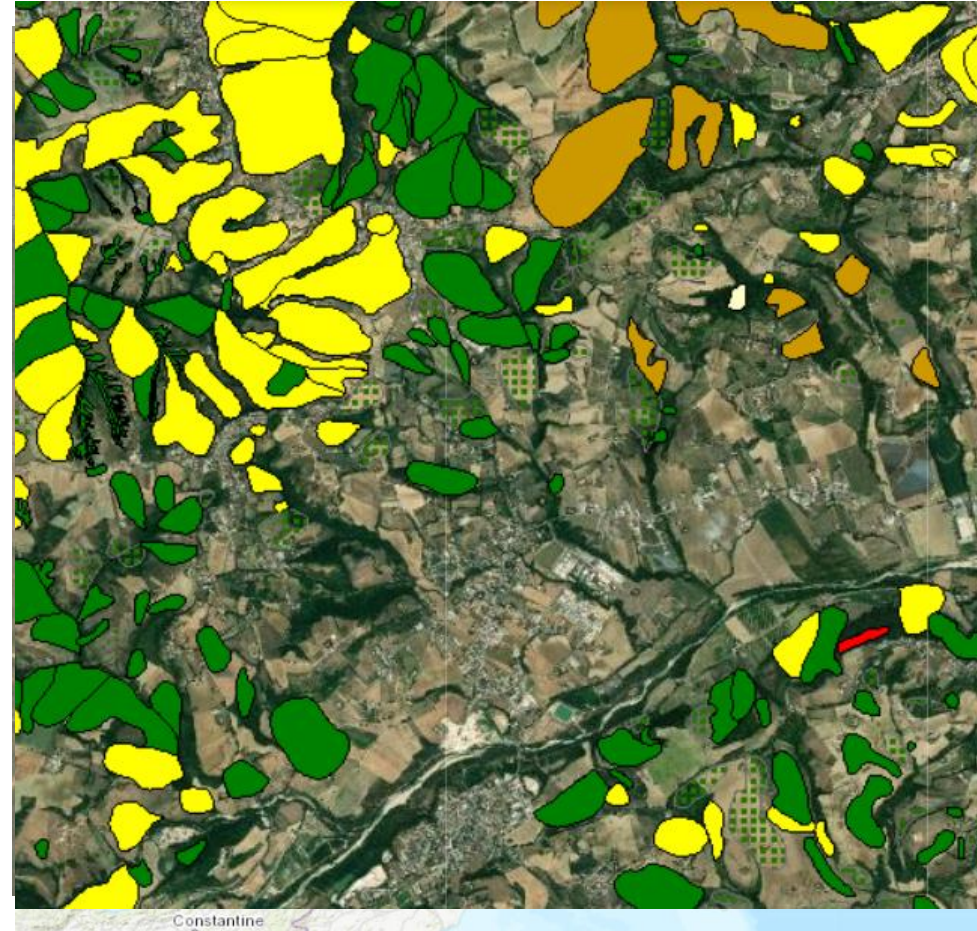
- Slope Analysis (Italy's mainland is hilly)
- 15% in N-S, 30% W-E: Tracker's manufacturer limits

Orography

- Horizon Profile
- Potential Losses due to lower GHI

Soil Assessment

- Hydrogeological risks
- ISPRA Inventory Map



Identifying optimal solution for the PV Plant interconnection

TERNA – TSO (transmission system) operator

- $P_{nom} > 10$ MW (high voltage)
- HV/MV Transformer Station

Distribution System Operators

- $P_{nom} < 10$ MW (medium voltage)



Hybrid solution – Group of Plant

- Italian Grid Code offers another solution
- Split Project (higher than 10MW) in a number of Sub-plants (with capacity lower than 10MW)

DESIGN & TECHNOLOGY

- Different Scenarios to be assessed
- Estimates the BoM for each scenario
- Run PV Syst simulation
- Identify the optimal Design solution

Item	Sceneries Assessment	Comments
Technology Selection		
Inverters Selection	String or Central	Central Inverters requires higher numbers of Buildings (Substations) to be approved by the Planning Authority.
	AC Power Level	with Higher AC Power smaller number of inverters but longer AC cabling
Structures Selection	Technology: Fix or single axis structure.	Using single axis structure the Energy Yield will increase around 15% more than Fix structure.
	Tracker length	In irregular PV areas, reducing the tracker length will increase and therefore the energy yield in a given site area.
Design Parameters		
Bifacial	Albedo	Albedo level: Bifacial gain vs Bifacial technology extra-cost
Optimum Ratio DC/AC	from 1 up to 1,5	Different DC/AC ratios should be done to reduce clipping losses and increase energy yield minimizing the inverter CAPEX.