



LARGE SOLAR PROJECTS: CHALLENGES & LESSONS LEARNED

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Agenda

ENGIE 01

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ENGIE Group – Leading the Energy Transition



170.000
Employees



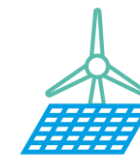
57.9 bn €
Turnover



Active in > **50**
countries



11-12 bn €
Investments
2019-2021



+ 4 GW
Renewable power
/year as from 2022

Nr. 1

independent
power producer
in the world

Nr. 1

Producer of
onshore wind
and solar in
France

Nr. 1

Cooling
networks in
the world

Nr. 4

Heating
networks in
the world

Nr. 1

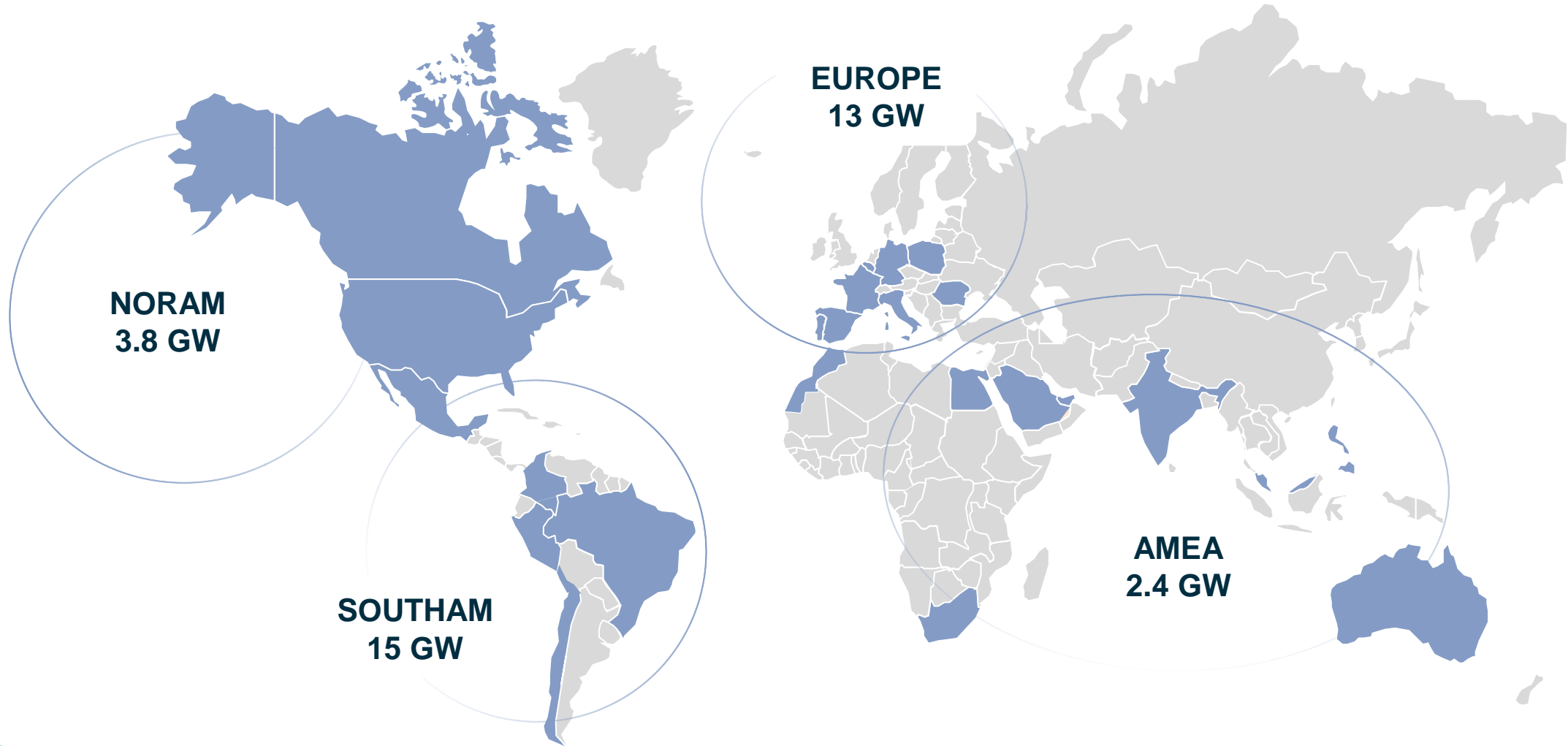
Technical
services in
Europe

Nr. 2

Charging points
for e-mobility
in the world

Renewable Global Business Unit - Installed Capacities

As of Dec. 31st, 2021



Targets Supported by a Significant Pipeline

Capacity evolution with 2025 and 2030 targets

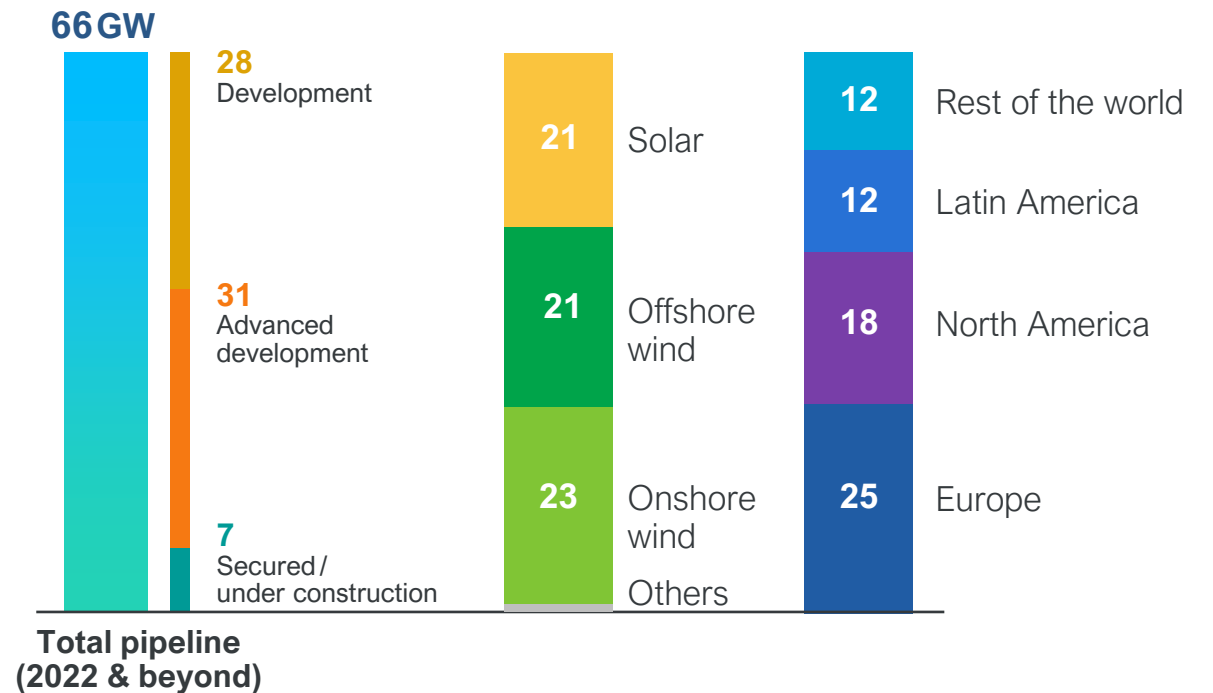
34+ GW 2021
↓
50 GW 2025 → **80 GW** 2030 (GW@100%)
up 4 GW on average over 2022 to 2025

2022 additional capacity
Secured / under construction

2023-25
Covered with strong cover ratio

2.8x cover ratio
for **~12 GW** additional capacity

Capacity targets well covered by pipeline¹ (GW at 100%, 31/12/2021)



¹ Split provided for indicative purpose. It might evolve depending on market evolution and in line with our ambition to get the higher returns.

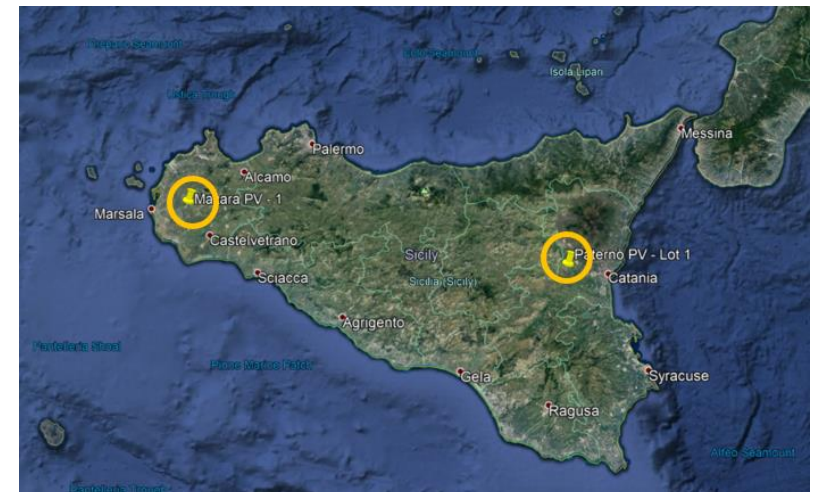
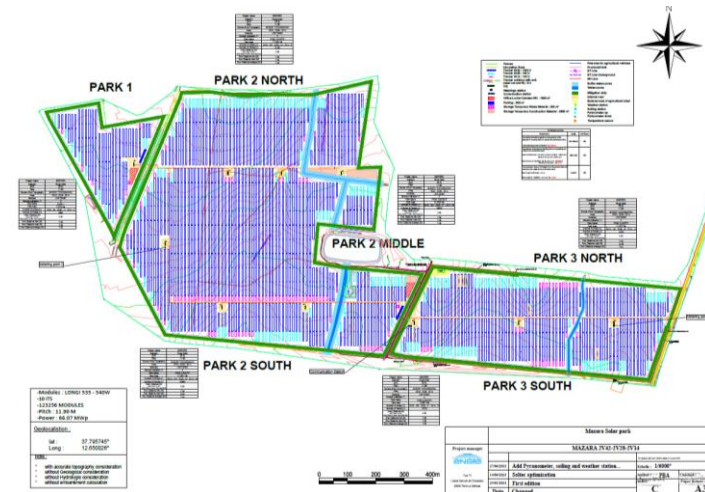
Case Study: Project Overview

Overview

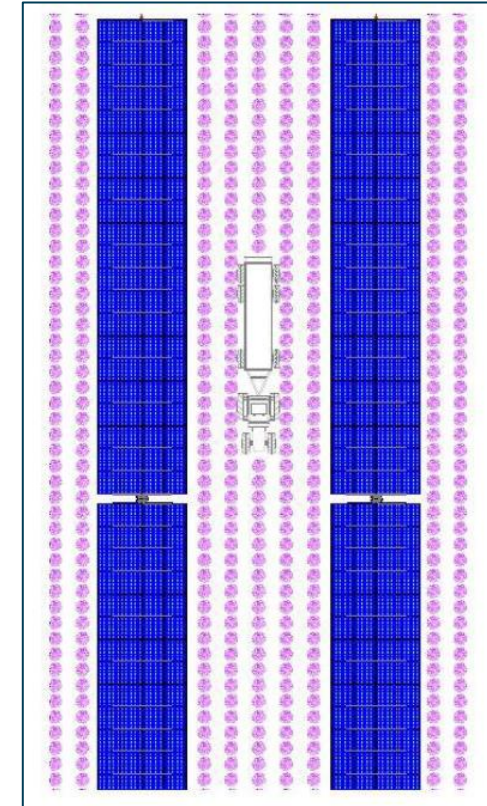
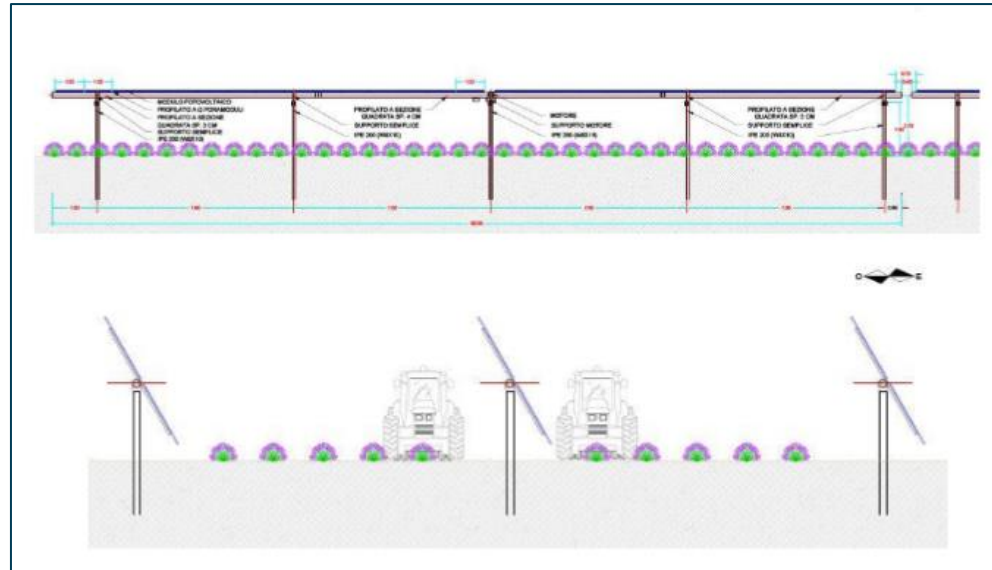
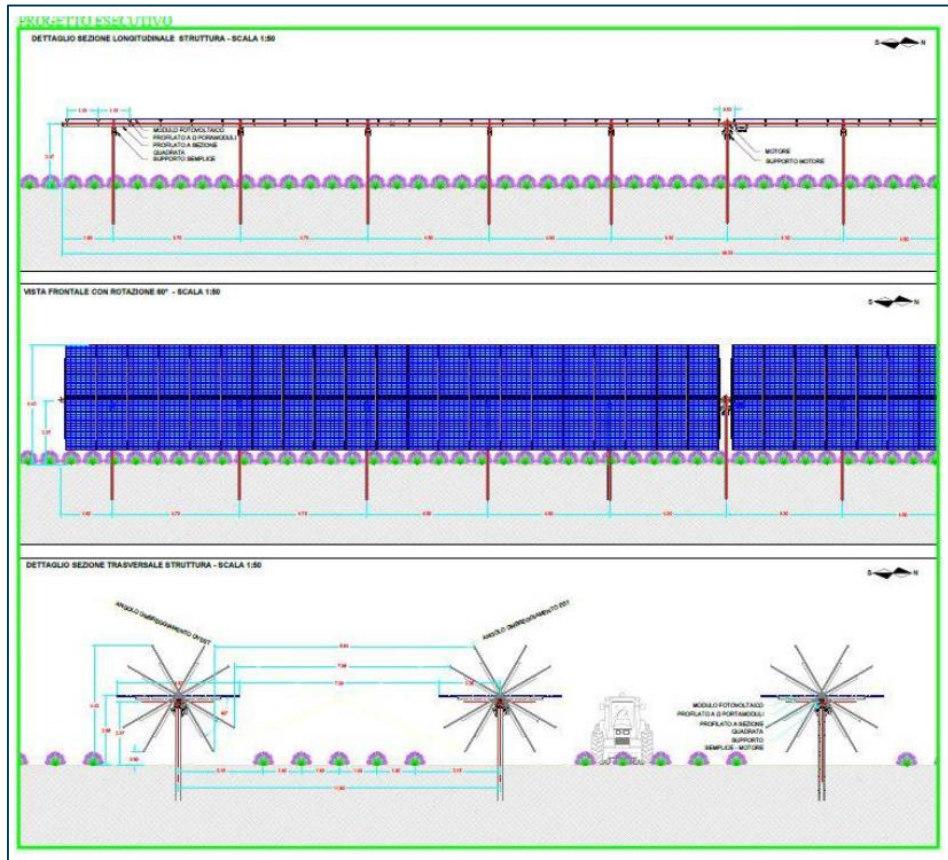
- Projects: 66 MW Mazara & 38.7 MW Paterno
- Location: Sicily, Italy
- PV Module Type: Monocrystalline Bifacial
- Structure Type: Single-Axis Tracker

Highlights

- Corporate PPA with Amazon
- Island location
- Paterno's proximity to volcano
- Mazara is adjacent to wind farm owned by ENGIE
- Agri-PV project



Large-scale Implementation of Agri-Photovoltaics



Progress of the Sites

March 2021

MAZARA



October 2021



March 2022



PATERNO



Challenges & Lessons Learned

CHALLENGES

Scarcity of land and priority to agriculture as a challenge for land securing

COVID – working & travel restrictions

Force majeure in China, shipping congestion due to Suez Canal blockage

Project delay affected the financing schedule

Extreme weather events in Sicilia in October 2021

Undetected subsurface conditions at Mazara

Key players located in Italia, France, Spain and China

Geographical uniqueness of projects located on an island

Proximity to volcano resulted in difficult pre-assessment of soiling impacts

Increased awareness of H&S issues on constructions sites in general

Delay of the planned COD postponed the offtake start

SUCCESSES

Show case for Agri-PV – co-location of PV besides plant cultivation

Project team worked overtime and virtually to clarify all topics

Adjustment to installation method to recover time lost due to shipment

Negotiations with the lenders to postpone project financing

Adjustment to project schedule and site personnel to recuperate lost time

Installation method switched from direct ramming to pre-drilling once detected

Attention to details required to account for time zone and cultural differences

Anticipated long lead times in schedule due to lack of connection to mainland

Pilot project with dedicated special workforce and white paper under way

Stronger focus of H&S with dedicated workshops held in March 2022

Internal PPA structuring capability allowed direct negotiation and resolution



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