

## Former Landfill of Treviso

**Country: ITALY**  
**Region: VENETO**  
**City: Treviso**  
**site typology: landfill**

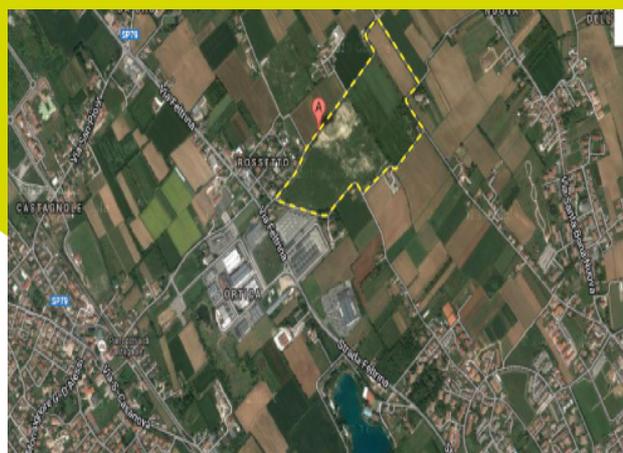
### 1. Foreword

The Project aims at installing a photovoltaic plant on site with an energy output of about 6MW. The plant will be designed and used as an electric energy condominium, divided in lots directly purchasable by enterprises, and private buyers for self consumption. It will be possible for municipalities with a population less than 20,000 inhabitants interested in the direct production of green energy. At the moment the entire surface of the former landfill is abandoned and left uncultivated. In 2009, the Municipal Administration commissioned a study for the redevelopment of the area, which included the construction of a photovoltaic park and in an area accessible to the general public with the aim of creating a true citizen of aggregation site social. Due to administrative obstacles a first project was discarded. Nevertheless estimates provided by the project developed in 2009 (solar power only), foreseen a total installed photovoltaic panels equal to 26512.5 m<sup>2</sup>, which would allow an annual energy production of 3,400 MWh/year.

### 2. The context

The former landfill area located in via Orsenigo (Municipality of Treviso), covers a surface of about 94,000 m<sup>2</sup>. According to the Overall Urban Regulatory Plan (PRG), the area is classified as asset available and Homogeneous Area. Additionally, the former landfill is sub-categorized as Sub-area E2, agricultural area. The landfill (please see pictures 1 and 2 below), is rectangular shaped and extended from west to east, with a tip that penetrates the surrounding built up area, structured as follows:

- more than 20 industrial buildings;
- about 10 commercial buildings;
- three multi-storey buildings for a complex of about 60 families;
- about 50 among villas and houses for a total of more than 50 families.



### 3. The new exploitation of the area

According to the Overall Urban Regulatory Plan the area is classified as E2 – agricultural area and from several years the municipality is looking for ideas for its exploitation and rehabilitation of the area, although the land was never put on a bid

The installation of a photovoltaic plant that will cover all the complete surface of the former landfill will provide an electric energy production of about 6MW which is able to cover the energy consumption demand of the following potential users:

- More than 15 industrial settlements ( $200\text{kW} \times 15 = 3\text{MW}$ );
- About 10 commercial settlements ( $100\text{kW} \times 10 = 1\text{MW}$ );
- Three multi-storey buildings for a complex of 60 families ( $5\text{kW} \times 60 = 300\text{KW}$ );
- Villas and houses for a total of abt. 50 families ( $5\text{kW} \times 70 = 350\text{kW}$ );
- Municipality with a population of less than 20 thousand inhabitants that can take advantage of the remote energy exchange on site ( $3 \times 200\text{kW} = 0,6\text{MW}$ );
- Others (Municipality of Treviso,  $xx = 0,4 \text{ MW}$ ).

The overall estimated total power (theoretical hypothesis, both locally and remotely absorbable): 5.650 MW.

### 4. Description of the investment

#### Technology: PHOTOVOLTAIC PARK

As previously reported the photovoltaic park will be designed as an electric energy condominium in order to be easily divided in lots and purchased by enterprises, private buyers for self consumption and municipalities with a population less than 20,000 inhabitants.



## 5. Management and economic considerations

DIMENSION	TARGET	SELLING PRICE (1)	TOTAL TAXABLE AMOUNT	IIR 25 YEARS (2)	ESTIMATED ELECTRIC ENERGY POWER	PAYBACK (2)	REVENUES 25 YEARS
5 kW	Civil	2.000 €\kWp	11.000 € (VAT included)	8,16 %	0.19 €\kWh	11.25	17.215 euro
50 kW	Commercial	1.800 €\kWp	90.000 €	9,08 %	0.17 €\kWh	10.43	160.694 euro
100 kW	Industrial-commercial	1.700 €\kWp	170.000 €	9,74 %	0.17 €\kWh	9.90	331.388 euro
150 kW	Industrial	1.700 €\kWp	255.000 €	9,74 %	0.17 €\kWh	9.90	497.083 euro
200 kW	Industrial	1.500 €\kWp	300.000 €	10,47 %	0.16 €\kWh	9.36	639.878 euro

1. The selling price of each photovoltaic lot does not include the expenses related to the connection to the on site grid for any single buyer.
2. The indicated amounts are assumed on the following bases: self consumption 80%; energy production 1,200 kWh/kWp with a decay of abt. 0.8% per annum, inflation rate 3%, maintenance cost per annum and insurance 3,5 euro/kWp.

A photovoltaic plant designed as an electric condominium makes possible to gain an easier access to bank loans and capital grants. The initial sale of lots composing the energy condominium must be subjected to previously clear and detailed condition of guarantee, such as the effective disposition of the initial investment only after having sold the 50% of the total structure installable to enterprises or private buyers. This will represent a precondition for the effective construction of the photovoltaic park. As regard the design, planning and building of the production plant, the following phases are assumed:

- a. establishment of a temporary company for the selling of the landfill lots of soil and the building of the electric energy plant turnkey;
- b. identification of a defined company structure or modality able to guarantee a profitable management and maintenance of the plant for a period of 25 years;
- c. The companies above mentioned on point A and B could be the same;
- d. The Municipality of Treviso will make available the landfill terrain for a photovoltaic energy production purpose at the following conditions:
  - i. Levelled and treeless soil, fenced with a metal mesh wire and worked for the surface rainwater drainage;
  - ii. No Taxes or royalties on the former landfill area.

## **6. Conclusions**

The M2RES recovering project will provide CO<sub>2</sub> saving for a total estimated amount of 1.600t CO<sub>2</sub>/year and a total power of 5.650 MW. Thanks to M2RES initiatives and support the Municipal Administration of Treviso (Public Works and Infrastructure Sector and Environment Sector), will be able to avoid administrative obstacles and burden in order to fully recover the marginal and dismissed area. The end of construction works is scheduled for the 2018.