

**TITLE:**

**The slag and ash pond of TPP Nikola Tesla A**

**Country:** Serbia  
**Region:** Suburb of Belgrade  
**City:** Belgrade  
**Site typology:** Slag and as pond of TPP

**1. Foreword**

The project aims at utilizing a slag and ash pond of TPP Nikola Tesla A for the building of a photovoltaic plant up to 30 MWe. The proposed facility will be supplied with energy generated from photovoltaic power plant as a renewable resource.

Through the above described development project in the municipal/public utility area, which is at present abandoned, the new landscape will be improved with a positive impact also in the surrounding area.

**2. The context**

The site is located in closely near Obrenovac, about 30 km far for the center of Belgrade, the capital of Serbia. Location: 44°41'40" North, 20°8'54" East, Elevation: 89 m a.s.l.,

In the past proposed site was used as a slag and ash pond of TPP Nikola Tesla A, the biggest thermal power plant in Serbia, consisting of six units with total installed power capacities of 1,650 MW.

Depositions of ash and slag have been done at the dump site of TPP-NT-A for many years, resulting in overflow and drainage waste water discharged into the Sava River. Besides the impact on water pollution, the dump site is surface source of air pollution by ash particles. In Obrenovac in 2011 more than 180 days were exceeded the maximum allowable concentration of polluting particles in the air, and in 2012 it was more than 100 days. This kind of air pollution have caused respiratory diseases of the population, threats to agricultural products, acid rains, damage to building facades and many other damages. A Feasibility Study and the Environmental Impact Assessment Study have been done and estimated costs of the project are 45 million €.

**PICTURE 1**



**PICTURE 2**



Because of accidental air pollution during the summer 2013 in August and September cassette 1 of ash disposal dump of TPP-NT-A of, was entirely covered with a layer of clay and prepared for autumn sowing grass. With these measures the conditions for a permanent reclamation of ash dump site had been created stopping pollution of Obrenovac and surrounding settlements, as well as agriculture and forest land, which were recognized as one of the major environmental problems. The land has a total surface of about 6 km<sup>2</sup> and around 140 hectares are now available for construction of renewable facility.

### 3. The new exploitation of the area

According to the provisions of the Draft of Spatial Plan of the City Municipality of Obrenovac ash and slag pond of TPP Nikola Tesla A is classified as a complexes suitable for renewable energy facility construction. According to the mentioned spatial plan, it is possible to request a construction permit on the basis of needed project documentation has to be prepared.

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 municipality welcomes and promotes its exploitation and it is ready to provide incentives for its development.

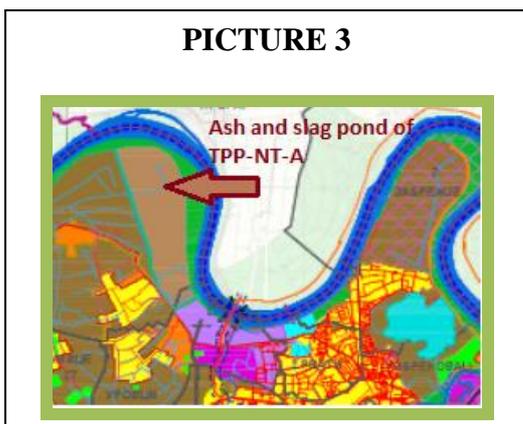
The land in the area should be used for solar power plant.

### 4. Description of the investment

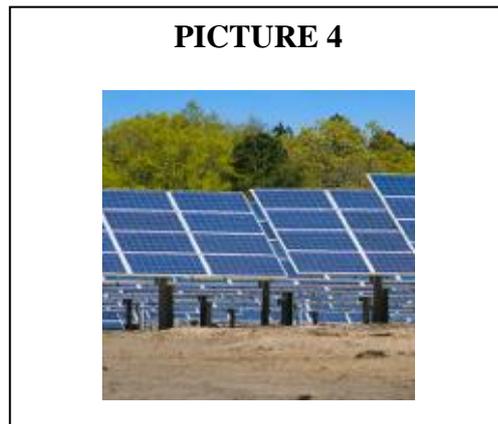
The complex of ash and slag pond of TPP-NT-A is suitable for construction of photovoltaic power plant. Realistic estimations of the production potential of the site are as follows:

- PV up to 30 MWe (crystalline silicon) – I Phase,
  - ✓ 35,200 MWh/y (Fixed system: inclination=34°, orientation=0°);
  - ✓ 46,200 MWh/y (Vertical axis tracking system inclination=54°);
  - ✓ 46,300 MWh/y (Inclined axis tracking system inclination=36°);
  - ✓ 47,300 MWh/y (2-axis tracking system).

**PICTURE 3**



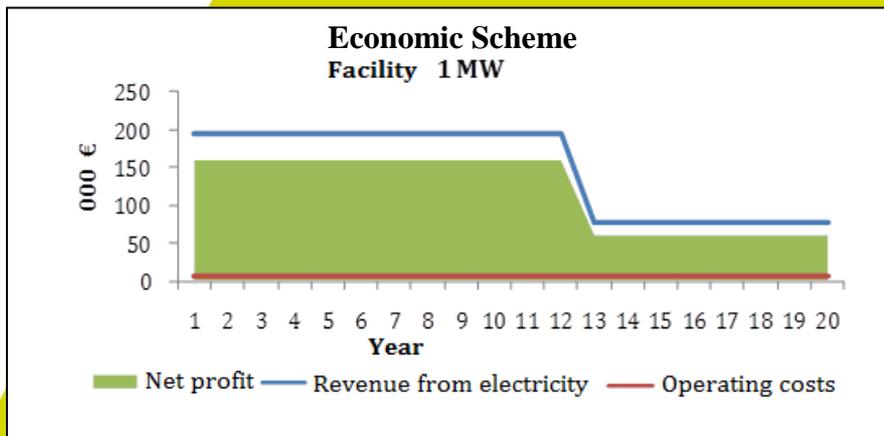
**PICTURE 4**



## 5. Management and economic considerations

The estimates of solar electricity generation are as follows:

- Capacity of 1 MW
- Installation Power Cost - 1,400 €/kW;
- Electricity production - 1,200 MWh/year
- Total investment cost for PV plant of 30 MW - 42,000,000 €;
- Lifetime - 25 years
- Feed in Tariff - 16,25 €/kWh
- Payback period - 12



## 6. Conclusions

The complex of ash and slag pond of TPP-NT-A is suitable for construction of photovoltaic power plant of 30 MWe of installed capacities in first phase and much bigger in next phase.