Impacts on the physical environment and social space and costs of HELIOSYN Dual Use PV power plants

Physical impacts

Dual Use defines a second use of the surface needed for PV plant installations by adding an independent water cycle to the electrical installation. In consequence land cover with plants is possible. The impacts of land cover are researched sufficiently to apply them with equivalent results to be expected in other physical environments.

- Stored water for maintenance purposes is always independently available on site.
- Independent fire protection
- No soil erosion
- Cooler micro climate
- Lower module temperatures
- CO2 reduction
- Biomass production
- Fostering biodiversity

Social impacts

Nearly all PV plants will be installed in rural areas with the equivalent social space.
The better the radiation, the less water is available in the area. Due to the missing water table management in Greece and Southern Europe/ Northern Africa, conflicts on water distribution are foresaid for the upcoming years. ” Water comes from the Tab” is an insufficient solution under this perspectives.
The calculated 20 years live time require the not competitive integration of PV installations in the rural society

Dual Use presents mutual benefits for the social space.

- It is an example of good practice in land management
- Dual Use PV plant green the environment of deserted, or in danger of desertification, landscapes.
- Dual Use eases the permission process due to its European Environmental Policy coherence
- They do not charge the water supply of the agricultural community
- They provide fodder for life stock of the agricultural society
- They provide durable working places in the rural social space
- Caring for the earth is a transparent marketing asset.

Costs

PV plants cover large surfaces. Maybe hundreds of thousands m3 water in a single day.
As such landscape architectural designs incorporating environmental impacts over time are essential.
The green of an airport has a different conduct in water absorption as the green of an airport covered with a large PV plant. During construction the green has been compressed. Surface cohesion during strong rainfalls lead to huge amounts of water running down the modules to penetrate the soil just below the lowest module row on the mounting structure. Building architectures operates with half pipes at each roof, knowing that the falling water may harm the houses fundaments. Module mounting tables are same sized like roofs, but no protection measures are applied.
Instead of equally distributed precipitation, the surface is penetrated with unequal chaotic water distribution. Places with nearly no direct precipitation meet places with water discharge quantities dissolving the soil structure in shortest period. Over time this generates a chaotic run off system resulting in mounting structures partially disconnected from the soil. Already to be seen in PV installations in Germany with 3 years of live time. The management of this damages for the next 17 years is a lasting burden for profits, as cable channels will be infected too.
Due to the need for landscape architectural planning and Dachrinnen (half pipes) in order to avoid erosion damages over time, Dual does not involve additional costs on this items.
The additional costs for Dual Use equipment to achieve the above mentioned benefits, related to conventional plants, amount to 90Euro/Kwp.

Published with the allowance of the IPR partner and co developer WaterTrust OE, Greece

 GR 74053 Melampes, Crete, Greece +30 2831031429 tpascoe@synergonhellas.com
Συνεργον Ελλάς ΕΠΕ Managing Director: Thomas Pascoe Court Registration: Rethimno 30144/22.04.1988
Chambre of Commerce Rethimno: 3181 VAT Ident: EL095414500 IBAN GR5 0120709000000085902857 BIC: EMPOGRAA