



ACADEMIC YEAR 2017 – 2018

TITLE OF DIPLOMA THESIS:

Site selection and management of Hybrid solar/wind Renewable Energy Systems: The case of Andros, Greece

AUTHOR: Bili Athina

ABSTRACT

The combination of two or more forms of Renewable Energy Sources at the same spatial scale is a highly promising sector, resulting in an increase in the number of installations of hybrid RES systems. In Greece, where abundant resources are available, such as wind and sun, the combination of these two renewable forms of energy can contribute to reducing dependence on conventional energy resources, as in hybrid power systems the weakness of a source is offset by forces of the other. The purpose of this thesis is the development of a methodology for selecting suitable sites for the installation of Hybrid Wind and Solar Energy Systems (HWSES) using Geographic Information Systems (GIS). The implementation focuses on the island of Andros, Greece, and the proposed methodology includes the exclusion of areas defined by the Greek legislation and the international experience for both forms of energy. The site selection corresponds to a complex, multi-dimensional process, which is characterized by the existence of multiple conflicting criteria; at the same time. Furthermore, the selection process requires the collection, the analysis and the representation of data related to the criteria required for the site selection process. In the next phase, the most technically appropriate area for the installation of the HWSES is selected and the required equipment is within the installation area defined. The structure of the proposed HWSES is carried out by the HOMER Pro software. The management of the proposed HWSES is performed according to the Project Management International Organization standards. More specifically, MS Project 2016 software is used in order to address the time and cost planning of the project throughout its lifecycle, namely the project planning, the installation and grid connection, the operation and maintenance phase as well as its decommissioning phase. The risks associated with the project are also identified and qualitatively assessed. Key Words: Hybrid Wind and Solar Energy Systems sitting, Geographical Information Systems, modeling, Time and Cost Management, Risk Management

KEYWORDS

Hybrid Wind and Solar Energy Systems sitting, Geographical Information Systems, modeling, Time and Cost Management, Risk Management

