

ABSTRACT

The present thesis negotiates the possibility of installing a processing unit of residual biomass that results from the agricultural and animal breeding activities at a small scale feed unit. A feed unit, dealing with ovine and caprine breeding which is the main occupation of Cypriot animal breeders, which counts 539 animals, a number that falls within the boundaries of the small feed unit (up to 600 ovines and caprines) was randomly selected.

Chapter 1, refers to the energy happenings in Cyprus, in 2008, to the contribution of the renewable energy sources (RES) to the energy balance as well as to the need for further penetration of RES in the energy balance in the near future.

Chapters 2, 3, 4 and 5 refer to biomass. Specifically, chapter 2 debates the source of the biomass and biomass dynamic that Cyprus presents. Chapter 3, investigates the applications of biomass for heating, biofuels and electrical energy while chapter 4 refers to economic, social and environmental consequences that come out of the exploitation of biomass. Finally, chapter 5 refers to methods of exploiting the biomass, which have been divided into biological and thermal, as well as to the equipment that is being used in each case.

Chapter 6 looks into the three main sectors of animal breeding in Cyprus, ovine and caprine breeding, pig breeding and cattle breeding, based on evidence from the Ministry of Agriculture, Rural Development and Environment. It also provides the measurements which have been taken by the feed unit. The measurements relate to stretches of land and number of animals.

Chapter 7 investigates the possible technology for exploiting biomass that results from the activities at the feed unit and the equipment for the chosen technology are selected. It also calculates the theoretical and technically available biomass dynamic as well as the annual production of electrical energy of the station. Based on the annual production of electrical energy, the power of the station is estimated.

In chapter 8, the law governing the suggested project is mentioned and in chapter 9, the technoeconomical study, related to the viability of the application, is presented. It, finally, presents the conclusions that resulted from the whole procedure.