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COURSE OF
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LANDSCAPE PLANNING

Abstract

**Models for the energy transition
of the smaller islands**

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The thesis is framed within a problem that today is also known to the general public, such as that of global climate change and in general of the transformation of the environment that our activities have produced and are still producing.

The solution to these problems is represented by the transition towards a new energy model, meaning a process of transformation of the framework of satisfaction of energy needs towards solutions characterized by a reduced environmental impact and, more generally, by greater sustainability.

It is therefore necessary to pass from words to deeds, conducting in-depth studies that highlight the criticalities and potential of the various territories in order to lead them to a new era.

The paper is developed starting from the analysis of the energy potential that can be produced from renewable energy sources and the energy requirements of the public facilities of the Municipality of Cantalupa (site of the curricular internship) in order to integrate the data of the Energy Plan of the new "Oil Free Zone" and the Pinerolese Energy Community institution.

In relation to the analyzes carried out, a study was conducted on the existing Cooperatives and Energy Communities in Italy and in the world and on the innovative projects of the Smart Islands.

It is possible to define that, from the energetic point of view, the valleys of the Pinerolese Energy Community can be associated with the small Mediterranean islands: both territories are in fact systems delimited by natural boundaries that are not easily overrunable and with a strong dependence on the outside also if in the presence of local resources that, if properly exploited, would allow the achievement of a substantial energy independence.

Because of the characteristics described, the island's contexts represent an ideal model of the territory in which to initiate the energy transition towards renewable sources.

In these contexts the renewable energy model must work perfectly and satisfy 100% of the population's needs throughout the year or risk looming in a block of all the island's activities, making it unlivable.

The focus of the thesis was the definition of models for the energy transition of the territories.

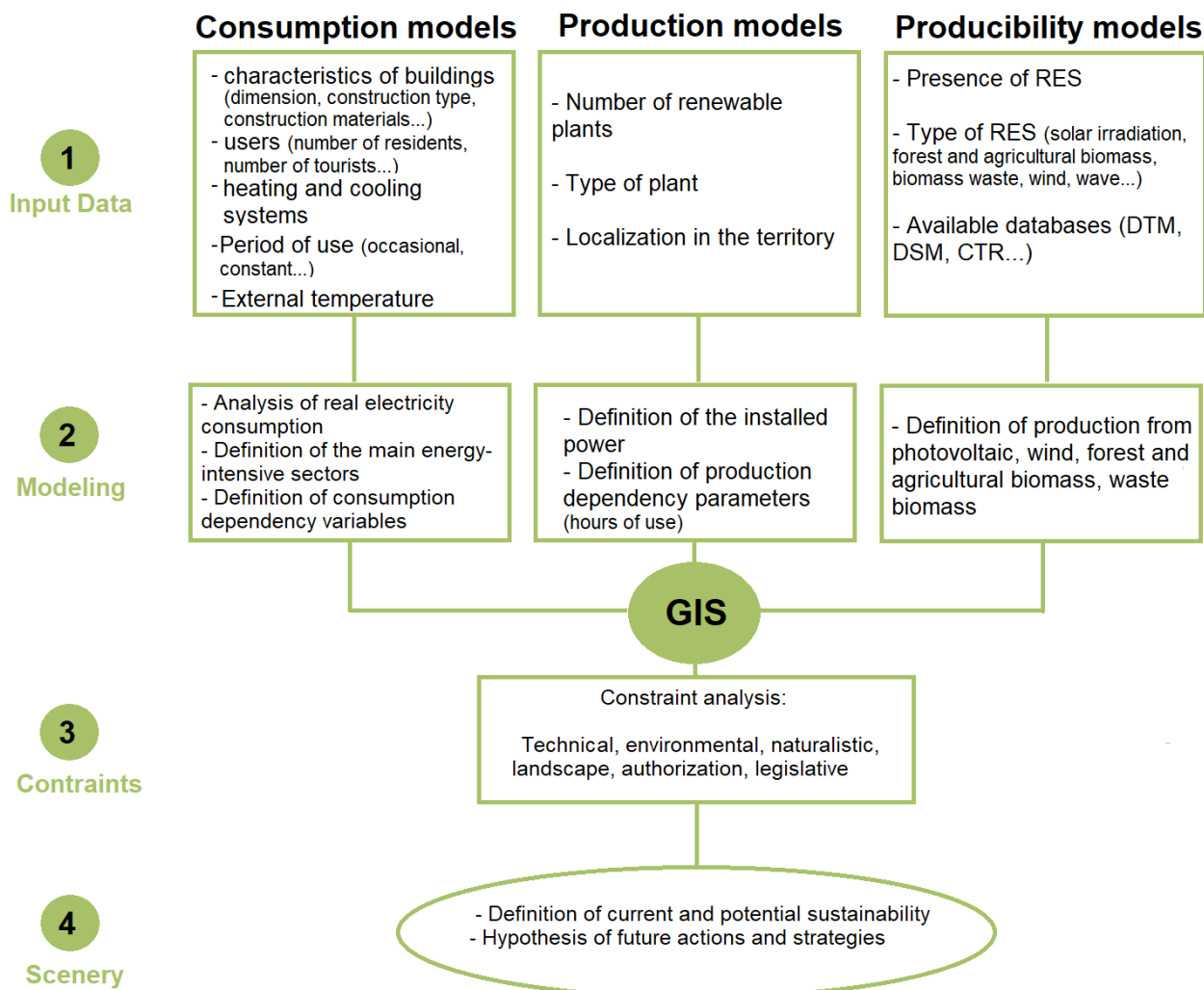
In defining them I focused on the smaller Sicilian islands of Pantelleria and the Egadi islands (Favignana, Levanzo and Marettimo).

Starting from the analysis of territorial contexts, the *consumption* model was first defined: this model is based on the concept that real consumption can be defined by means of variables that affect them and that, once identified and "weighed" through constants, they can be used to define hypothetical and future consumption scenarios.

The *production* model has been shaped related to the current presence and production of renewable technologies such as photovoltaic panels, wind turbines ...

Finally, through the use of the GIS software, the model of *producibility* related to potential production from renewable energy sources such as photovoltaic, wind, forest and agricultural biomass and urban waste was defined.

Being the smaller Italian islands subject to numerous constraints, those falling on the territories under analysis were analyzed and, through their mapping on GIS software, it was possible to define which of these reduced the renewable producibility identified for the individual components of the producibility model.



Img. 1: Study methodology used.

The results of the analysis models made it possible to define scenarios related to current and potential sustainability and a hypothetical scenario to evaluate the response of the models to changes in consumption.

The study aims to be a useful decision-making tool for local administrations to make informed energy choices in order to reach the goal of energy transition.