

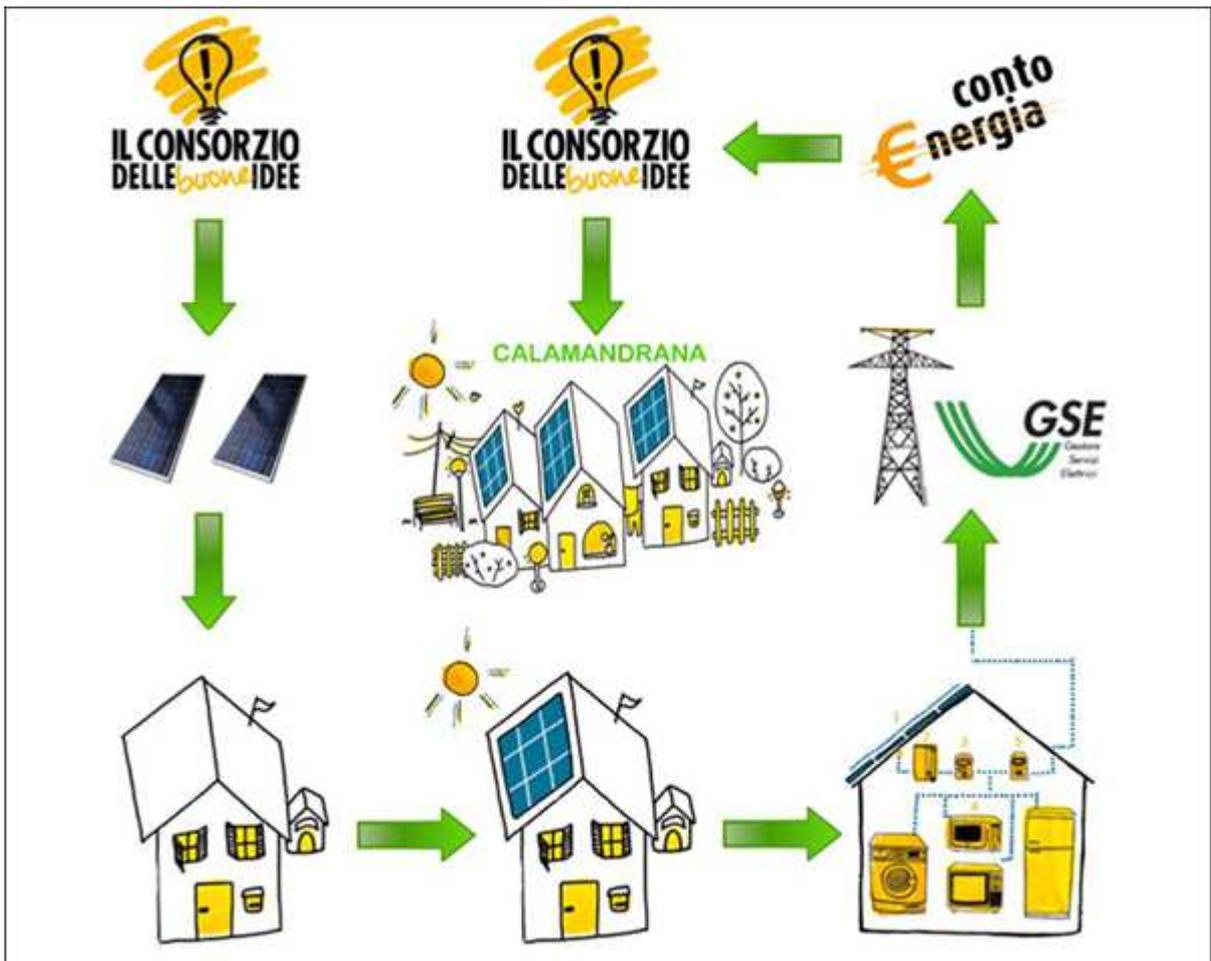
POLITECNICO DI TORINO
SECOND SCHOOL OF ARCHITECTURE
Master of Science in Architecture for Sustainability
Honors theses

**The widespread photovoltaic.
The experience at Calamandrana as a critical lens**

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The main theme of the thesis is the use of photovoltaics in buildings, especially with this paper, we have reached the goal of demonstrating how it is possible to invest in the field of renewable energy, obtaining, as well as an important environmental benefit, even a satisfactory economic return for both the private and the society in which it resides.

The first operation was performed a search that included new technologies, photovoltaics, life cycle, distribution and installation of the landscape, the integration in the area and finally testing locally.



It was then considered to be the state of the art on the subject, both experienced a possible strategy for the project / installation in a small municipality : Calamandrana, with the main purpose to carry out a careful analysis of the feasibility. In order to make a correct analysis of the feasibility was first necessary to analyze the consumption of users, we could not analyze a user-per-user, so we made use of graphs that show statistics users type.

At this point, the feasibility study has touched the points of orientation and surface area available to each household for the installation of the PV system.

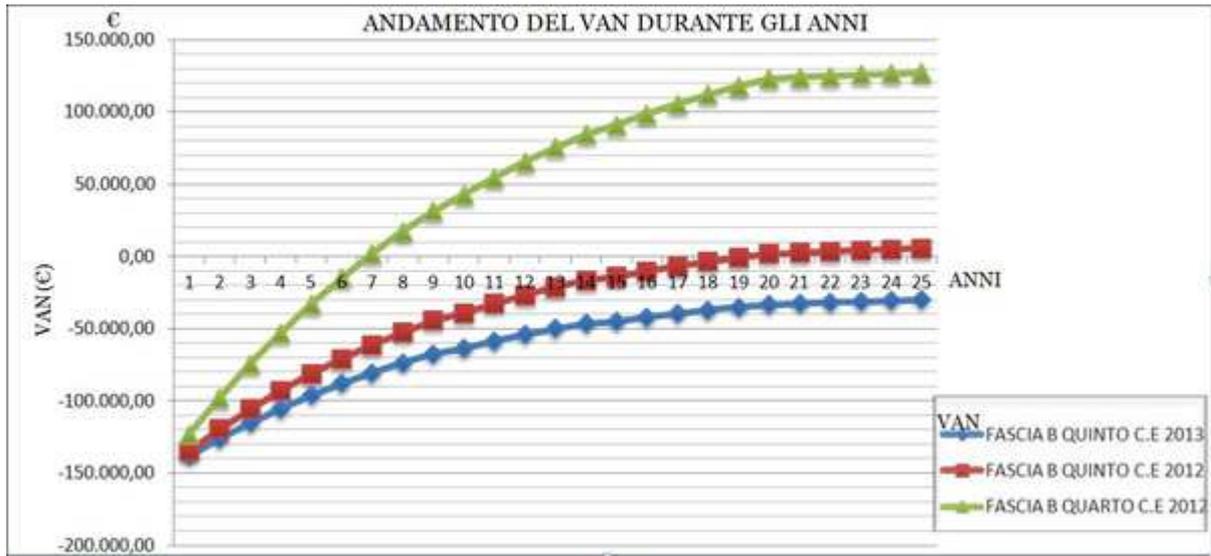
As there is no high-resolution aerial images, a cross was made between the cadastral maps and photographs of each home, the data have been developed and are enclosed in a database containing the main data.

Defined the geometry of the roof, was later elaborated a summary analysis of exposure separately with different colors, depending on the orientation, all of the buildings of the town:



To improve the economic situation was also planned analysis of a system of trackers in a yard owned by the municipality.

At this point I started simulations of all bands of orientation, account has been taken of the Quinto Conto Energia and a comparison was made with respect to the Quarto Conto Energia.



It was finally made the sensitivity analysis: consists in different "simulations" by changing only one variable of the project and while leaving all the others. The results of the simulations showed that the project produces benefits for the participants, considered as separate units, both overall, in the system-generated collection. The thesis has thus achieved the goal of demonstrating how it is possible to invest in the field of renewable energy, obtaining, as well as an important environmental benefit, even a satisfactory economic return for both the private and the society in which it resides.

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