POLITECNICO DI TORINO
FIRST SCHOOL OF ARCHITECTURE
Master of Science in Eco-Design
Honors theses

FROM GARBAGE TO RESOURCE
Systemic approach applied to the fourteenth district of Reggio Calabria
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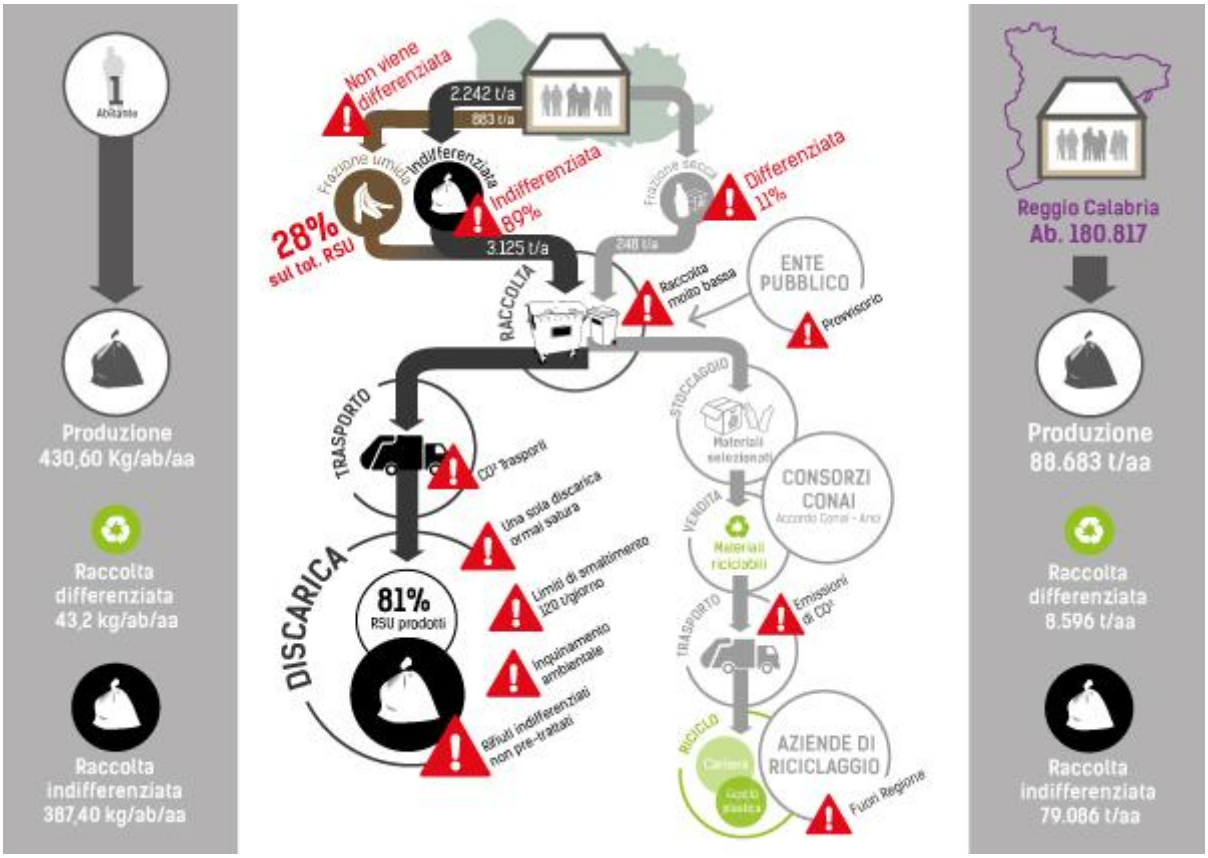
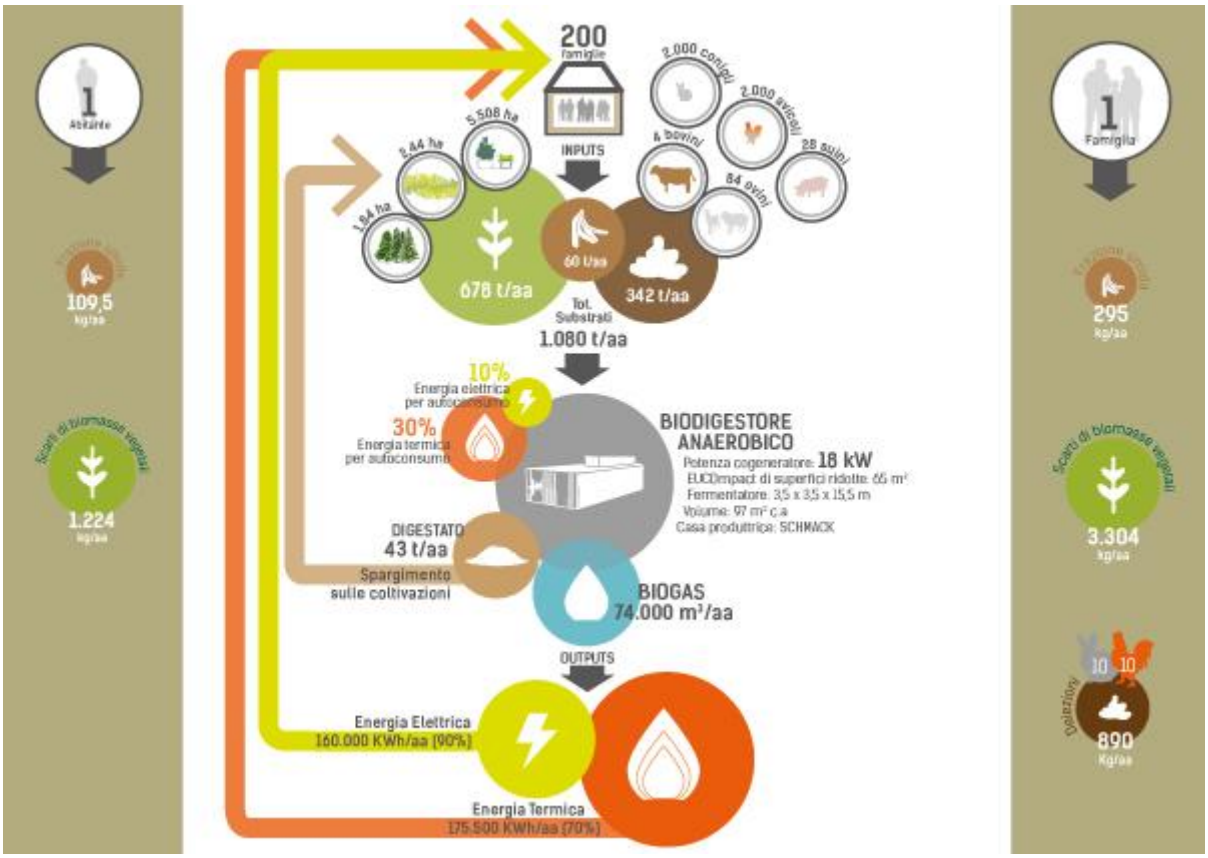
My research project focuses on the problem of refuse in the territory of the fourteenth district of Reggio Calabria. Here there has been for years a garbage crisis. A citizen in Calabria region produces 430 kg per year of garbage: 387 kg of this amount ends up in the waste sorting; it is about the 89%.



This system involves very high costs at the expense of Calabrian families who pay a waste fee of 531 € per year about. The real innovation is explaining people that what they call “garbage” is actually a resource. It turned out that the social cost of the garbage is inversely proportional to the increase of the waste sorting. It was therefore decided to start the analysis from the waste sorting of the organic fraction.

For the citizen separating the organic is easier because it goes to the soil so it is easier to select unsorted waste (non-recyclable) in the landfill, where there are fewer emissions and consequently less operating costs. Furthermore, the output of the organic fraction can be turned in input through the biodigestion of the compost for the production of green energies.



The case study analysed includes a small group of 200 families with farms for self-consumption producing a quantity of organic fraction, of plant biomass and animal manure. These elements are transformed through an anaerobic digester, subsequently processed into biogas, into electricity and thermal energy. This digester of 18 KW is managed by families through a cooperative company thereby creating new jobs. It also manages to reduce energy costs and waste fees. There is a total saving of 708 € per family per year, it is about the 40%. Citizens experiencing the saving continue into the waste sorting of other materials also. It was then analysed the system of Mr. Pack- a machine used for the waste sorting of packaging material. It collects the flow C (PET and HDPE). Citizens insert their packaging material into machine. By reading the bar code, the machine attributes a score and the points collected can then be used in in different affiliated shops. The material already selected inside the machine has better qualities and through the agreement with the consortium of plastic, a sum of money is paid. Part of this sum is paid to the cooperative company that manages the machine and part to the local public administration that supports this new system. There are lower operating costs of the garbage system and therefore the amount of waste sorting increases.

The family using the digester and recycling the flow C obtains a saving of 825 € per year. Another type of collection is then proposed: the collection of paper. There is the need to create paper mills in this area in order to take advantage of this resource and create new job opportunities for local residents. Fewer and fewer are the quantities of unsorted waste: - 79%. This means that less material should be transported to landfills and fewer costs to be paid. Risks of environmental pollution decrease and security in the processes of waste management increases. It is possible to obtain a 50% saving on taxes. If these data were compared to the entire district of Gallina, you would have a profit of € 176,800 per year. If all the districts adopt this new system you would have in Reggio Calabria a saving of taxes for an amount of 60 million € per year , with a reduction of almost 56,000 t per year (the current production is 89,000 t per year). It is so created a systemic local autopoietic network in which there is a flow of matter generating new processes. It is proposed a change in the way of waste management which ,through the waste sorting ,involves all the stakeholders and captures the positive impact on the territory, seen as a set of people and as the player itself of the systemic evolution.

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