

ALBARELLA FUTURE – ZERO CARBON EMISSION

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Climate warming is setting requirements on research also in the agronomic and forest fields. The soil and vegetation are available as carbon sinks. Ecosystems under high exploitation lost part of their carbon. It is possible to recover this carbon from the air with natural processes and to return it to the land. Besides, global warming requires a change in mentality that moves into the replacement of fossil fuels with other energy sources. In this perspective, the island of Albarella, with its environment and economic activities, represents an attractive miniature model of the planet Earth. For this design, we estimated (Vensim simulation) the emissions and storage of CO₂ equivalent of the whole island. Then, with the idea of acting on natural ecosystems to make them more active in carbon storage, we analyzed two vegetation series from the forest to the sea, one located in the nearby natural reserve of Porto Caleri, and one on the island of Albarella. The investigation concerns the soil carbon storage and the quality and quantity of populations of arthropods, bacteria, and fungi as well. The biodiversity of artificial environments resulted in higher than that of natural habitats, opening a debate. Acting in different ways on the substitution of fuels, we obtained scenarios with decreasing emissions, from consumerist without substitution of fuels, realistic with 15% of replacement by solar energy, and sustainable with zero use of fossil energy and all the island electricity produced through photovoltaic panels.

Keywords: Albarella island, Global Change, Carbon cycle, Carbon Still, Soil biodiversity, Environment use, Sustainable tourism, Emission scenarios

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