

## Editorial

Energy efficiency and global warming are among the topics of greatest interest not only for the scientific world but for all the citizens, finally aware of the need to stop the climate change underway that increasingly affects ecosystems, urban areas and on the same human activities. The scientific evidences show us that the heat waves and the intense and sudden rains, are to be put in relation above all with the increase of the levels of the emissions of CO<sub>2</sub> in the atmosphere, which have exceeded 400 parts per million, a level never reached before. According to data from hundreds of experimental observations reported in the IPCC reports (Intergovernmental Panel on Climate Change), human activities and, in particular, the excessive use of fossil fuels in the various productive sectors, are certainly not exempt from responsibility towards of the increase in greenhouse gases that have contributed to raising of the global temperature by 1.5°C. According to the major agencies that deal with energy, greenhouse gas emissions and the environment, only if the G20 countries, responsible for 78 percent of global emissions, will find an agreement to implement climate change strategies at the national level, with the Intended Nationally Determined Contributions - warns the UNEP - it will be possible to achieve the goal of containing the global temperature increase within 2°C in the coming years, necessary to avoid disastrous consequences on terrestrial ecosystems, i.e.: *heat island* in cities, waves of heat, periods of drought, intensity of rainfall, decrease in water resources.

In this context, among the sectors with the highest CO<sub>2</sub> emissions, the construction sector and the agricultural-food system are certainly to be included. In Europe, buildings are considered on average responsible for 36 per cent of CO<sub>2</sub> emissions and 40 per cent of the total energy consumed, while United Nations agencies attribute to the agriculture and agro-industry sector, globally, about 30 per cent of total energy consumption, and between 24 and 30 percent of total CO<sub>2</sub> emissions.

This special issue of the *Review of Studies on Sustainability* reports the scientific contributions presented at the Conference, organized by ORSA non-profit association, in collaboration with the Simone Cesaretti Foundation, entitled “Energy and environmental sustainability for the territories and cities”, held on 5 and 6 November 2019 in Alcamo (Trapani). Among the topics addressed by the conference, the integration of plant systems in buildings in the form of parietal green (green walls) and horizontal green (green roofs), and the resulting advantages in terms of increasing the energy efficiency and comfort of the building, thanks to the biological *phenomena* of photosynthesis and evapotranspiration of plant elements that, with their metabolism, consume CO<sub>2</sub> and decrease the temperature of the air with the introduction of water vapor. A second theme has taken into consideration the potential of bioclimatic systems and LCA – Life Cycle Assessment – for the design of low energy and environmental impact buildings in wine cellars and buildings. Renewable technologies, including photovoltaic, biomass and solar cooling, with the description of best practices to improve energy efficiency in the agro-industry and in the greenhouse sector, represent the third topic of the conference. A fourth theme was devoted to the description of incentive systems to support the improvement of energy efficiency in the building sector. Finally, the last topic took into consideration the study concerning the use of herbicides in viticulture, the fertilizers of organic origin and the evaluation of soils for urban decoration. The conference saw the scientific contributions of the Universities of Palermo, Bari, Pisa and Milan, of CREA and of ENEA. It should be emphasized that ENEA’s participation was characterized by the presence of scholarship holders belonging to the INNOVA Project, of which ENEA was the coordinator, financed by the Sicilian Region, under the Public Notice n. 11/2017 – Strengthening the employability in the R&D system and the creation of Research Spin-off in Sicily-Operational Program of European Social Fund 2014-2020.

We are convinced that the contents of the scientific contributions presented in the Conference will contribute to increase the sensitivity of institutions, companies and citizens, on the need to develop actions and behaviors that are indispensable to decrease the consumption of fossil energy in the building sector and in the agricultural system food and, above all, to support environmental protection, control and use of natural resources and, in this way, the promotion of the sustainable economic development.

Guest Editor  
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