THE PLACE OF THE CONCEPT OF ALGATECTURE IN CLIMATE CHANGE: A REVIEW ON SOLAR DECATHLON EUROPE'2021-2022

MELIKE ERSOY, NESLIHAN OZMAN, MELTEM ERDEM KAYA, ASUDE ERDOĞMUŞ, AYSEGUL ORUCOĞLU

In order to ensure the continuity of life, our basic need is the constant availability of energy resources in our lives. The energy obtained from fossil fuels, which we call finite energy sources, has taken up more and more space in our daily lives, but it has also brought some problems to the agenda. The increase in environmental problems as a result of the high use of coal, oil and natural gas, which are mentioned as fossil energy sources, constitute the main problems of global warming, which we are talking about more today, and climate change, which has begun to affect our lives. The mechanization after the Industrial Revolution, the change in production models and the facts that we need to improve and differentiate in today's world also bring to light.

Although environmental problems started with humanity, it gained such momentum on a global scale after industrialization. Environmental problems with human factors have two different structures, arising from natural resource consumption and environmental degradation. In the process from the 1972 Stockholm Conference to the 1992 Rio Conference, the existence of environmental problems, the fact that they are a global problem, and the increasing environmental disasters have revealed the necessity of international cooperation. From this perspective, the concept of sustainability came to the fore with the Kyoto Protocol. The "sustainability" expressed within the scope of the protocol is the first decision taken to leave a livable world to the next generations. One of the main objectives is to reduce carbon emissions by reducing the use of fossil fuels. The Paris Climate Agreement is a new agreement signed in 2015, following the expiration of the Kyoto Protocol in 2020, and is an agreement to keep global warming below 2C. When the decisions taken within the scope of the Kyoto Protocol and the Paris Climate Agreements are examined in a general framework, it can be said that there is an orientation towards renewable energy potentials.

Although the approaches to the use of renewable energy sources in architecture have not reached the desired levels yet, it can be said that we will see many examples in the built environment when the initial investment and maintenance costs decrease over time or if it is supported by government incentives.

The increase in the use of fossil fuels in the last century has also led to a decrease in air quality and human life comfort. This complex structure and whole of relations, which we cannot look at from a single framework, increases carbon dioxide emissions and causes both the warming of the world and the decrease in air quality with the usage areas it creates.

In this context, the study proposes the use of microalgae technology, which is one of the nature-based solutions that is active in the use of renewable energy and air quality in the comfort of life in cities.

Within the scope of this study, Solar Decathlon Europe (SDE21-22), in the relationship between sustainable cities and architecture; The concept of algeaetecture, which we define as algae architecture, is examined in terms of increasing air quality, supporting biodiversity, and the integration of biomass, which is the end product, with architecture in a cyclical approach. It is aimed to convey the basic principles and practices that have been tried to be transferred on an urban scale from the design process to the building, which was realized in Germany and whose construction was completed on a 1:1 scale.