

# Solution to Global Warming By Increasing the Algae Based Products in Biotechnology

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## Extended Abstract

In this century, humanity is still engaged in wars, continues to burn fossil fuels, and ignores the realities that threaten the world. While, on the one hand, trying to set rules and sign agreements against global warming, on the other hand, being so slow in implementing solutions.

It is known that greenhouse gases cause global warming and carbon dioxide accounts for 76% of total greenhouse gases. So what could be the role of algae in creating a solution to global warming? Algae have the ability to absorb carbon dioxide 50 times more than plants, and although it varies depending on the species, they can produce 280 tons of dry weight per hectare per year and absorb 513 tons of carbon dioxide meanwhile [1]. Although forests are known to be the world's source of oxygen, it is also known that micro and macro algae in the water provide more oxygen than forests by performing photosynthesis. Algae have a wide range of uses like biofuels, food, feed, cosmetics, nutraceuticals, fertilizers, biomaterials etc. When produced in closed and controlled systems, algae can produce more dense and rapidly. In this case, algae can consume more carbon dioxide because they can produce more biomass since their doubling time is approximately 1-3 days. Adding carbon dioxide to the culture raises the production. Supplying flue gas is also a rational solution that can be used to prevent air pollution. Since algae use nitrogen and phosphorus as nutrients, they could also be used in bioremediation. The use of wastewater as culture medium is extremely suitable, especially for the biodiesel and biofertilizer purpose, as it reduces the cost of production.

Many projects and studies are carried out in the “Algal Biotechnology” laboratory of Ege University Bioengineering Department which we focused on usage of algal biomass and finding potential chemicals for industrial usage and determination of optimum conditions for their production [2-5]. In an ongoing project related with “SeaWheat” COST Action (CA 20106) and a connected project supported by TUBITAK (123Y090), We continue our work to transform *Ulva* (sea lettuce), which blooms and causes pollution in the Gulf of Izmir, into value-added products. Within the scope of this project, we aim to transform *Ulva* biomass into food, biogas and bioplastic in a circular economy with the biorefinery concept and zero waste approach.

Increasing researchs about the use of algae in different areas and supporting application facilities may provide solutions for reducing carbon dioxide levels that cause global warming and treatment of wastewater.

## References

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