Microalgal Production of Biodiesel and Lutein
(Technical Report)

Transformative Adaptation and Policy Reform: Climate Change Action in the United States
(Sociotechnical Research Paper)

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Contents

Preface

Microalgal Production of Biodiesel and Lutein

Transformative Adaptation and Policy Reform:
Climate Change Action in the United States

Prospectus

Preface

Countries worldwide are battling the global climate crisis through clean energy imperatives that change how we source and use energy. How can the United States serve as a role model in leading the transition towards a clean energy society?

Electrification of the transportation sector is necessary but constrained by high conversion costs, the environmental and human costs of scarce battery minerals extraction and disposal, and other daunting obstacles. Alternative fuels that cause lower greenhouse emissions than fossil fuels may therefore be essential to the decarbonization of transport. Due to its high energy content and rapid growth rate, microalgae may serve as an ideal feedstock for biodiesel. Even at an industrial scale, however, algal biodiesel would be too expensive to compete with petroleum fuels. A novel and more cost-effective process design is therefore proposed where previous process strategies are optimized while subsidizing costs through co-production of a highly valued nutrient for human eye health.

The U.S. federal government has been slow to implement effective climate change mitigation policies. Interests groups compete to influence federal climate action. In this complex struggle, fossil fuel companies' political influence thwarts effective policy responses to the climate emergency. To promote an effective climate policy, climate groups must strive to overcome the barriers their opponents erect to hinder climate action.