Oil Companies Watch Out: Biofuel Production from Salt Water Plants and Fish Waste

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INTRODUCTION

The idea presented is the enzymatic production of biodiesel and biogas from *Salicornia bigelovii* and fish waste. *S. bigelovii* and a fish farm would be cultivated in conjunction with one another using salt water as the main water resource. *S. bigelovii* would then be harvested to produce biodiesel and bioethanol. The bio-waste and fish waste would be used to produce biogas.

PROCESS OVERVIEW

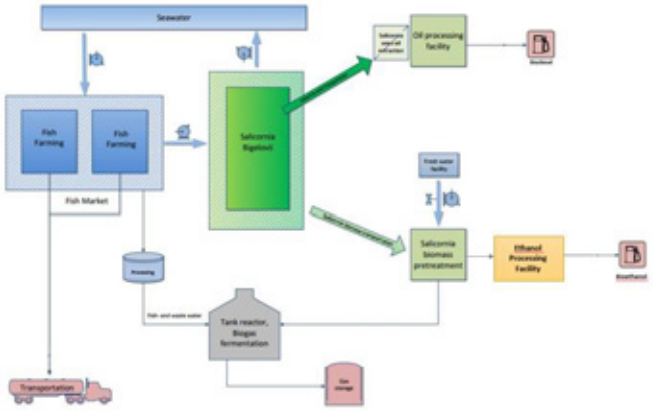

Figure 1. Overview schematics

Seawater is pumped to the fish ponds, then the nutrient rich water is used as fertilizer for *S. bigelovii* and the resulting waste water is used in the production of biogas. Fish is sold as a product and the fish waste is used in the generation of biogas. The seeds from the halophytes are extracted and sent to a processing facility to produce biodiesel. The remaining biomass of the plants is then sent to a pretreatment facility before being used to produce bioethanol. A small amount is used in the biogas reactors. The biogas tank reactors digest the substrates and the biogas is used to power part of the facility.

SUSTAINABILITY

The enzymatic biodiesel and biogas processes have a lower environmental impact and energy use when compared to more traditional biodiesel processes. *S. bigelovii* grows in salt water on arid land and therefore does not compete with food and feed crops. Due to the usage of the fishery waste water to grow *S. bigelovii* no fertilizer input is needed. In addition *S. bigelovii* absorbs more carbon that what is emitted during the growing and harvesting process and increases the net sink of carbon stored in the soil.