



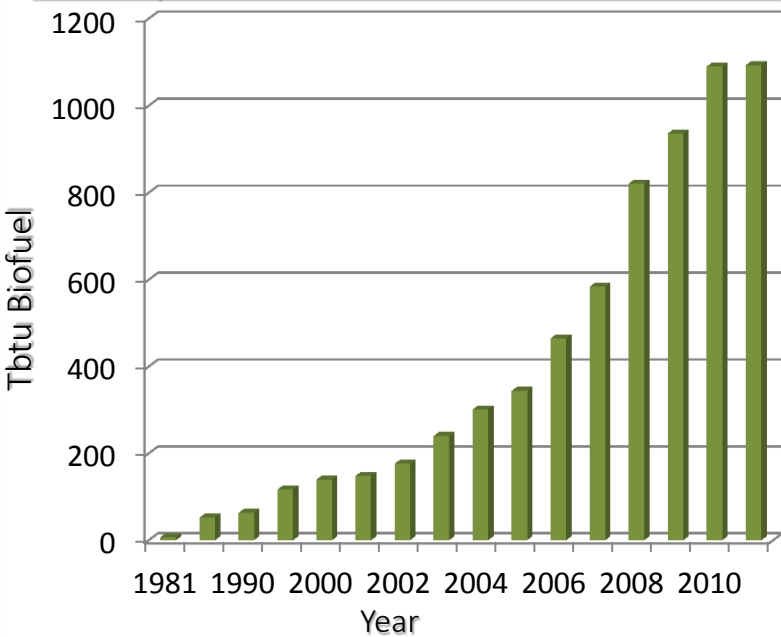
## Pros

- Using biofuel, pure or blended, in engines can reduce GHG emission by replacing crude oil and fossil fuels.
- By reducing GHG and particulate matter by using biofuels will improve air quality.
- Biofuels can be produced from waste.
- Agriculture production of biofuels would allow for new economic opportunities in rural communities.
- Considered to be a renewable and sustainable form of energy.

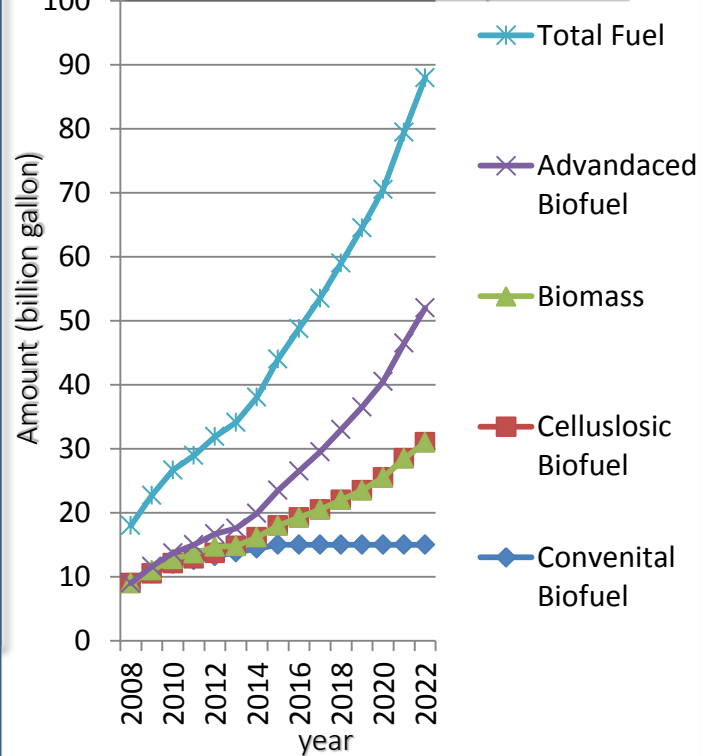
## Cons

- Due to land and forest clearing for new production of biofuel can have indirect emissions.
- It can take up to 95 years to have a carbon saving from forest clearing.
- Production of biofuels could compete with food production, raising the price of food.
- Certain biofuels could require new infrastructure.
- Certain biofuels require large amount of energy to be produced, reducing the net gain of energy from using biofuels.

Consumption of Biofuel from 1981-2011 in the US



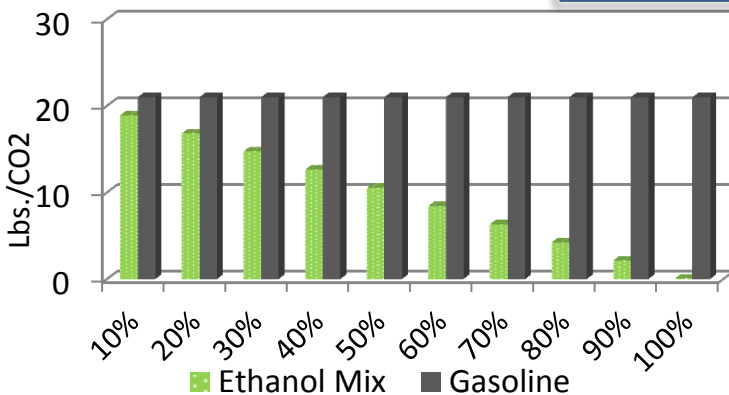
EPA Renewable Fuel Requirement



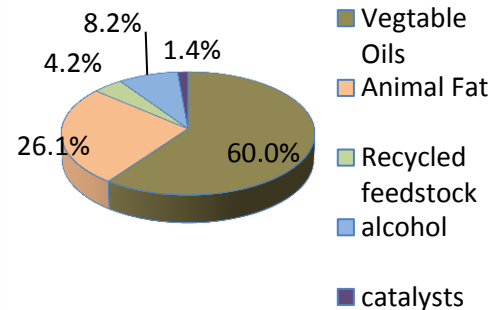
## Ethanol versus Gasoline Emissions



Example: If you drive 30 miles in a 2012 Chevy Cruze which gets 28 mpg what CO2 emissions can you reduce using mix of ethanol and gas compared to 100% gasoline fuel?



Inputs to Biodiesel fuel production





## Pros

Scragg, A. H. *Biofuels: Production, Application and Development*. Wallingford, UK: CABI, 2009. Print.

## Cons

### **1-2**

Timilsina, Govinda R., and Simon Mevel. *Biofuels and Climate Change Mitigation: A CGE Analysis Incorporating Land-Use Change.* *Environmental and Resource Economics*

### **3-5**

Scragg, A. H. *Biofuels: Production, Application and Development*. Wallingford, UK: CABI, 2009. Print.

## Consumption of Biofuel from 1981-2011 (Tbtu)

US Energy Information Administration. "Monthly Energy Review." EIA. Table 10.3.

## EPA Renewable Fuel Requirement

U.S. Environmental Protection Agency. 2011. "Biofuels and the Environment: First Triennial Report to Congress." Table 2.1

## Ethanol versus Gasoline Emissions



"Independent Statistics and Analysis." How Much Carbon Dioxide Is Produced by Gasoline and Diesel Fuel? Energy Information Administration, 18 Apr. 2013. Web. 12 Apr. 2014.

## Inputs to Biodiesel fuel production

U.S. Environmental Protection Agency. 2011. "Biofuels and the Environment: First Triennial Report to Congress." Table 3.2