

BIOFUELS

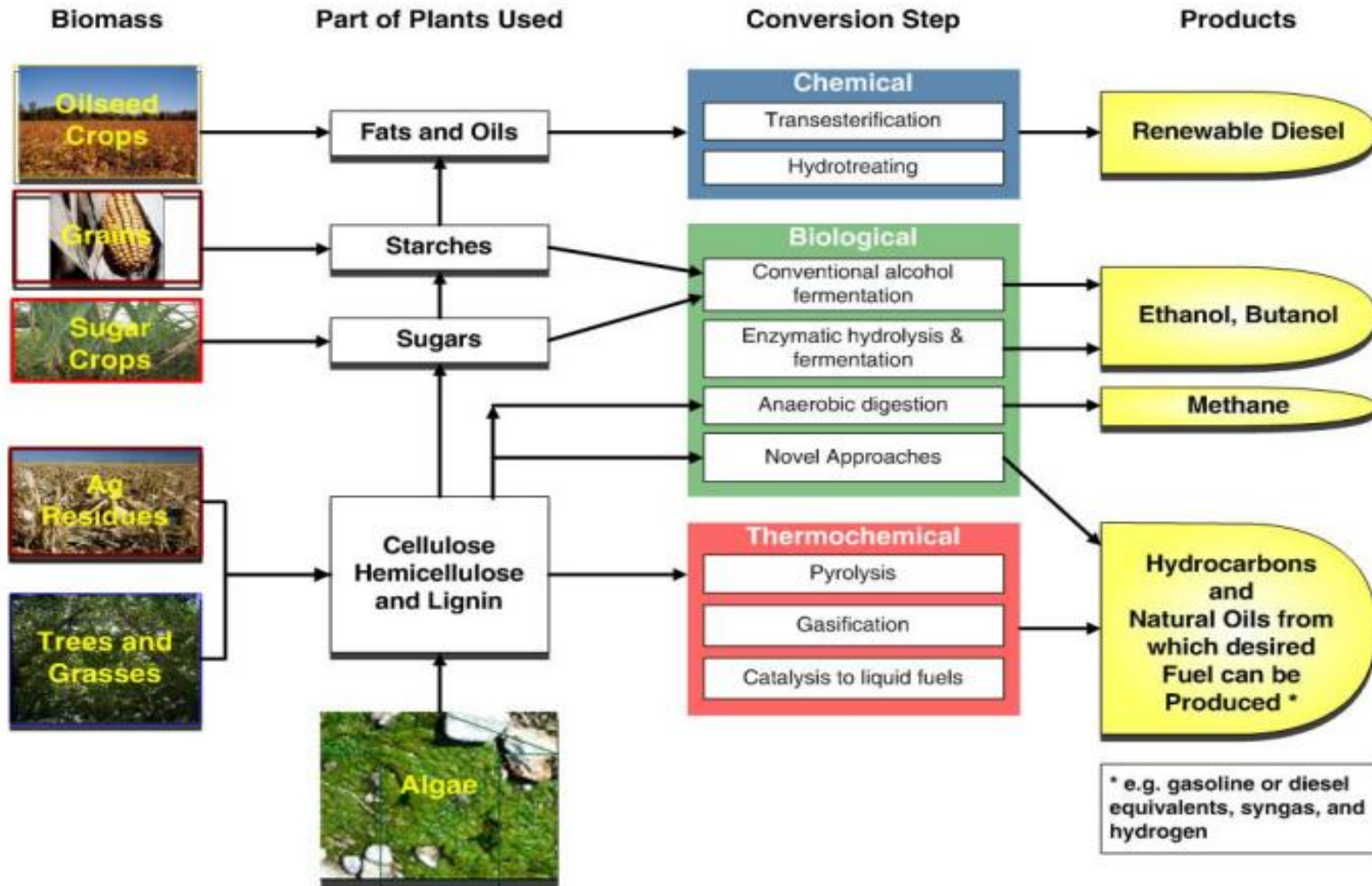
Advantages, disadvantages and challenges

WHAT ARE BIOFUELS?

- Fuels derived from biomass (biological material from living, or recently living organisms)
- Types of biofuels include:
 - Bioalcohols (ethanol, methanol, butanol ...)
 - Biodiesel
 - Green diesel
 - Vegetable oil
 - Algae fuel
 - Bioethers
 - Biogas
 - Syngas
 - Solid biofuels (wood pellets, dried manure ...)



BIOMASS → BIOFUELS



BIOFUEL ADVANTAGES

- Reduction in GHG
- Renewable energy
- Low substitution costs (bioethanol, biodiesel)
- Higher octane; increased thermal efficiency (bioethanol)
- Effective solvent – cleaner engines, tanks and pipes (biodiesel)
- Less toxic (biodegradable as sugar) – safer transport and handling (biodiesel)
- Oil price moderation
- Reduction of poverty?



BIOFUEL DISADVANTAGES

- Significant energy inputs required – GHG reductions questionable
 - Farm equipment, cultivation, planting, fertilizers, pesticides, herbicides, and fungicides made from petroleum, irrigation systems, harvesting, transport of feedstock to processing plants, fermentation, distillation (often unsustainable fossil fuels used), drying, transport to fuel terminals and retail pumps
 - Land use changes – direct and indirect (deforestation, soil erosion, water depletion, loss of biodiversity)
- Diversion of food crops – increased food prices
- More expensive to produce than fossil fuels
- Smaller energy density than gasoline; thus more fuel required for same amount of work
- Pollutants – formaldehyde, acetaldehyde etc.



BIOFUEL POLICY

- Many programs at national and regional level
 - Mandatory biofuel content for transport fuels
 - Subsidies for production
 - Financing for research
- Clean Development Mechanism (CDM)
 - Can apply for certified emissions credits (CERs) for CDM projects that result in substitution of fossil fuels with biofuels
 - Biofuel must be used by consumers within the project boundary
 - Calculation must take into account emissions associated with the production of the biofuel
 - Calculation need not consider impact of land-use changes
 - Biofuel projects with the aim of exportation to Annex 1 countries are not eligible



BIOFUELS – CHALLENGES

- Sustainable production – national and international regulations and commitments required
- Trade law – creating the right incentives within the WTO framework
- Environmentally sound, transparent and equitable calculation methods for determining GHG profiles

