

Chemistry 234

An Introduction to the policy and law
context of biofuels in the US

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A quick request

- Please fill out a post-it card on your table with:
 - an example of a public policy tool that you think is important in the biofuel arena.
 - Add the mode through which the policy may have an effect on biofuels – that is, *how* the policy works.

We will return to this question later in the class.

The role of public policies in biofuels

- Public policies include:
 - regulatory standards, renewable energy use mandates, carbon emission markets, sustainability certification, trade controls, R&D grants, land use controls.
- Governments can draw from a portfolio of policy tools to create a “policy environment”.
- Policies can function through many pathways:
 - Creating new market incentives, reduce (or create) production and market risks, favor development of specific biofuels over others...

Who are the policy-makers that you need to think about?

- **Regulators in government agencies**, such as the US Environmental Protection Agency, who enforce pollution laws, run cap-and-trade markets for carbon emissions, and set standards for renewable fuel manufacturing;
- **Elected representatives in state and federal legislatures** who enact laws providing subsidies to companies;
- **Local government officials** who make zoning and permitting decisions for building bio-refineries in rural areas;
- **Research funders in government agencies** such as the Department of Energy who issue calls for grant proposals or who provide loans to businesses;
- **Government resource managers** such as the Bureau of Land Management who lease land to private industry to produce biofuels; or
- **Courts that make rulings** on whether low carbon fuel standards have been made according to the law.

Key features of the US government system to keep in mind

- The US is a federal system of government:
 - There are local, state, and federal levels of government, each with its own powers and standpoints
 - Policy-making is highly decentralized and overlapping
- Most biofuel policies will come from administrative agencies and legislatures. In this course, we will focus on:
 - Federal level: Department of Energy, Environmental Protection Agency,
 - California level: Air Resources Board, Department of Toxic Substances Control

What are the policy-making processes that you need to think about?

- **Legislating:** the US Congress has the constitutional power to make laws on energy and environmental issues,
 - **the Energy Independence and Security Act of 2007**
- **Rule-making:** agencies such as the Environmental Protection Agency are often required under laws to make rules that implement the laws in practice. For example, EPA has to make many rules that flesh out the requirements of the 2007 law.
- **Executive decision-making:** the US President has a range of powers that can affect how biofuels are produced to some degree. For example: executive orders.
- **Administrative decision-making:** agencies engage in countless decisions from day to day that may reflect rules but that involve discretionary choices.

Overview of key policy tools relevant to biofuels

- Mandates for producing renewable fuels
- Subsidies for producing biofuels
- Policies for fostering research and development innovation
- Rules restricting greenhouse gas emissions
- Environmental and land use regulations

Renewable Fuel Mandates

- There are different types of mandates:
 - *Set a percentage target for a given year*, like the EU mandate for 10% of transportation fuels to be renewable by 2020
 - *Set a volumetric target for a given year*, like the US Renewable Fuel Standard's call for 36 billion gallons of renewable fuels by 2022

These function to create, or expand, a stable market for biofuels where there was only a weak, unpredictable market previously.

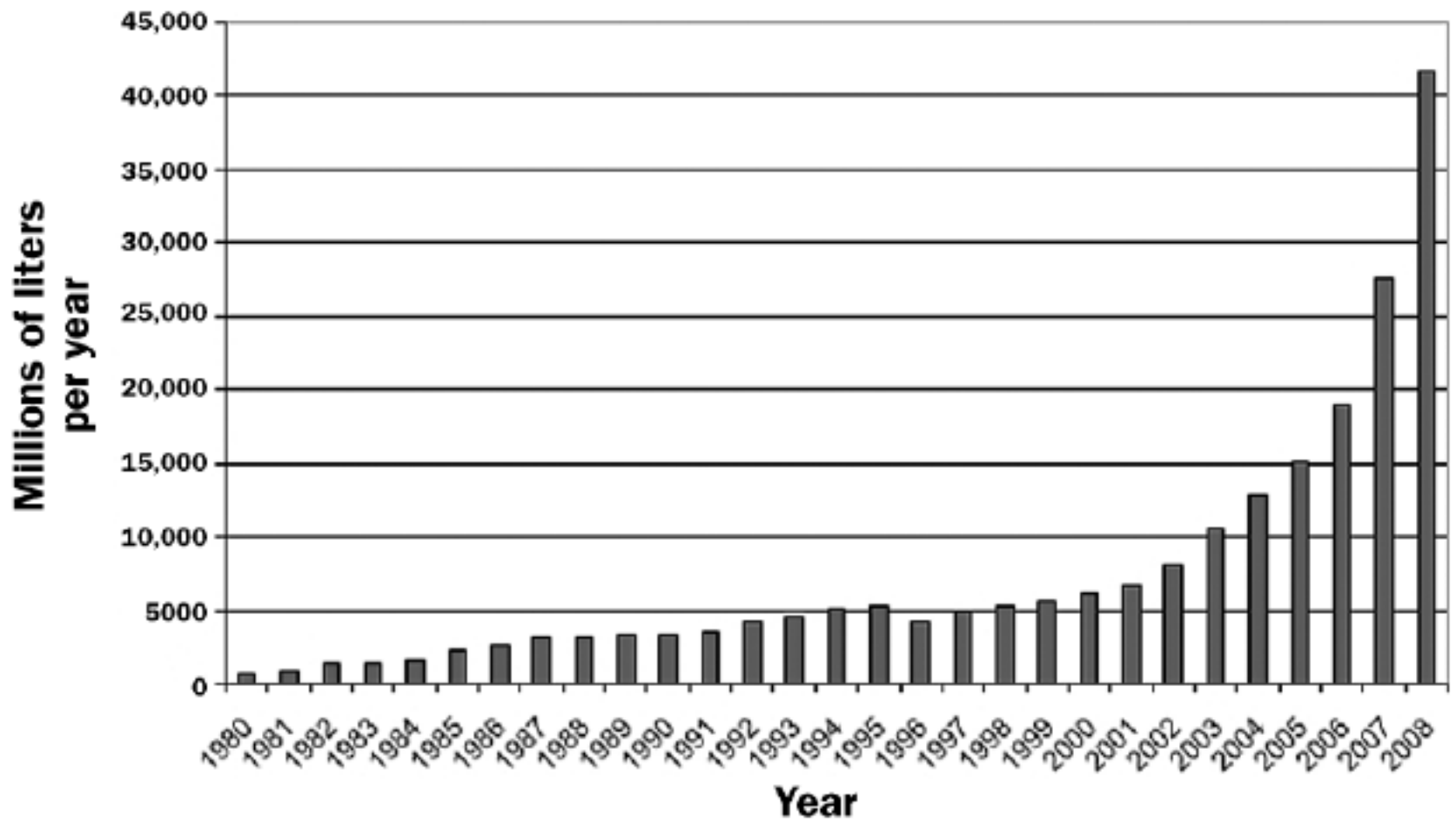
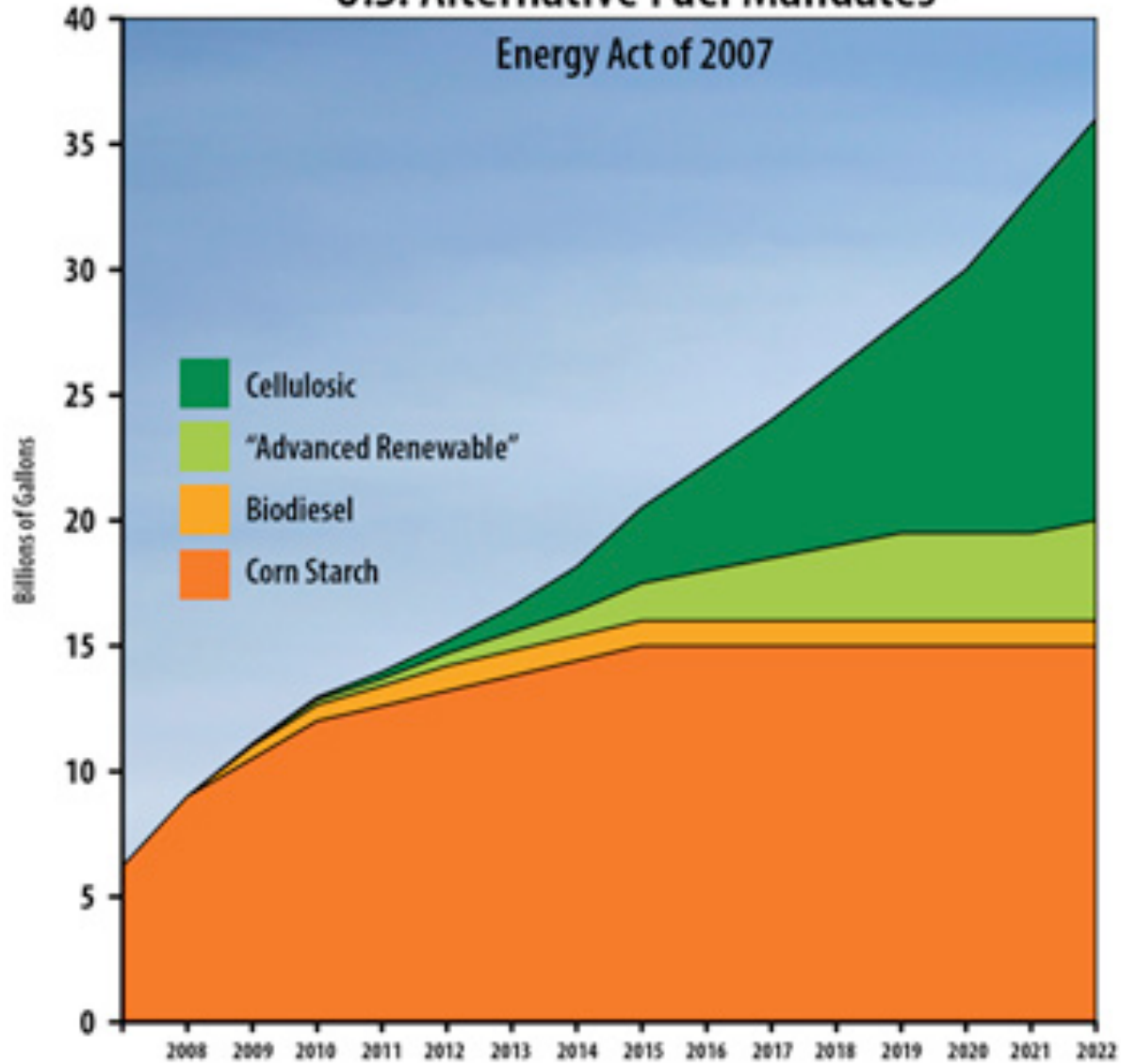


Figure 2. US ethanol production (millions of liters per year) from 1980 through 2008 (projected) (Tyner 2007b).

U.S. Alternative Fuel Mandates



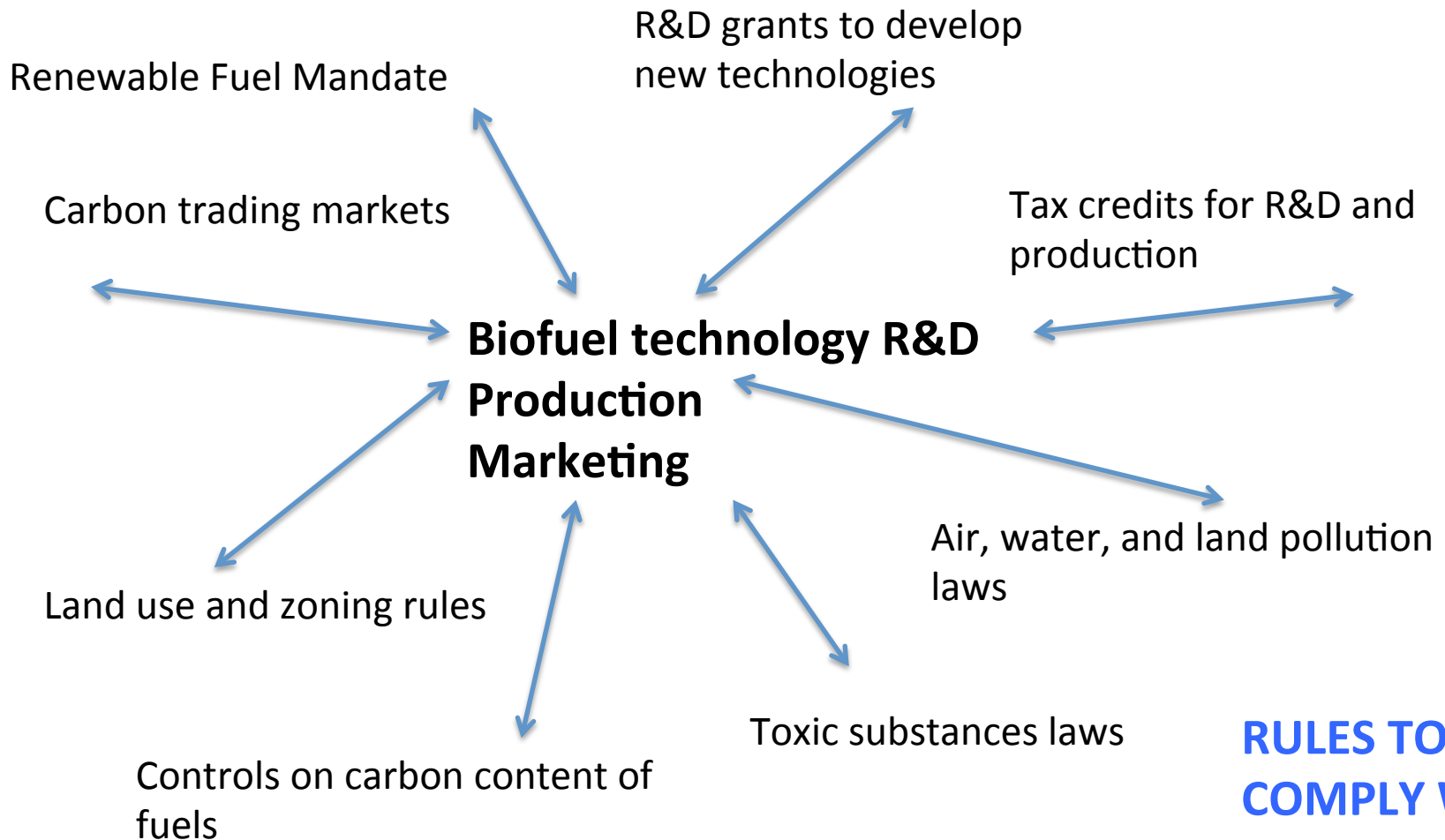
Renewable Fuels Association, 2013

Other policy tools

- **Subsidies:** direct payments, tax relief, support for R&D, trade tariffs.
 - Example: Blender's Tax Credit of 45c per gallon
- **R&D policies**
 - Example: Department of Energy funding for algae studies
- **Greenhouse gas emission rules**
 - Example: California's Low Carbon Fuel Standard
- **Environmental and land laws**
 - Example: Clean Air Act

The policy environment from a company's standpoint

INCENTIVES



Putting yourself in the feet of a policy-maker

- Policy-makers have **multiple motivations and goals**
- There are often **unintended or unforeseen social, ecological, and economic consequences** flowing from a policy choice
- Policy-makers act according to “**bounded rationality**”: limited information, cognitive biases, varying risk perceptions

Think about the political, scientific knowledge, institutional, and economic challenges that a policy-maker might face.

Throw out a few ideas and we will put them on the whiteboard!

Possible policy-maker challenges

- Policy-makers may be exposed to a matrix of **political demands** from the many constituencies that they are accountable to.
- Policy-makers may struggle with **the state of technical and scientific knowledge**.
- Policy-makers are affected by **institutional factors** like rule-making processes
- Policy-makers think about the **tractability** of various issues to policy-making