

Indexing Biomass Benefits and Risks

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September 8-9, 2008, I presented two posters at the ISU Bioeconomy Conference in Ames, Iowa. This paper summarizes the poster presentation on indexing biomass benefits and risks in regulations¹.

For years I have been working in and around the overlap between regulations that may achieve their own single objective, but when they interface with other related regulations, sparks fly. We all know of cases where there is policy friction. Some examples are:

Food Safety vs. Environment Quality...

Air Quality vs. Water Quality...

Biomass vs. Fossil Fuels...

Composting vs. Bioenergy...

Farm Bill vs. Energy Bill vs. EPA...

Wildlife vs. Water Quality...

Urban Sprawl vs. Farm Land Expansion...

Carbon Negative vs. Carbon Neutral

Local Energy vs. Interconnection to Grid...

In short it is a regulatory mess that adds costs and economic friction to economic development. Federal and state regulatory agencies are working very hard to get all the pieces to fit. Unfortunately, it is largely driven by politics and so it is painfully slow, with backward progress as well as some accidental forward progress. An alternative to incremental permit adjustments would be a new index system based on benefits and risks of feedstocks, technologies, and products.

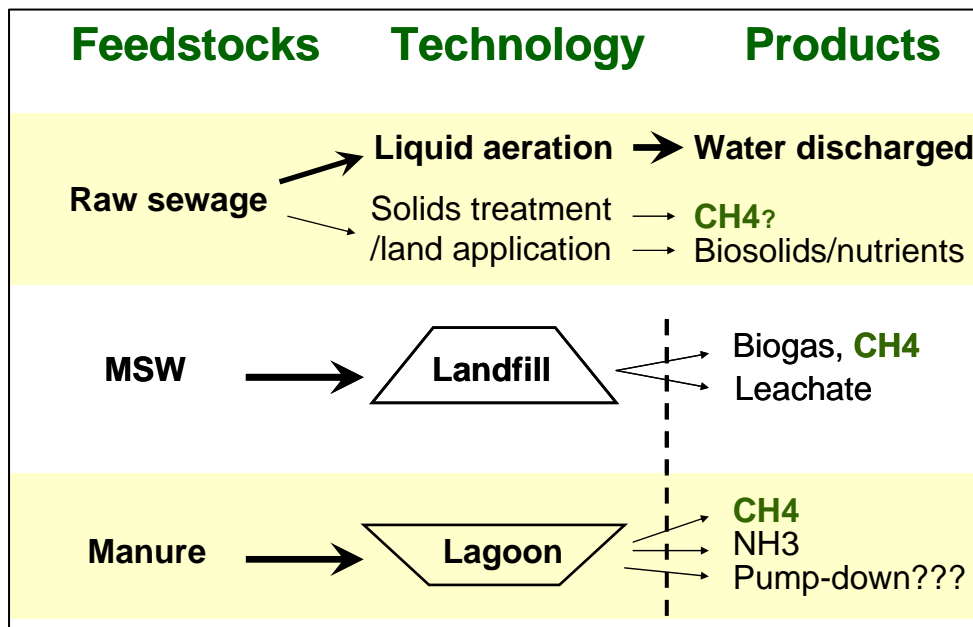


Figure 1 Traditional Flow of Organic Waste Treatment Technologies.

¹ This regulatory index work is based on work I am doing for the State of Indiana, *Permission to Emit*. The other ISU Bioeconomy Conference presentation on energy values for biomass materials is available through the Biomass Rules, LLC website, www.biomassrules.com.

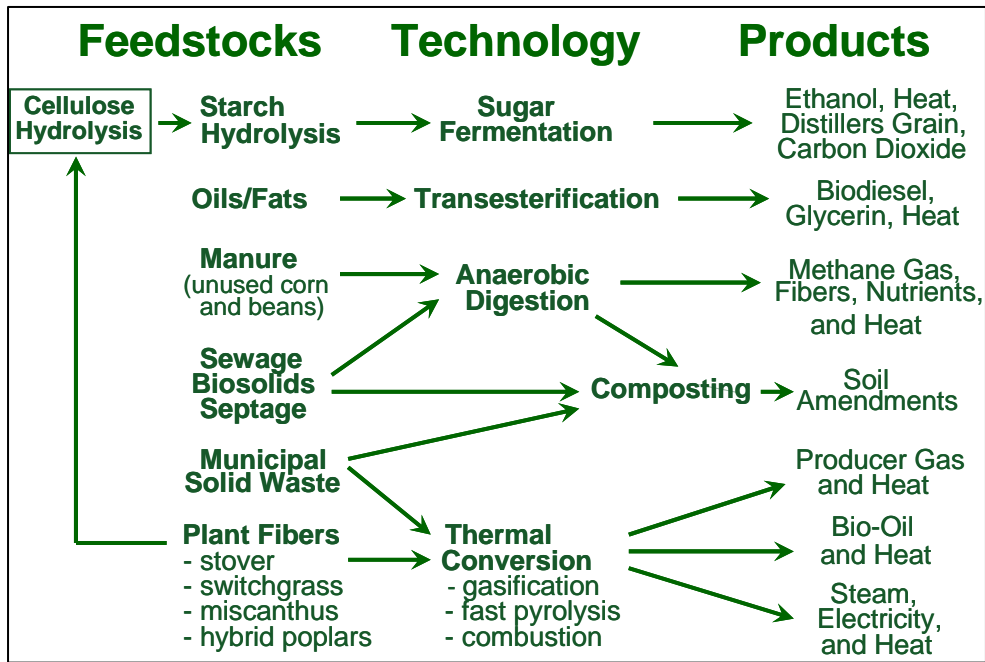


Figure 2 General Flow of Biomass Feedstocks through Energy Conversion Technologies.

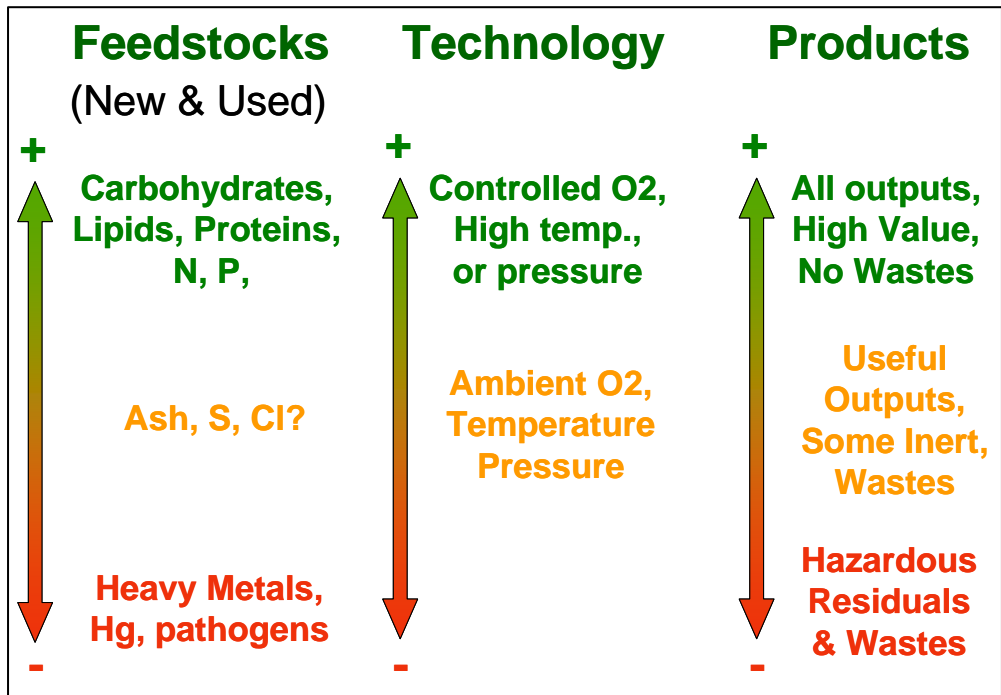


Figure 3 An Index that Captures Benefits/Risks of Feedstocks, Technology and Products

By creating a separate index, *i*, for each feedstock (F), technology (T) and product (P); industry can be incented to minimize their Total Index Score.

For each benefit,	' <i>i</i> ' < 1.0
For the regulatory standard,	' <i>i</i> ' = 1.0
For each liability risk,	' <i>i</i> ' > 1.0

Indices, *i*, that are beneficial (*i*<1) will drive the Total Index Score lower. Industry standards will have no influence(*i*=1). Risky feedstock, technologies, or products (*i*>1) will drive score higher.

$$\textit{The Total Index Score} = (\sum F \cdot iF) \times (\sum T \cdot iT) \times (\sum P \cdot iP)$$

By 'forcing' interactions between feedstocks, technologies, and products it is possible to mitigate a 'dirty' feedstock risk with a clean technology benefit. Super benefits, like food and certain specific kinds of very clean energy could be weighted to drive adoption or to retire certain technologies. The lower the Total Index Score, the more streamlined the permitting process could be.

Permitting agencies could even offer financial bonuses for projects that fell below specific scores. In other words, if someone has a feedstock, technology and product that are all beneficial, why not give them their permit in a week AND pay them \$10,000 for meeting and exceeding the goals of the regulatory policy.

The index is intended to validate accountability for health and environmental quality - not circumvent the system. With the appropriate science, permitting should go quickly through the index-scoring procedures.

This is a concept that is still evolving. One of the high points of the ISU Conference was meeting Tim Gieseke, President of Ag Resource Strategies, New Ulm, MN. Tim has actually done this for farm land use. He has taken the very tangible universe of farm land use and combined all the available production and environmental indices that are available into an amazing decision tool. The Ag Resource Strategies website is www.agresourcestrategies.com. It is very cool!

There IS hope for policies that conflict. That means there is hope that as the US moves forward in this fledgling biomass energy industry frontier, we may also find ways to streamline the economic friction created by colliding policies.

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