Liquid Light raises $15M and a lot of eyebrows as it advances towards making $$ out of waste CO2.

September 15, 2014 | Jim Lane

Used to put the "renewable" in Coca-Cola's wildly successful Plant Bottle? That's ethylene glycol.

But there's a better, cheaper way to make it , says Liquid Light - which now has a hatful of investors jumping on the bandwagon.

Here are some things you could do that will never happen.

You could gasify $100 bills and vent them into the atmosphere. Or you could melt gold and spray it into a landfill.

It will never happen because there's value in the material. Gold and $100 bills are never vented, never wasted. They never become garbage. Even when they are lost, we send out rescue teams to find them.

And that's the problem with the planet today, to put it simply as possible. There are chemical compounds being vented and landfilled because there is no economic value in them – or, rather, that the economic cost of venting or landfilling is less than the economic value in using them.

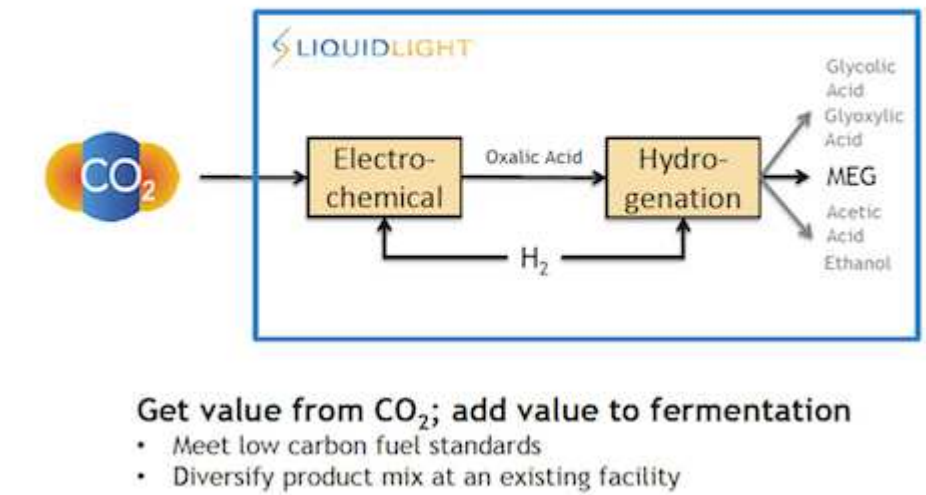
That's climate change in a nutshell, and that's pollution in a nutshell too. For which there is the complex, fractious, painful remedy via government mandates, controls, incentives, taxes and subsidies.

Or, the simpler remedy, which is to find higher value in the materials.

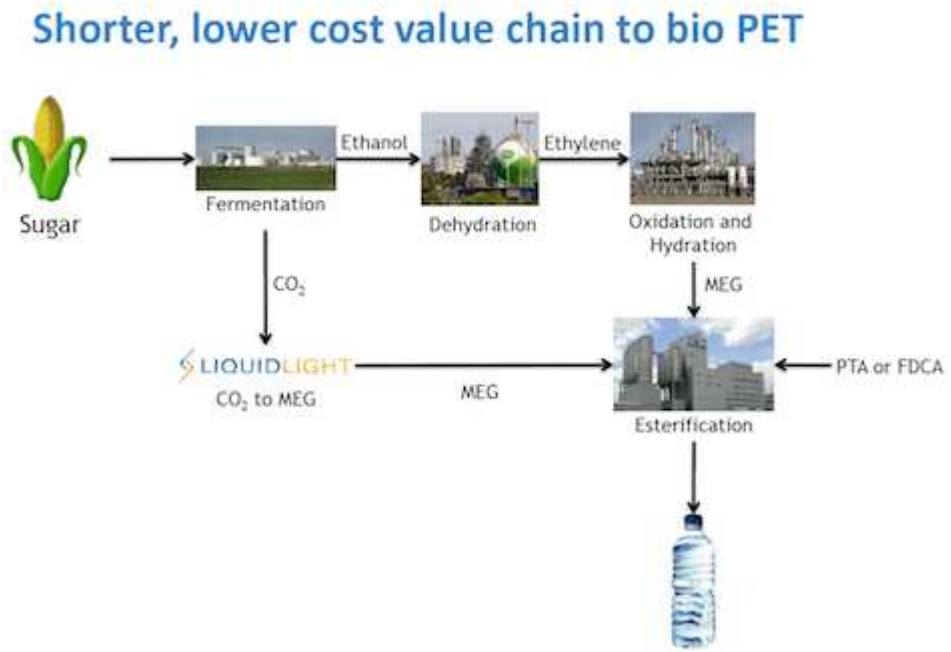
In the case of CO2, the venting is so massive that there is the problem of finding uses at sufficient scale that ends or mitigates the venting. You can't solve the CO2 problem by making more carbonated soft drinks.

Draw curtain. Cue talent. Enter Liquid Light.

This week, the company announced that it has closed a $15 million Series B financing. New investors include Sustainable Conversion Ventures, which focuses on renewable fuels and chemicals investments. Existing investors VantagePoint Capital Partners, BP Ventures, Chrysalix Energy Venture Capital, and Osage University Partners also participated in this round. The financing was completed at a significant increase in company valuation.



The new financing will be used to complete process development at pilot scale, providing the information needed for further scale up to a tons-per-day plant. The scale-up work is also aimed at validating the quality of the chemicals produced by the process, to confirm their suitability for use in key applications such as the PET used to make plastic soda bottles.



Their first target molecule? Consider monoethylene glycol (MEG), a $1200 per ton product with a $27B market, that is generally made from one of three ways in the Old Economy.

1. Out of ethane, costing $360 per ton.
2. From ethylene, costing $510 per ton.
3. From corn-based ethylene, costing $615 per ton.

So, here's the CO2-based alternative in the Advanced Bioeconomy. You can make it from roughly $80 per ton CO2, if you have the technology (based on converting 1.58 tons of CO2 at $50 per ton, to a ton of MEG).

What's not to like about that?

Draw curtain. Cue talent. Enter Liquid Light's technology.

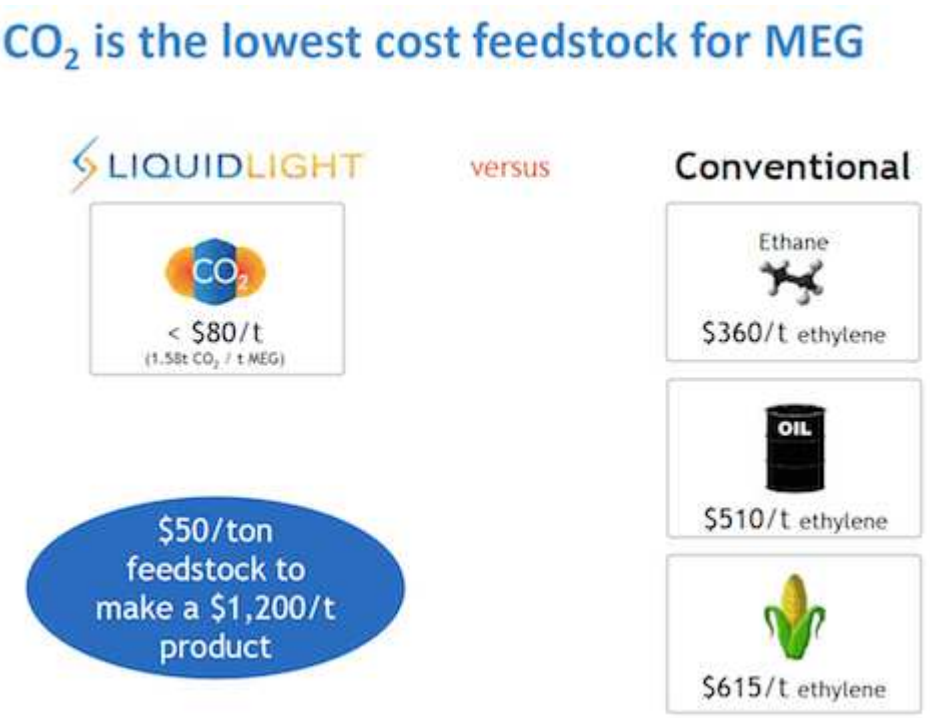
So, here's the process, simplified. Start with CO2, add an electrocatalytic process, add hydrogen – presto, oxalic acid. Add more hydrogen via hydrogenation, get MEG (or a variety of other products like glycolic acid, glyoxylic acid, acetic acid or even ethanol).

Now, there's our friend hydrogen, where's that coming from?

"There are three ways to get it," says Teamey, "one which we have unique to Liquid Light. The two most obvious are to use steam reforming or water electrolysis. The less obvious is to strip hydrogen from something else and make two products simultaneously."

Un, explain that again.

"For example, our technology can be used to remove hydrogen from propane, thereby converting it to propylene, and then use the hydrogen for CO2 conversion."



How much hydrogen do you need? “Can’t get into two many specifics about product cost, but if you look at the mass of hydrogen you would need .16 tons of hydrogen to make a ton of ethylene glycol.”

Source of the CO2.