[MUSIC PLAYING]

ANDY: Sarah, go ahead and start by telling us where you're from and how did you end up here.

SARAH: So I'm from Atlanta, Georgia. I just graduated from Dartmouth in 2014. But when I was here, I studied environmental studies and I worked a lot with the Office of Sustainability, and so that's how I kind of got my feet into the whole biodiesel venture.

ANDY: OK, excellent. So we really haven't, in our course, defined biodiesel or straight vegetable oil. So tell us what those two things are, your definitions, and then tell us where you went and what you did with it.

SARAH: So waste vegetable oil is essentially a cooking oil that you use to fry any sort of food. So McDonald's, or any fast food restaurant will essentially use waste vegetable oil or waste cooking oil in their processes to make their food. And the cool thing about waste veg is that you can actually turn that into biodiesel in a fairly simple chemical reaction.

So when you make biodiesel out of waste vegetable oil, you essentially take the waste vegetable oil, you add in a few ingredients, methanol or lye or KOH. You mix it up. There's not a lot of intensive mechanical things that go into it. And then you end up with biodiesel, which is a fuel that is very similar to diesel that we run our cars or engines.

ANDY: But the advantage is that at least a fraction of it is not a fossil fuel, but it's coming from a seed oil or something. So it's a modern carbon fuel as opposed to a fossil carbon fuel.

SARAH: Exactly. So the great thing is that we say that the carbon that's used in that fuel is already in "play." So we're not taking it out of the ground, it's already something that's been used. And the double benefit is that it's a waste product a lot of the time.

So by using waste vegetable oil, which usually would just be thrown away or disposed of, we're actually creating something that's of higher value. But in India, where I'm working on my project, that idea hasn't even quite taken hold yet. So we're working with street food vendors.

So in India there are street food vendors, kind of similar to fast food in the US. There are street food vendors on every street corner, and they're selling fried foods mostly. Samosas or pakoras, and they fry in these huge vats of oil. And so at the end of the day, they take all their oil and they dump it down the public drain, which--

ANDY: Basically a storm sewer?

SARAH: Yes. Storm sewer, exactly. And so the problem with that is that it clogs the drains, which is obviously really bad for water pollution. And obviously, that whole waste product that has some value is not being put to any use.

So my venture that I'm working on takes the waste vegetable oil, we collect it from the street food vendors. We pay them a little money for it, which is good for them, because they're currently not making any money off it. And then we turn into biodiesel.

ANDY: Wow. And then you sell it somewhere?

SARAH: And then we sell it. So we can sell it to diesel vehicle owners, and the benefit of that is that there's no retrofit required to run biodiesel in a diesel engine. So as long as you have a diesel car, you can just put it right in, and it's ready to go.

ANDY: What percentage is it of that?

SARAH: So in India, unlike the US, over 50% of their vehicle fleet runs on diesel. And that's actually growing right now. So it's very good for our business.

ANDY: That's excellent. And so tell us what city or cities you've worked in, and also I believe you've had a partner in all of this, right?

SARAH: Yes. So my partner, Meegan Daigler, she got interested in biodiesel by going on

Dartmouth's Big Green Bus, which is a biodiesel powered bus that tours the country every summer. And so with her knowledge of biodiesel and my knowledge of India-- I studied abroad in India before coming up with this idea-- we kind of combined our expertise. And that's how we got into street food biodiesel. And right now we're piloting in New Delhi, India, which is the capital. And it's a great place to pilot, because there's a lot of street food there.

ANDY: So how many street vendors have you negotiated an agreement with?

SARAH: So that's what we're hoping to start in the fall. We've informally done it in about 15 markets in Delhi. So markets are essentially concentrated areas of street food vendors. But we're hoping to go back in 2 months and actually sign contracts with them.

ANDY: Wow. And then the vendor would agree to give you all their waste oil, you agree to pay them a certain amount per liter? Is that the way you do it?

SARAH: Per liter, yeah. So the amount of oil depends on what they're cooking and how much is left over, but the average street vendor will have about a liter left a day, which after a while, it's pretty significant.

ANDY: OK. So if you're trying to convince someone of the importance of this project, keeping in mind what you and I talk about all the time, energy conservation, improving efficiency, fossil carbon, modern carbon, what's your pitch? What do you say to people about why this should happen? Or you're going to contribute to a Kickstarter campaign on this, or what's your pitch?

SARAH: So the great thing about this project is that from the supply side through the demand side, there are environmental and social benefits. So on the supply side, we're paying street food vendors, who are often making $1 a day, literally a dollar a day, for their waste oil. And so we're supplementing their income and diversifying their income. So that's a great benefit socially.

We're also diverting waste product from the public drainage system, which is providing an environmental good. Then on the demand side, we're selling a more

energy efficient fuel, a "modern fuel," as you were saying. And the emissions of biodiesel are significantly better than diesel.

So it's 67% less soot, 48% less carbon monoxide, and it completely eliminates sulfates. And so it actually does have a really huge impact in terms of emissions. And the great thing, especially in India, is that in India right now, vehicular emissions are over 2/3 of their air pollutants. And so as much as we can help reduce the emissions from vehicles, that's a pretty big impact.

ANDY: That's excellent. So there's a social benefit to the vendors, it increases their income. It reduces water pollution and gets rid of that waste product from going down the drain. And then it reduces air pollution when the product is burned. That just sounds like a great--

SARAH: A win-win.

ANDY: Yeah, a win-win for everybody.

SARAH: And on top of all that, we're selling it at a price that's slightly less diesel. And so we're making this fuel--

ANDY: Oh, you're selling it less. Because you said it had to be priced competitively, but you're actually selling it less than diesel.

SARAH: Right, we're selling it less. So hopefully, that's accessible to everyone that has a diesel vehicle.

ANDY: Wow. Well, that's really exciting. Thanks for telling me about this.

SARAH: You're welcome.