Voices of Sustainability: Season 1, Episode #2

Phillip Schlies

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Intro

Hello and welcome, I'm Phillip Schlies and you are listening to the Voices of Sustainability Podcast. Join us as we delve into the various strategies and challenges faced by the government, businesses, and non-profits, all striving to balance economic growth with environmental and social responsibility.

This season from the University of South Carolina, our reporters are all business majors at the Darla Moore School of Business with a concentration in sustainability. They'll be talking with various organizations to highlight how they're working to improve the world we live in and conserve our natural resources.

To explore the topic of sustainability, the episodes will explore how each person being interviewed defines sustainability, how the success of sustainability initiatives are measured in their organization, the motivations to be sustainable, and how to have a positive impact in your career. The conversations also provide insights into topics such as, circular economy and recycling, innovation and technology in sustainability, as well as regulation and policy that are influencing this space.

On today's episode, our reporter Cassie Kuenn is joined by Morgan Crapps, the director of Public Affairs and Government Relations at Redwood Materials, a company that aims to recycle batteries and produce battery materials for electric vehicles and storage systems. They'll be discussing Redwood's mission to create a closed-loop system for battery recycling, as well as the importance of domestic supply chains, and Morgan's journey in sustainability. Let's get into it

Script

Cassie Kuenn
Hello Everyone, my name is Cassie Kuenn and today I will be interviewing Morgan Crapps from Redwood Materials.

Morgan Crapps
My name is Morgan Crapps. I am director of Public Affairs and Government relations for Redwood materials, and so in this role I lead external affairs for Redwood materials here in

South Carolina. I joined Redwood Materials back in May. I've spent my career in economic development until now and so, when I was at the University of South Carolina School of Law, I actually started working for the State Department of Commerce and went there full time. After graduating from law school and have been an economic development both in the public sector and the private sector ever since then. I worked with Redwood when they were considering South Carolina as a location for their new battery materials campus, and then ended up moving over and joining their team coming up on a year ago.

Cassie Kuenn
Yeah, that's really amazing. Currently as an ECON major, you don't find many of them at the University of South Carolina, so I think it's fascinating to hear about your background in economic development. And then another broad question, but what does sustainability mean to you?

Morgan Crapps
Yeah. So sustainability for me is about really making the world a better place and creating ways to help our environment while minimizing our footprint here on Earth. One of the things that we do at Redwood is we're working to create a closed loop system for batteries, and so making them circular. In terms of recycling them when they reach the end of their life cycle and then turning them around to make new battery materials from those and so anything that we can do. As far as recycling and reducing our carbon footprint, here on Earth is sort of how I view Sustainability.

Cassie Kuenn
Yeah, I know reducing carbon footprint is gonna be massive, especially in the long term. And I know you mentioned a little bit about what's going on at Redwood Materials, but can you describe in more depth how you've carried your sustainability passion into Redwood materials?

Morgan Crapps
Yeah. So, I never went into my career imagining that I would be doing anything with sustainability. I sort of fell into this, but as I learned more about Redwood and the company's mission and how important it is to create end of life pathways for lithium ion batteries, I really fell in love with what the company was doing and see it as such an important mission for us here in the United States that I was really excited to join the company and help further this mission and and do it here in South Carolina, which I think is really exciting. Redwood is really an innovator in this space, and so it's exciting to be on the cutting edge of new technology like this. That's really creating new pathways for batteries, which are growing right now and our economy so much. So, it's a really important mission and one that is novel, but really exciting to be on the cutting edge of.

Cassie Kuenn
Yeah no. I think I'm hearing everything currently going on in South Carolina, especially to be based in Colombia's really exciting. Thank you so much for the background details on you and a little bit about Redwood materials. Can you please talk about what continually motivates you to

continue pursuing some of these sustainability initiatives or rather like what is keeping you going on this mission?

Morgan Crapps
Yeah. So, what is keeping me going? So, there's so much work to be done reaching these goals. And as we look at the growth for lithium ion batteries in the coming years, we expect that there's gonna be about somewhere between 500 and 1000% growth in the use of lithium ion batteries. And when we think about all of that growth and what's going to happen with these batteries when they reach end of life, really there are two issues. One making sure that when they reach end of life, they can be properly recycled. But then two, how do we meet the demand for all of these batteries? And today, that has largely been with mining for new critical battery materials, but our solution to this problem is to recycle them and turn them into new battery materials. So, they can actually be recycled infinitely, and we're able to get about 95% or more of the critical metals out of a battery. And so, our goal is now on the road as more and more of these batteries come into the economy that we're eventually able to have a fully closed loop system for recycling and remanufacturing these battery materials. And so that being said, there's lots of work to be done just in educating the public about recycling batteries and working on the external affairs side to make sure that people understand the importance of having these batteries recycled and properly taken care of when they reach the end of their life. But then also helping to ensure that we're able to make battery materials to help battery makers meet this growing demand here domestically. Today, most of that production is happening outside of the US and so specifically in Asia. So, there are a lot of advantages to having domestic production of those battery materials and including everything from, you know just domestic security and keeping the geopolitical risk as low as possible, supply chain issues, environmental issues. So, you know there are lots of reasons why. Ohh and of course cost. It's saving on cost to be able to make them here. So, there are a wealth of reasons why we want to have this domestic supply chain that doesn't exist today for these critical battery materials. So again, it's something very new for the US and so there's lots of work to be done and almost every aspect as we innovate these processes and try to make them as effective as possible. But it's a fun space to be in. In one that keeps you going day to day as we work to try to educate and grow this space here in the US for the first time.

Cassie Kuenn
Yeah, I think that's a lot of really important details and information and a lot of impressive statistics. Even so, thank you so much for sharing. And then another personal kind of question, but I know you were a bar certified lawyer for several years. I'm curious to know how you think law has changed your perspective in general and then within sustainability?

Morgan Crapps
Wow. Good question. So yeah, I went to law school and I did practice as an attorney for a few years and realized that was not my favorite pathway for a career, but certainly one that I use every day and that helps me. And in my career and my day-to-day work, so I'm now an inactive member of the bar, but I I do think that from just a day to day standpoint having that. Analytical

side and and the problem solving and being able to sort of walk through steps to to solve a problem is something that's helpful in any career and especially in one that's external affairs and and policy related. And so I certainly use my law background, even though I'm not practicing today. And then from a sustainability standpoint, again, I never envisioned that I would be in a career focused on sustainability, but I think certainly as we look to troubleshoot and try to come up with solutions on a day to day basis to problems. I think having that analytical background and being able to problem solve has been a big asset for me.

Cassie Kuenn
Yeah. I think going to law school to like, even if you're not practicing, just having that JD degree can give a lot of perspective on a lot of different topics. That's why I was so curious to hear about. So, thank you for sharing. And additionally, you touched on a little bit your background in economic development. How do you think having a background a lot aids you within your work in that field?

Morgan Crapps
Yeah. So as a young professional, I think just having a law background was helpful for me and being able to go into high level business meetings and help maybe give a little bit of credibility. I started my career working in global business for the South Carolina Department of Commerce, where I was working with companies who are considering South Carolina as a business location for new facilities. And so within that space, I did both project management and international business recruiting. And so being a young professional and meeting with sea level executives, I think having that legal background helped give me a little bit more confidence and credibility in some of those meetings. And then certainly just again going back to the problem solving and even just the organization that it takes to be an attorney and walk through steps to reach a conclusion or reach an end result, I think was helpful for me and helping to manage complex projects. So, I think certainly having the law background was helpful at that early stage in my career and then walking through complex issues like incentive contracts and incentive proposals and being able to explain those to perspective, South Carolina companies was also very helpful. It all, it was a good, good background to have for sure.

Cassie Kuenn
Yeah, that's incredibly fascinating to me. I'm heavily considering going to law school postgrad. So it's interesting for me to hear your perspective, especially with my ECON Major. I was really eager to meet you, especially because of your career path. So thank you so much for sharing.

Morgan Crapps
You know and always happy though.

Cassie Kuenn
Uh, and then on top of law school, you have experience in consulting. Ah yes, thank you. On on top of law school, you have experience in consulting government work and now as a director.

What do you think is the defining factor for your ability to have such diverse experiences and abilities?

Morgan Crapps
Wow, that's a great question. So my career path has touched a lot of different areas within economic development, but until now has always been within economic development. And so starting with the state working with the Department of Commerce and then moving into the private sector where I practice law for a few years, but still focused on economic development and specifically incentive contracts and helping companies navigate incentive contracts and expansions into the US, so working with a lot of foreign companies who were looking at the United States as an investment destination and helping them with the legal aspects of that and so. Still staying within economic development and then moving into site selection on the consulting side, which was also in the private sector. But I would say it was sort of a combination of what I was doing as a practicing attorney and then also what I was doing as a project manager for the state where I was representing corporate clients. But looking at oftentimes multiple states, helping them analyze locations and select areas for new business locations. And so everything was sort of intertwined that I did in my career and told moving over to Redwood and then this was just such an exciting opportunity with a client of mine. At the time that I had to jump on it and make the switch. So this is a little bit of a new role for me and some aspects and some things are areas where I've experienced it before and have a lot of experience. And then there are other parts of this role that are more new to me, but this is the first job outside of the economic development world that I've had in my career. So it's been a fun learning experience.

Cassie Kuenn
Yeah, I think wearing a lot of different hats. Does it come with some of those benefits like you mentioned of just the depth and then also breadth of skills that you must possess now? So thank you so much for sharing a little bit more about you to get in some company specifics. How far along do you think Redwood materials is on your sustainability journey?

Morgan Crapps
Yeah. So I mean, the whole sort of ethos of the company is sustainability. And so we're very, very concerned with sustainability, the whole goal and mission of the company is focused around sustainability and creating a circular economy for batteries. So I think we're far along and also in, in other senses continuing to try to grow in that space every single day. So we're a company that is very concerned with innovation and trying to make sure that we're creating the very best processes and being as sustainable as possible. And in every aspect. So things like not using a natural gas line at our sites and 100% electric, we also have no process waste water. So that's something that's very unique for a company like ours and especially with some of the processes that we have in place for refining metals. And so we are always looking for ways to be more sustainable, but we're a very earth conscious company and so reducing the environmental footprint in every way possible is something that's always top of mind for us.

Cassie Kuenn
Yeah, that's very fair. I think when it's so ingrained in the companies mission, then it's a little harder to quantify because it is in every aspect and I know you've talked a little bit about Redwood Materials mission to complete that closed loop for lithium ion batteries. I don't know if you have any other necessarily tangible or statistic timeline based goals, but has Redwood materials had any trouble meeting your goals and if so, what have the troubles been?

Morgan Crapps
Yeah. So I mean we are always looking at new ways to innovate and make processes and our products better. And so, you know, we've got an extensive R&D team, lots of engineers working on everything from our production processes to our products, which are anode, copper foil and cathode active material that we're supplying to battery makers. And so, you know, we are always as a still sort of startup company, always pivoting and looking for better ways to do things and ways to be more effective and efficient. So I think that's probably how I would answer that question is that we are always looking for ways to be better and get closer to our goal of creating a circular economy for batteries.

Cassie Kuenn
OK. Yeah, that makes perfect sense. And then a little bit once again more specifics, but how does your company measure the impact and effectiveness of your sustainability initiatives?

Morgan Crapps
Yeah, that's a good question too. So, we are again constantly looking at ways to innovate. And so in a lot of our metrics, we have certain goals with customers where we're using certain portions of recycled content and things like that. And then other initiatives such as our use of no process where are having no process wastewater. You know, those are pretty easy to measure just in our business operations. And so we have a sustainable sustainability team within our EHS team that's constantly looking at those issues, but always looking for ways to better, better bring in sustainability initiatives and then certainly meet all of our customers goals as well.

Cassie Kuenn
Yeah, that's important. I think Sustainability team is something a lot of companies are looking to add. So I think it's encouraging to hear Redwood Materials already has one and then you have mentioned it a little bit just especially for people like me who do not know specifically what a closed loop domestic supply chain means. Can you please explain in detail what a closed loop domestic supply chain means and how Redwood materials has been tackling creating a circular supply chain?

Morgan Crapps
Yeah, absolutely. So, today, when you look at the supply chain for battery materials, UM, it's not uncommon for an atom of lithium and specifically the four main metals that we're looking at are lithium, nickel, copper and cobalt. And there are others as well, like graphite and manganese. But the four big ones for us are the four I have first mentioned. So cobalt, copper, nickel and lithium

today it's not uncommon for an atom of lithium to travel 50,000 miles before it ever ends up in a battery. And so it might start in South America, and then it's gonna go to Asia to be refined, specifically China. So almost all of that activities happening in China today, then it will go from China to typically Japan or Korea where it gets made into a battery material and then back to Europe or North America before it gets put into a battery cell and then into a car. And so that supply chain is not sustainable for a lot of reasons. You know the geopolitical risk, the supply chain risk, the cost and then the environmental impact are all very volatile with a supply chain like that. And So what Redwood is doing is really appearing at both the end of a batteries life cycle and then at the beginning. And So what I mean by that is we recycle end of life batteries and this is everything from Evie and hybrid vehicle batteries to large utility scale stationary storage batteries all the way down to consumer devices. And so laptops and cell phones and tablets and Air pods and watches. And you know, you name it something rechargeable. We're probably recycling, so we recycle those end of life batteries as well as battery production, scrap and so battery makers also have a lot of scrap as they make batteries, even the most efficient battery production makers are going to have significant amount of scrap. And so we take that scrap and then the end of life batteries and then we recycle it, we refine it and pull out all of the all of the metals from those batteries and then we use them to create new battery materials. So the anode copper foil for the anode and the cathode active material for the cathode, and then we supply those to battery makers here in the United States who are putting them into new batteries for electric vehicles. So we are working with companies like Panasonic and Toyota to supply them with battery materials for the batteries that they're making here domestically. Uh, so yeah, we're we're sort of in a unique position where where we're appearing as batteries reach the end of their life cycle, but then also creating these new battery materials for, for cars that will be made here in the United States.

Cassie Kuenn
That's incredibly fascinating. Honestly, I think hearing more about like the global economy and how all these different countries and just production sites are intertwined as fascinating, specifically within the renewable energy equipment industry. I know 65% of global manufacturing within the renewable energy equipment industry occurs in China. How does this fact correlate with Redwood materials sustainability initiatives?

Morgan Crapps
Yeah. So. So for us, a lot of this activity has been happening in China and Asia for many years. But it's a new industry for the United States and so we haven't seen and these materials being produced here really ever. So, for the first time, we're able to start producing these battery materials at scale here domestically, which is huge for our U.S. Economy, for all the reasons we've already talked about. But it's really important as the demand for lithium ion batteries continues to grow, that we have a secure domestic supply chain of these critical battery materials because it doesn't just impact us or one battery company. If there's a slowdown in the supply chain, it has the ability to impact all of the automakers who are now making electric vehicles. Which when you start thinking about how that can start to spiral and all the different suppliers that are involved in the automotive industry and dependent on these automakers making these

electric vehicles, there's a lot of risk that comes with a volatile supply chain. So having a secure and reliable domestic supply chain for these battery materials, I think as we saw with semiconductors and when those shortages happened and how they had a ripple effect and having that domestic supply chain for critical battery materials here in the United States is really, really important. So again, today we've been largely reliant on China and other countries across Asia, but we think it's very important, as does the US government to have a domestic supply chain that's ready and available here.

Cassie Kuenn
Yeah, I completely agree with all of those points. Having things that are manufactured and produced within the country will definitely help if there is a shortage of at any point. And then I have a last question for you. You've given a lot of good information, a lot of education for me. If someone who's not that educated on the renewable technology field, especially with batteries, so I appreciate everything you've been able to share. So then if you had one piece of advice to give me your other students looking to have an impact in their career, what would it be?

Morgan Crapps
Yeah. So I think. My biggest piece of advice for students is to try to build your network. I've really been able to make strides in my career through my network and through. Relationships and people that I know and that I've worked with and so trying to form those, I'm trying to form those friendships and relationships and meet as many people as you possibly can and build your network is always very, very helpful. And that starts in college. Certainly, I have great friends from college that I still work with in different capacities today. So utilize being able to form those friendships and form those relationships with people in business that you're interested in pursuing. And then certainly just take advantage of any experiences that you can. You know, I I think the more experience you have under your belt and doing different things, whether they're through classes or through clubs or through extracurriculars or you know whatever that looks like, just having those experiences under your belt gives you things to talk about and interviews and once your early in your career so that that sort of my advice is just try to try to do as much as you can. UM, early in your career and and work as hard as you can and try to gain all of those experiences that you possibly can because they tend to build on one another as you move through your career.

Outro

Thanks for tuning in. I hope you've enjoyed getting to know Morgan and learning more about Redwood Materials. Their closed-loop system is a great innovation, effectively recycling and re-using battery materials to minimize environmental impact. It's exciting to see them leading the way in creating a more sustainable future." However, that’s all the time we have today. Tune in

next episode to hear our guest from Mumford Industries talk about recycling on a business scale. Thank you for listening and we will see you next time.

Tag

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