

SUSORG Interview with The Switch-20250224_090006

Interview Transcript

Sofia Ala 0:08

Welcome to today's podcast episode on Extractivism. The circular economy and the future of truly sustainable solutions. We live in a world where natural resources are being depleted at an alarming rate, and our current economic model is based on taking, using, and discarding.

But is there a better way?

How can we transition to a system that not only minimizes harm, but actively?

Regenerates the planet.

Extractivism has shaped our economies for centuries, taking resources, using them and discarding waste.

But this linear model is pushing our planet to the brink, causing deforestation, water shortages, and social injustices, especially in the global South.

The big question is how do we break free from this cycle?

CD

Clara Dumesnil 0:57

Before we dive into solutions, we should define what extractivism really means.

It's not just about mining or logging, it's an entire economic model based on the large scale extraction of natural resources with little regard for ecological or social consequences.

This approach fuels climate change, exploits vulnerable communities and leads to environmental degradation.

It's especially harmful when countries rely on exporting raw material.

Instead of developing sustainable industries.

SK

Sanja Klar 1:30

Exactly. Most modern economies are deeply dependent on extractivist practices, whether it's fossil fuels, industrial agriculture, or rare earth mining for economic shifting away. For this model requires system exchange.

CD

Clara Dumesnil 1:48

Yeah. And that's where the circular economy comes in. Instead of extracting and wasting resources, we design projects to be reused, repair and recycle.

It's about creating close loop systems where materials stay in circulation. If businesses and governments, we can drastically reduce waste and environmental damage.

SK

Sanja Klar 2:11

But policy is also a major hurdle. Most industries are built on extractivist models, but transitioning requires incentives, regulations, and, above all, cultural shift.

Governments can implement extended producer responsibility, making companies accountable for their products entire life cycle.

But even that's just one piece of the puzzle.

SA

Sofia Ala 2:39

Yeah, true sustainability.

Sustainability goes beyond just minimizing harm.

It means creating systems that actively regenerate.

Look at bio mimicry in nature and there's no waste.

Every output becomes an input for something else. If we design with those principles, we can build self-sustaining solutions.

CD

Clara Dumesnil 3:00

Exactly. The future isn't just about doing less damage, it's about regenerative solutions.

We already see this in things like regenerative agriculture, carbon negative building materials and algae based bioplastic.

The challenge is making this solution scalable and affordable.

SK

Sanja Klar 3:22

Yeah. And also ensuring they don't become greenwashing tactics. Many corporations claim sustainability while still relying on extractive supply chains.

We need transparency, accountability and a shift away from economic growth that depends on resource depletion.

SA

Sofia Ala 3:44

Absolutely. The future of sustainability means shifting values from endless consumption to sufficiency, from ownership to access, and from waste to renewal.

It's not an easy transition, but it's the only path forward.

CD

Clara Dumesnil 3:58

It all starts with design, policy and business working together. If integrate secular principles at every level.

Material logistics energy sustainability won't be a separate goal.
It will be built into our everything functions.



Sanja Klar 4:17

Agreed. A truly sustainable future isn't just possible, it's essential.
But it'll take collaboration across industries, governments and communities to make it reality.

Now let's move forward with this week's podcast episode, where we'll be interviewing Jonna Tiainen from the Switch. Diving deeper into these themes and discussing how companies can transition towards.

Truly circular and sustainable models.

Stay tuned.



Sofia Ala 0:05

So welcome to our podcast where we dive into the most pressing sustainability topics of today.

We are Sofia, Sonia and Clara, and in this episode we're exploring a topic that challenges some of our assumptions about green energy extractivism circular economy and the future of truly sustainable solutions. To discuss these topics, we're joined by Jonna Tiainen.

Who is a senior specialist in thermal design at the switch, which is a company specializing in innovative drivetrain technology for wind, marine and other renewable applications.

Jonna, welcome to the podcast.



Jonna Tiainen 0:50

Thank you.



Sofia Ala 0:51

So first I was gonna ask you a bit about your role at the switch.

What do you do there?

And maybe tell us a bit also about the company.



Jonna Tiainen 1:01

Yes, I joined the switch around two years ago and I'm responsible for making our

machines cool.

So I do terminal design for the machines and also for the power electronics and. Yeah, the company is specialised in assembling.

And.

Designing the machines, drives and power electronics products, for example for marine industry.

For big vessels to electrify the marine industry and.

We were used about wind turbine generators, but nowadays marine industry is the bigger portion of our business. And then we have high convert high frequency converters also used for example in ships.

SA **Sofia Ala** 1:54

OK.

Yeah. And could you also tell us a bit about your background?

Like what have you studied?

JT **Jonna Tiainen** 2:04

Background is in LUT-University in Lappeenranta.

I studied energy technology and after my studies I Started to do doctoral thesis.

So I was a doctoral student and specialized in heat transfer and fluid dynamics.

I graduated as a Doctor of science in 2018 and after that I spent four years doing research at LUT before I came to the switch.

SA **Sofia Ala** 2:36

OK. Interesting.

SK **Sanja Klar** 2:42

Thank you Jonna and Sofia.

Now let's start with a critical topic. In a renewable energy industry, and that is extractivism.

Often when we think about renewable energies, we assume it's inherently positive or sustainable.

But these terms like Green extractivism challenge this assumption.

So how would you define green extractivism?

Where does the switch position itself in this debate of sustainability versus green extractivism?

JT **Jonna Tiainen** 3:21

According to my understanding, it means that we accept that it is fine to use limited resources such as rare earth materials in equipment and products required in renewable energy production and storage. And we at the switch are aware of green extractivism.

We do our best that we developed energy efficient products which have long lifetime.

And therefore we aim to maximize the advantage.

Of those resources, what we are using?

And in addition to energy efficiency solutions, our supply chain is made transparent.

And this means that we audit our suppliers.

We know where the parts of our products are coming from and we can have a dialogue with the suppliers, for example, about CO2 emissions.

And this dialogue with the suppliers improves.

All the time.

And now our suppliers have started to share also the data of their CO2 emissions with us. And this knowledge of the CO2 emissions guides us to choose more environmentally friendly processing methods and green energy.

But the decision about processing methods and energy source are made by the suppliers and we can only open the discussion and propose ideas.

But in the future, the use of recycled metals would be an interesting option for us, and the use of recycled metals would significantly reduce the CO2 emissions.

And what comes to this open dialogue with the suppliers we have listed those raw materials and chemicals that we don't accept to be used in our products and they are listed on the so-called Blacklist and its list of materials and chemicals originates from the restrictions given.

By the EU legislation and international agreements.

SK **Sanja Klar** 5:27

Thank you.

Yes, that's really interesting. And I think this transparency and awareness are really important when we discuss these topics.

But there's still this contradiction where on the other hand, renewable solutions are key to decarbonization.

And therefore sustainability. But on the other hand, they rely on mining as we talked, which has real consequences.

So delving even deeper on top of this, auditing work and tracking sustainability change, how does the switch acknowledge and address this, this contradiction?

JT

Jonna Tiainen 6:09

1st we used permanent magnets in our machines, such as in the generators of wind turbines and these permanent magnets are long term materials and they do not need to be changed during their lifetime or during the lifetime of the machine.

And 2nd, in order to reduce the dependency of rare earth metals and materials, the switch participates in the EU funding research project.

Which is called MAGNEA and this MAGNEA project will develop new alloy material for permanent magnets which is free from rare earth elements.

And this project will also develop recycling strategies to allow an efficient reuse of alloys.

And efficient recycling and reuse of other materials like steel and copper would be also an important research topic.

For us in the future.

SK

Sanja Klar 7:10

Thank you.

Yeah, this this effort sound very important and the research considering the complexities.

Moving on, mining isn't just an environmental issue, but it has social consequences too, especially in the global S so.

How about their social consequences?

If we touch upon that theme.

JT

Jonna Tiainen 7:46

We follow the discussion and our customers are more and more aware of the emissions and they ask relevant questions regarding the environmental and social consequences and however, the switch is far away from both the mining industry and end users of our project products.

But we do our best to.

To the listed requirements and we sees of the end users.

And if our machines were used in mining industry, they would make the mining industry more energy efficient and sustainable.

What we do inside our company is that we have recycling guidelines which follow EU Waste Framework Directive.

And this means that we prioritize to repair or reuse the product.

But if we if to reuse it is not possible then we recycle the material and if recycling is not possible then we then it can be used in energy production and we avoid in all situations the disposal of material without utilization.

And in addition, we reuse the packing material materials. For example, the pallets used to transport the stator part of the seft generator to the Lappeenranta factory. It is reused again when we are transporting the assembled whole staff generator to the CPR.

We also are decommissioning have the commissioning guidelines for electrical machines and the end user is responsible for decommissioning.

Of the machines, but we can give them recycling recommendations and as already mentioned, we participate in this EU funded research project.

We're aiming to reduce the dependence on rare earth materials.

SK **Sanja Klar** 9:46

Thank you.

CD **Clara Dumesnil** 9:49

Thank you. You and Sonia. Moving beyond extraction. Let's now talk about circular economy.

Designing product to minimize waste and maximize longevity so you know now does the switch engage in circular economy practices?

JT **Jonna Tiainen** 10:10

Yes, we do.

We follow the ISO 14001 standard which specifies the requirements for an environmental management system that an organization can use to enhance its environmental performance.

And at the factories we recycle materials, we use renewable electricity and clean

district heating. And what comes to our products, their lifetime is designed to be very long.

Ends of years and also refurbishment of our machines is possible to extend their lifetime.

SA **Sofia Ala** 10:51

Yeah. Thank you.

Now we're moving forward.

So in your view, what's the biggest challenge the switch faces in making products truly sustainable, not just less harmful?

JT **Jonna Tiainen** 11:06

One of the biggest challenges is that we are dependent on China and its rare earth materials.

Another challenge is to make sure that the entire material supply chain is sustainable. We have audited all our suppliers but the question mark, especially in China is the suppliers of the suppliers.

And their challenge is that money always talks and we need to listen to our customer requirements.

For example, we make a compromise between transportation emissions and costs and manufacturing emissions and costs.

We can either transport parts from China to Europe.

But very often the final product assembled in Finland needs to be transported back to China.

Do the Cprt and another option is the localization of assembling work totally in China?

So there is no transportation back and forth from China to Europe.

And the challenge now is also available of green steel, but this is developing and might be better available and cheaper also in the future.

And in the future, when recycled materials and metals will be more available, the possible challenge may be the attitude towards recycled materials from the customers. And the question then is that how we ensure the quality and strength of those recycled materials?

But to answer this question, we need research to be done.

SK **Sanja Klar** 12:42
Thank you.

SA **Sofia Ala** 12:42
Yes, thank you.

SK **Sanja Klar** 12:43
Be interested to hear more about this auditing that you have made.
So what's what kind of or how has this auditing taken? The local committee's needs and wishes and what's kind of findings has been there on these audit things?

JT **Jonna Tiainen** 13:02
That's a very good question. I would need the backup from our quality team to answer better in this question, but auditing is done so that people from from the switch.
We sit the supplier and they see their processes, their ways of working.
And and so on so that we are familiar what happens at our suppliers premises and then there is that open dialogue.
Between the supplier and the switch.

SA **Sofia Ala** 13:40
Yes, thank you.
And now looking at the bigger picture, what's your hope for the future of green energy?
Do you think we're moving in the right direction?

JT **Jonna Tiainen** 13:52
Yes, my hope is that the new green energy startup companies would be born and grow since there is the demand for, for example, high temperature heat pumps that could upgrade waste heat for industrial processes. And we at the switch are also studying and developing high speed electrical Mach.
Of heat pump applications to cater for example with LUT University and we are already moving to the right direction as we at the SWITCH are electrifying marine industry.

With green technologies such as our soft generators and electrical propulsion systems.

And customer pressure is the one that drives us to develop more and more energy efficient solutions.

So legislation and IMO International Maritime organization regulations, drive Development to the right direction.

And I would like to highlight that also at the factory level, we are moving to the right direction.

What comes to the CEO2 emissions, the CO2 emission calculations have been done for our own operations.

And also for the upstream and downstream activities which are in direct CO2 emissions.

And the CO2 emissions of our own operations will drop close to 0 in very near future, since only 5 tonnes of CO2 are released from the leasing cars next year in 2026 and there are no other CO2 emissions because we are.

Using renewable electricity and green district heating at our factories in Finland and in order to improve with demand that new leasing cars need to be electrical for all once in the future.

CD **Clara Dumesnil** 15:51

OK.

Thank you, Anna.

It has been an insightful conversation.

Do you want to add something that we haven't approached yet that maybe there is a subject that that you like and we didn't discuss about yet?

JT **Jonna Tiainen** 16:07

Thank you for your questions.

I think they covered very nicely the whole theme.

What we wanted to discuss, and I don't have anything to add.

SA **Clara Dumesnil** 16:21

OK.

So thank you listener for for listening to our podcast and see you next time.