

The Future's So Bright, We Gotta Wear Shades

Carbon emissions refuse to go down and the way we manage biodiversity has been described by the UN Secretary-General as “committing suicide by proxy”.

So why the positive title? How can the future still seem bright despite the bad news? For starters, the Nordic countries have for decades been at the forefront of environmental action. Collectively, the Nordics have an impressive track record of citizen engagement, ambitious legislation and open and collaborative cleantech business and innovation ecosystems. In the 2022 European Innovation Scorecard, Sweden, Finland and Denmark were ranked 1st to 3rd respectively.

We have seen Denmark’s Vestas grow into the world’s largest manufacturer of wind turbines and a other strong growth journeys such as Norwegian solar companies REC and Scatec, and Swedish heat pump manufacturer NIBE take leadership on a global stage.

Investments in cleantech companies have surged over the last few years and are holding up well to the current pressure on financial markets. In 2022, 339 cleantech venture capital deals took place in the Nordics, totaling 4.3 Bn €.

Now, a whole new generation of Nordic cleantech companies are on the cusp of going global. These companies have benefited from the Nordics’ existing business and innovation ecosystems for cleantech. They also inherited its hard-won experience and cutting-edge infrastructure. Who are these next Nordic cleantech companies making the future so bright that its blinding?

Sweden’s electric transport industry has a stunning line-up of game-changing growth companies in e-bike manufacturer Cake, autonomous e-truck company Einride, e-boat companies X-shore and Candela, and electric airplane manufacturer Heart Aerospace. All have international sales revenue growth and are at the international forefront of their field.

All 5 Nordic countries rank in the world top 10 for EV sales giving Electric Vehicle charging equipment and related software companies an astonishing proving ground in the Nordics and there is an armada now emerging, such as ChargeAmp of Sweden, Virta of Finland, Monta in Denmark and Zaptech and Amina out of Norway.

Northvolt is quickly turning into a giant in its own right, building battery factories in Sweden, Germany and Poland, having secured some 55 Bn€ in orders from customers like BMW and Volkswagen, and attracting 2.3 Bn€ from investors last year alone. Freyr as well as Morrow are also Nordic giga-scale battery factories in the making. There’s also innovation that can drastically reduce the negative environmental impact of batteries, such as Sweden’s Altris producing a sodium-ion cathode material, which can potentially replace both lithium and cobalt used in current lithium-ion batteries with more environmentally friendly sodium.

Finnish circular economy company Swappie, which has built two factories to refurbish iPhones and re-sell them, was at the top of the Financial Times' recent list of Europe's fastest-growing companies. Re:newcell of Sweden just started commercial operations at their newly built factory to recycle fabric from textile waste and is already getting orders H&M and Levi's.

The legacy companies are not all on the sidelines either. Fortum is a Finnish energy company building a new battery material recycling facility. Swedish industrial giants SSAB, LKAB and Vattenfall have joined forces in Hybrit, working together to develop the first fossil-free steel. In parallel, start-up H2 Green Steel just secured €260 million in funding to develop a large-scale plant to produce steel with up to 95 percent lower carbon emissions than traditional steelmaking and has already signed contracts for 1.5 million tons a year of its low carbon steel.

Installing solar power is turning into a real Swedish stronghold through companies such as Alight and Svea Solar, the latter recently passing 100 M€ in revenue. Exeger is on the technology side and builds flexible thin solar cells that are integrated into devices such as remote controls and headphones, with Adidas as a recent notable customer. Epishine (Sweden) has also launched thin film solar, specifically for indoor light energy harvesting and now has pioneering customers integrating their tech into product lines.

These are far from the only areas where fast growing companies are emerging. We haven't even touched upon biobased materials or low-carbon food production but here is the conclusion, and it has somehow gotten completely lost in the debate surrounding choices for our future:

Fast growing Nordic cleantech companies are emerging across a very wide spectra of sectors. Coming from a domestic market ahead of other markets they are now going global with strong and proven technologies.

This does not mean we can sit back and relax. As rightly pointed out by the Climate Change Performance Index (CCPI) - even if all countries were as committed as the current frontrunners, efforts would still be insufficient to prevent hazardous climate change.

What it does mean is that we can and should act from a position of confidence. Confidence to see high climate and biodiversity ambitions as an opportunity, not a threat. And to see our already strong position within the Nordics as an opportunity to accelerate further.

So how do we make **the Nordics a powerhouse for cleantech innovation and growth, increase exports and avoid emissions globally?**

We go global. Fast.

To achieve the potential of many of our cleantech innovations we need to improve global deployment of them. Part of this challenge is related to the workforce, in particular attracting skilled sales and marketing people as well as seasoned entrepreneurs with industrialization and internationalization experience. Role-models that have excelled at this from the get-go, such as Northvolt, Cake, Swappie,

are plenty but so are the examples that have little understanding and/or capabilities in this regard.

If we increase our focus on this, we will find more ways to accelerate global growth.

We deploy more Nordic capital to scale-ups

There is a need for investments that can support capital-intensive projects like building out new factories in the Nordics or scaling up to meet the growing global market demand for cleantech hardware. This kind of funding requires more specialized investors and networks who understand specific sectors, regions and technologies. Combining these requisites – late-stage funding, specific knowledge sets and networks – into late-stage Nordic cleantech funds could fill a critical role in the market. The Nordic co-operation would benefit from a combined Nordic approach and the different Nordic countries all have vehicles that could take part in it.

We increase Nordic co-operation

The Nordic region offers an incredibly supportive and globally unique environment for cleantech growth. There is potential for increased cooperation across Nordic countries, sharing best practices, collaborating on outreach and coordinating the future energy system.

We address the shortage of skilled personnel in the cleantech sector

Many fast-growing companies lack skilled workers to take their growth to the next level. This includes people who can assist in large-scale production at factories, deploy artificial intelligence or manage internationalization. To address this we need to include our education systems and it may include to facilitate work force import of skilled workers to the sector.

We plan and build our electricity system for abundance of renewables

With a growing global demand for products with a low-carbon footprint, our competitiveness is strongly linked to our ability to produce renewable, reliable electricity in large quantities. As an example, LKABs transition to fossil-free iron alone will demand 55 TWh of electricity. This may sound like a lot, but it should be seen in the light that LKAB estimates carbon savings for customers corresponding to 2/3 of Sweden's total carbon emissions. The Nordics are highly suitable to plan for and build an electricity system prepared for and incentivizing an abundance of renewable electricity.

The Nordic potential to create a number of new cleantech success stories has never been greater. Realizing their full potential will benefit all of us. Put on your shades and let's do it.

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