The Nordic Report
03

Ísland
Danmark
Suomi
Sverige
Norge

03
The Nordic Report

FOREWORD

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The Nordic Report 03 is the third situational analysis and scanning of ongoing initiatives and decision-making within sustainable consumption and production in the Nordic countries. These reports are published within the scope of the project SUSTAINORDIC. The point of departure for the first report was good examples, while the second placed more focus on policy, business and research. In the third, we have chosen to highlight and reflect on a number of contemporary "phenomena".

Each individual item in the manifesto and its associated chapter has been given a special focus to exemplify the phenomenon and the theme of the chapter. All three publications are deep dives into UN Sustainable Development Goal 12 – Sustainable Production and Consumption – according to the 2030 Agenda. The target group for all the Nordic Report consists of international decision-makers and the publication is disseminated via the Nordic authorities and other relevant meeting places in the Nordics, Europe and the world.

At the start of 2020, we were struck by something that most of us could not even have imagined – the COVID-19 pandemic and its rapid spread. In just a short period, the world has changed. What we have previously taken for granted is no longer a given. The labour market, the global economy and our manner of producing, consuming and socialising have all changed indefinitely.

What we can be sure of is that the corona crisis has been solved by completely different means than other disasters in the world, the climate being one. World leaders have taken drastic measures, not due to fear of the threat entailed by increasing greenhouse gases and environmental destruction, but due to the fear of a contagious virus. The responses to the two different crises are fundamentally different – the pandemic

The Nordic Report 03 är den tredje omvärldsbevakningen och scanningen av pågående initiativ och beslutsfattande inom nordisk hållbar konsumtion och produktion. Publikationerna görs inom ramen för projektet SUSTAINORDIC. Den första publikationen tog utgångspunkt i olika goda exempel medan den andra lade större fokus på politik, näringsliv och forskning. I den tredje har vi valt att lyfta fram och spegla några nutida "fenomen".

Varje enskild manifestpunkt med sitt tillhörande kapitel har fått en särskild inriktning som exemplifierar fenomenet och temat för kapitlet. Alla tre publikationer är en djupdykning inom FN:s Globala Mål 12 – Hållbar produktion och konsumtion – enligt Agenda 2030. Målgrupp för alla Nordic Report är internationella beslutsfattare och publikationen sprids via nordiska myndigheter och på andra relevanta mötesplatser i Norden, Europa och globalt.

I början av 2020 drabbades vi av vad de flesta av oss inte ens hade kunnat föreställa oss – pandemin covid-19 och dess intensiva spridning. Världen har på kort tid blivit en annan. Det vi tidigare tagit för givet är inte längre en självklarhet. Arbetsmarknaden, världsekonomin och vårt sätt att producera, konsumera och socialisera är på obestämd tid förändrat.

Vad vi kan vara säkra på är att coronakrisen har lösts med helt andra metoder än för andra katastrofer i världen, där klimatet är en. Maktshavarna har gjort drastiska tilltag, inte på grund av rädslan för det hot som ökningen av växthusgaser och miljöförstörelse innebär, utan av rädslan för ett smittsamt virus. De två kriserna bemöts på fundamentalt olika sätt - pandemin visar synliga effekter direkt medan klimat- och miljöfrågan har mer långsiktiga…

De beteendeförändringar vi ser i nuläget med minskad konsumtion och minskat resande är inte bara utslag av panik utan de är också rationella.

shows visible effects right away, whereas the climate and environmental issues have a more long-term impact.

The behavioural changes we are seeing at present, with reduced consumption and reduced travelling, are not only an expression of panic, but they are also rational. Perhaps the corona pandemic, in combination with the climate discussion, will result in different methods of production and more sustainable consumption. But we do not know. And we cannot know.

Hopefully, companies will rethink and think greener, review their supply chains and reduce their vulnerability – not putting all their eggs in one basket. Hopefully, we will heed the researchers' warnings and hopefully, decision-makers will show courage and leadership with the experience of the pandemic's ravages. Perhaps, globalisation has run amok and we have reached the limit. But we do not know. And we cannot know.

Let us hope and believe that the corona crisis is an opportunity for us earthlings to find new innovative and sustainable paths forward. Let us hope that we can manage to unite the world in the same way for a global environmental transition as we did when mobilising against the virus. We all share the responsibility to not only douse fires and find short-term solutions to an economic crisis, but rather find new creative solutions and continue working towards sustainable consumption and production! An emerging paradigm shift is happening in the Nordic countries, which is the point of departure for this report. Experts provide inspiration through in-depth perspectives.

In closing, we would like to thank everyone who has contributed in various ways to make this situation analysis possible.

We hope that SUSTAINORDIC may contribute to new insights, new knowledge and inspiration for a more sustainable world!

Kanske är det så att coronapandemin, tillsammans med klimatdiskussionen, resulterar i att vi kommer att producera på nya sätt och konsumera mer hållbart. Men vi vet inte. Och kan inte veta.

Förhoppningsvis kommer företag tänka nytt och mer grönt, se över sina leverantörskedjor och minska sin sårbarhet – inte lägga alla ägg i samma korg. Förhoppningsvis kommer vi att lyssna mer på forskarnas varningar och förhoppningsvis kommer beslutsfattarna visa på mod och ledarskap med erfarenheten från pandemins härjningar. Kanske är det så att globaliseringen har löpt amok och att gränsen är nådd. Men vi vet inte. Och kan inte veta.

Låt oss hoppas och tro på att coronakrisen är en möjlighet för oss jordbor att hitta nya innovativa och hållbara vägar framåt. Låt oss hoppas att vi lyckas samla världen på samma sätt för en global miljömässig omställning som vid mobiliseringen mot ett virus. Vi bär alla ansvaret för att inte bara släcka bränder och hitta kortsiktiga utvägar i en ekonomisk kris utan istället hitta nya kreativa lösningar och fortsätta arbetet kring hållbar konsumtion och produktion! Ett begynnande systemskifte pågår i de nordiska länderna, vilket är utgångspunkten för publikationen. Experter inspirerar med fördjupande perspektiv.

Vi vill avslutningsvis tacka alla som på olika sätt bidragit till möjligheten att göra denna omvärldsanalys.

Vi hoppas att SUSTAINORDIC kan bidra till nya insikter, ny kunskap och inspiration till en mer hållbar värld!

INTRO

What
SUSTAINORDIC is a platform and network that aims to promote sustainable consumption and production based on a Nordic perspective, in accordance with the UN's Sustainable Development Goal 12 of the 2030 Agenda. The initiative is based on an item in a joint Manifesto with twelve underlying sub-goals. In the Manifesto, Goal 12 has been interpreted as more concrete points of action which resonate with Nordic values and culture.

Who
SUSTAINORDIC is a collaborative network between six Nordic design and architecture institutions. The project owners are the Swedish Centre for Architecture and Design - ArkDes (SE) and Form/Design Center (SE), with the co-partners DOGA - Design and Architecture Norway (NO), DAC - Danish Architecture Center (DK), Design Forum Finland (FI) and Iceland Design and Architecture (IS). The project was founded in 2015 with the support of the Nordic Council of Ministers.

Why
The Nordic region is at the forefront of sustainable development. The aim of the network is to collect and spread Nordic initiatives of best practice in sustainable production and consumption internationally, and to stimulate the development of national policies in the field.

How
The network partners collectively gather initiatives of sustainable production and consumption from the Nordic countries. The initiatives are then compiled and structured in accordance with the Manifesto sub-goals and presented in The Nordic Report. The report is disseminated through each Nordic country's international network to reach a global audience.

Vad
SUSTAINORDIC är en plattform och ett nätverk med syfte att främja hållbar konsumtion och produktion utifrån ett nordiskt perspektiv, i enlighet med FN:s Globala Mål 12 i Agenda 2030. Projektets utgångspunkt är ett gemensamt manifest med tolv underliggande delmål. I manifestet har Mål 12 tolkats till mer konkreta handlingsplaner i linje med nordiska värderingar och kultur.

Vem
SUSTAINORDIC är ett nätverk mellan sex nordiska design- och arkitekturinstitutioner. Sveriges nationella centrum för arkitektur och design - ArkDes (SE) och Form/Design Center (SE) är projektägare med DOGA - Design og Arkitektur Norge (NO), DAC - Danish Architecture Center (DK), Design Forum Finland (FI) och Miðstöð hönnunar og arkitektúrs (IS) som samarbetspartners. Projektet startades 2015 med stöd av Nordiska ministerrådet.

Varför
Norden ligger i framkant när det gäller hållbar utveckling. Syftet med SUSTAINORDIC är att samla och sprida goda nordiska initiativ inom hållbar produktion och konsumtion internationellt, samt att stimulera till utveckling av nationella riktlinjer inom området.

Hur
Samarbetspartners samlar initiativ kring hållbar produktion och konsumtion från de nordiska länderna. Initiativen sammanställs och struktureras i enlighet med manifestets delmål och presenteras i The Nordic Report. Rapporten sprids sedan i de nordiska ländernas respektive nätverk för att nå läsare över hela världen.

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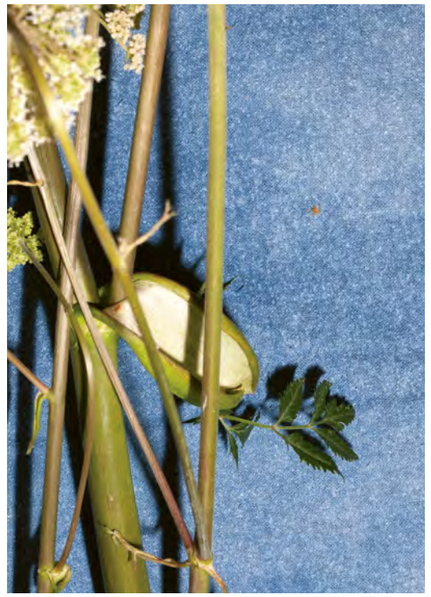

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MANIFESTO

01 NORDIC VALUES

Strengthen Nordic values such as democracy, transparency, participation, diversity and equality. By highlighting Nordic values specific to the region, we create attention and reflection regionally and internationally.

02 KNOWLEDGE SHARING AND DISCUSSION

Contribute to debate, discussion and the sharing of knowledge within the subject areas. We promote debate and dialogue within the field in order to impart new knowledge.

03 PARTNERSHIPS

Foster collaboration between different stakeholders to contribute to innovative and sustainable interdisciplinary solutions. By supporting new collaborations and creating natural platforms where actors and experts can meet, we contribute to new innovations and sustainable solutions.

01 NORDISKA VÄRDERINGAR

Stärka nordiska värderingar som demokrati, transparens, delaktighet, mångfald och jämställdhet. Genom att lyfta fram och sprida värderingar som är specifika för Norden skapar vi uppmärksamhet och medvetenhet på både lokal och internationell nivå.

02 KUNSKAPSUTBYTE & DISKUSSION

Bidra till debatt, diskussion och kunskapsutbyten inom ämnesområdet. Vi bidrar till ökad debatt och dialog inom området för att sprida ny kunskap.

03 SAMARBETE

Främja samverkan mellan olika aktörer för att bidra till innovativa, hållbara och tvärvetenskapliga lösningar. Genom att lyfta fram samarbeten och skapa naturliga mötesplatser mellan skilda aktörer och kompetenser bidrar vi till nya innovationer och hållbara lösningar.

04 SUSTAINABLE METHODS AND MODELS

Share and export the Nordic methods and processes for sustainable production and consumption internationally. By highlighting good examples where Nordic methods, models, tools and processes have been used, we inspire others to develop new knowledge and new processes.

05 CIRCULAR ECONOMY

Promote a circular economy by improving the overall performance of products throughout their life cycle. We encourage a circular approach to minimise waste and to make optimal use of resources in production, in contrast to the “take, make & dispose” model of the traditional linear economy.

06 REDUCED WASTE

Create incentives for reduced waste and wastage in the production chain. We support clear incentives and regulations to minimise waste and recycle waste products, thereby demonstrating that there are alternatives in terms of future product and service development.

04 HÅLLBARA METODER & MODELLER

Dela och exportera nordiska metoder och processer för hållbar produktion och konsumtion internationellt. Genom att lyfta fram goda exempel där nordiska metoder, modeller och verktyg har använts inspirerar vi andra till ny kunskap och nya processer.

05 CIRKULÄR EKONOMI

Främja en cirkulär ekonomi genom förbättrad produktprestanda genom hela livscykeln. Vi uppmanar till ett cirkulärt förhållningssätt för att minimera avfall och använda resurser optimalt vid produktion, till skillnad från den traditionellt linjära ekonomins slit- och slängmodell.

06 MINSKAT AVFALL

Skapa incitament för minskat avfall och bortfall i produktionskedjan. Vi stödjer tydliga incitament och regelverk för att minimera avfall och återvinna restprodukter och därmed visa på alternativ i framtida produkt- och tjänsteutveckling.

07 **SHARING ECONOMY**

Boost the sharing economy for more efficient use of products, services and places. We encourage the collective use of products and services in order to limit consumption and contribute to innovative alternatives in terms of acquiring, providing, sharing and exchanging goods and services.

08 **ROBOT LOVE**

Encourage the use of new technology, digitalisation, robots and AI as tools for more sustainable solutions. We promote new technology, digitalisation, robots and AI as a way to streamline production and improve environmental management. Technology is having an increasing impact in our everyday lives, which entails new ethical dilemmas.

09 **RESPONSIBLE PROCUREMENT**

Encourage and support government agencies and private organisations to consider sustainability in procurement. We encourage the public and private sectors to consider the full life cycle of products and to integrate requirements, specifications and criteria for sustainability in their procurements.

07 **DELNINGSEKONOMI**

Främja delningsekonomin för ökad nytta av produkter och tjänster. Vi uppmuntrar till delning av produkter och tjänster för att begränsa konsumtion och bidra till innovativa alternativ att införskaffa, tillhandahålla, dela och utbyta varor och tjänster.

08 **ROBOTKÄRLEK**

Stimulera ny teknik, digitalisering, robotar och AI som verktyg för mer hållbara lösningar. Vi främjar ny teknik, digitalisering, robotar och AI som bidrar till att effektivisera produktion och förbättra miljöledning. Teknik påverkar oss alltmer i våra dagliga liv vilket medför nya etiska dilemman.

09 **HÅLLBAR UPPHANDLING**

Uppmuntra och stödja myndigheter och privata organisationer att inkludera hållbarhet i upphandlingar. Vi uppmanar den offentliga och privata sektorn att alltid ha hela livscykeln i åtanke samt integrera krav, specifikationer och kriterier för hållbarhet i sina upphandlingar.

10 **NUDGING**

Influence consumers to adopt sustainable attitudes and behaviours. We aspire to influence both collective and individual behavioral patterns and decision-making processes through positive reinforcement, nudging and best-practice examples of sustainable attitudes.

11 **TRANSPARENCY**

Inspire decision-makers and producers to provide transparent, ethical and environmental information on products and services. We foster increased knowledge and insight regarding transparency requirements for the origin and contents of goods and services, which encourages future consumers to set high standards for their consumption.

12 **FUTURE GENERATIONS**

Invest in future generations by promoting sustainable development as a subject in school. We believe that giving children and young people increased knowledge and insight regarding sustainability increases the chances of changing behaviours and values in future generations.

10 **NUDGING**

Påverka konsumenter till hållbara förhållningssätt och beteenden. Vi vill påverka beteendemönster och beslutsfattande för både grupper och individer genom positiv förstärkning, indirekta förslag och genom att lyfta fram bra exempel på hållbara förhållningssätt.

11 **TRANSPARENS**

Förmå beslutsfattare och producenter att vara transparenta kring etisk och miljömässig information om produkter och tjänster. Vi stödjer ökad kunskap och insikt när det gäller krav på transparens kring varors och tjänsters ursprung och innehåll, vilket uppmuntrar framtida konsumenter att ställa höga krav på sin konsumtion.

12 **FRAMTIDA GENERATIONER**

Investera i framtida generationer genom att verka för att hållbar utveckling blir ett skolämne. Att ge barn och unga ökad kunskap och insikt om hållbarhet förbättrar möjligheterna till förändrade beteenden och värderingar hos kommande generationer.

INGRID SOMMAR: A PERSPECTIVE ON COVID-19

Suddenly, it was as if the conditions for the climate efforts had changed. The corona crisis quickly became a frightening illustration of the importance of sustainable consumption and production. The shortcomings of the globalised system that we have been living in the last 30–35 years became apparent. A crisis can entail great suffering, but it can also speed up necessary social change.

A recurring perspective in my work as a design journalist has been to tell consumers about production. Not always a simple task. This in actuality essential aspect has often seemed exceedingly distant to the customer in the shop, far beyond their everyday choices. That distance has now been removed. The long and alienating production chains – from extraction and choice of materials, to manufacturing in faraway factories and long-distant transports until the goods have reached the customer and the shop – can no longer be ignored. The reason being that they have proven unsustainable.

It only took little over a week after WHO's announcement on 11 March that the coronavirus was now a pandemic before major car manufacturers such as Volvo closed down all production, laying off tens of thousands of employees in Sweden alone. The reason was not only that car manufacturing had been drastically affected marketwise, but its intricate supply chain had also been immediately struck by the crisis. The components for the cars were no longer available, and transports were hindered by the closing of borders. The air transport sector, one of the climate debate's most criticised actors, was diminished just as quickly. Especially for domestic flights, the question remains of whether the previous scope can ever be recuperated, since there are more climate-smart alternatives for short distances. The environmental effects of cancelled production were also immediate. In Wuhan, China, as well as in Lombardy, Italy – two of the areas most severely affected by the virus, and both with high levels of industrial activity – there was an immediate, albeit temporary, reduction in emissions and improvement in the air quality.

Plötsligt var det som förutsättningarna för klimatarbetet hade förändrats. Coronakrisen blev snabbt till en skrämmande illustration av hur viktigt det är med hållbar konsumtion och produktion. Bristerna i de globala system vi levt med de senaste 30-35 åren blev uppenbara. Kriser kan betyda stort lidande men också att nödvändig samhällsomvandling skyndas på.

Ett återkommande perspektiv i mitt arbete som designjournalist har varit att berätta för konsumenter om produktion. Inte alltid så enkelt. Denna egentligen så grundläggande aspekt har för kunden i butiken ofta verkat alltför avlägsen, bortom shoppingens vardagsval. Det avståndet är nu borta. De långa och alienerande produktionskedjorna - från utvinning och val av material, via tillverkning i fjärran fabriker och långväga transporter tills varorna nått fram till kund och butik - kan inte längre ignoreras. Detta eftersom de visat sig ohållbara.

Det tog bara en dryg vecka efter WHO:s besked den 11 mars att coronaviruset var en pandemi tills stora biltillverkare som Volvo stängde ner all produktion och bara i Sverige permitterades tiotusentals anställda. Orsaken var inte enbart att bilförsäljningen rent marknadsmässigt påverkats drastiskt, utan också att de intrikata leverantörskedjorna snabbt drabbats av krisen. Komponenter till bilbyggena saknades, transporter kunde inte utföras när gränser hade stängts. Flyget, en av klimatdebattens mest kritiserade aktörer, krympte lika snabbt. Speciellt för inrikesflyget kvarstår frågan om den tidigare omfattningen någonsin kan återtas, eftersom klimatsmartare alternativ finns för korta sträckor. Miljöeffekterna av indragen produktion lät heller inte vänta på sig. Både i kinesiska Wuhan och italienska Lombardiet, bland de mest coronadrabbade områdena, båda dessutom industriellt högaktiva - noterades direkt om än tillfälligt minskade utsläpp och förbättrad luftkvalitet.

Samtidigt har myntets andra sida blivit lika tydlig. Även den mest engagerade klimataktivist har blivit påmind om att fungerande samhällsekonomier är nödvändiga. De livsviktiga åtgärderna för att nå uppställda klimatmål och sänka skadliga utsläpp kan inte ske

Ingrid Sommar is a Swedish architectural and design journalist who has been writing about the climate issue from a production and consumption perspective in articles, the daily press and books for many years.

At the same time, the other side of the coin has also been revealed. Even the most committed climate activists have been reminded of the necessity of a working economy. Essential measures to achieve the set climate targets and reduce the harmful emissions cannot be taken at the expense of employment numbers in the millions. Instead, the measures must aim towards smarter, more sustainable systems of production and consumption, which can benefit both the climate and the economy. We have now learned the hard way that change is possible.

It is worth noting how the limited period of time that the global just-in-time production chains of recent decades have actually been predominated. How different the links between society and industry were just 50–60 years ago. When our Nordic environments were still called production landscapes, when local natural resources were still the predominant materials in our furniture, appliances, houses and clothes. The same environments have later been transformed into consumption landscapes, where we have used nature primarily for recreation and tourism. At the same time the manufacturing of our everyday consumer goods has been moved to complex networks around the globe. Highly efficient and lucrative, but also extremely frail as the coronavirus has shown us.

From here on, we need to reclaim the local production apparatus in my view. Use local resources to a higher degree and develop the competence of how to best put them to use. And we need to do this in a world characterised by the internet, without losing sight of the global contexts. Robotisation and 3D printing are already prominent features of both design and manufacturing and could become more prominent still. “Local” does not have to mean isolation and “global” does not have to mean alienation.

till priset av miljontals arbetslösa. Istället måste åtgärderna syfta till smartare, mer hållbara system för produktion och konsumtion som kan gynna både klimatet och samhällsekonomin. Att förändring är möjlig har vi ju nu lärt oss den hårda vägen.

Det är värt att påminna om hur kort tid de senaste decenniernas globala "just-in-time" produktionskedjor faktiskt har regerat. Hur annorlunda sambanden mellan samhälle och industri såg ut bara för 50-60 år sedan. När våra nordiska omgivningar ännu var så kallade produktionslandskap, lokala naturresurser ännu dominerande material i våra möbler, bruksföremål, hus och kläder. Samma omgivningar som sen förvandlats till konsumtionslandskap, där vi använt naturen främst för rekreation och turism. Medan tillverkningen av våra vardagsvaror förflyttats till komplexa nätverk runt jorden. Högeffektiva och lukrativa - men också extremt sköra, som coronakrisen visat.

Min uppfattning är att vi framöver behöver återta närheten i produktionsapparaten. I högre grad ta fasta på lokala resurser och utveckla kompetensen kring hur de bäst kan användas. Och samtidigt i en värld präglad av internet inte förlora de globala sammanhangen. Robotisering och 3D-printing präglar redan både design och tillverkning och kan komma att användas ännu mer. ”Lokalt” måste inte betyda isolering och ”globalt” inte alienation.

01

NORDIC VALUES

Strengthen Nordic
values such as democracy,
transparency, participation,
diversity and equality.

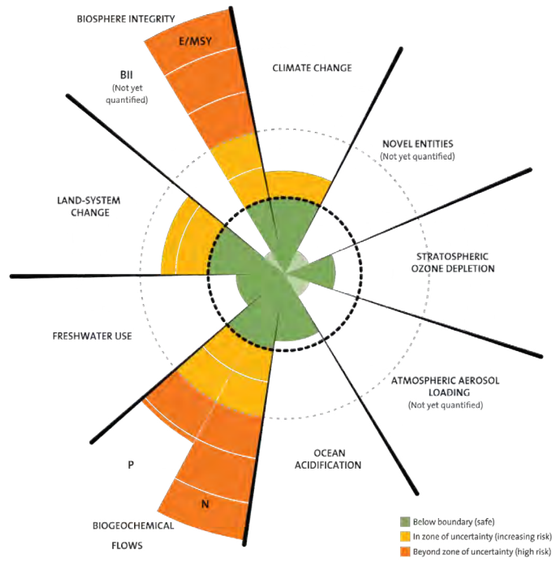
Left image:
Andréason & Leibel

01 PHENOMENON

BORDERLESS CLIMATE

Climate and environmental impact recognises no borders – what we produce and consume have an effect both inside and outside our nations. Nordic core values, which are expressed in areas such as the Nordic climate policy, gives us good conditions for disseminating knowledge and inspiration. The Nordic climate policy needs to prioritise the measures that will have that greatest effect globally, and which can contribute to attention and awareness.

THE PLANETARY BOUNDARIES



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The nine planetary boundaries is a framework in which humanity can continue to develop and thrive within for generations to come.

CAPTURING CARBON

COPYRIGHT: THOMAS RATOUIS

CarbFix extracts CO2 and other gases from emissions.

01 BORDERLESS CLIMATE

We are living in changing and complex times. Tough challenges require courage, leadership and long-term priorities through collaboration between politicians and experts, and between the government, business, financial and academic sectors. And collaboration across borders.
The outbreak of COVID-19 has demonstrated the drive and determination that countries can muster. Will such an approach lead the way within the climate area as well?

According to the UN's climate panel IPCC, human activities are responsible for the majority of the temperature increase that has been taking place since the mid-1990s. The concentration of carbon dioxide has increased by 40 per cent since the preindustrial era through the combustion of fossil fuels and changes in how land is used. In the EU member countries (2017), energy consumption represented 80.7 per cent of the greenhouse gases, with transports constituting roughly one third. The emissions from the agricultural sector represented 8.72 per cent, industrial processes and product use 7.82 per cent and waste management 2.75 per cent. In 2018, Sweden released the equivalent of 53 million tonnes of carbon dioxide, with Finland, Norway and Denmark at around the same level. If we include the emissions created in other countries due to Nordic imports and consumption, the figures are considerably higher. Imports of clothing, electronics and energy, etc. create an increasing share of our total consumption-based emissions.

The challenges are great, including decreased biodiversity, climate change and increasing migration. Interdisciplinary research is underway at the Stockholm Resilience Centre to increase understanding of our complex social and ecological systems. This has resulted in the concept "planetary boundaries" to describe nine environmental issues where the limit values cannot be exceeded without great consequences.

New large-scale solutions are needed. It is not enough to reinforce nature's ability to bind carbon dioxide in land, water and vegetation, nor to strive to reduce the deforestation. Storing carbon dioxide during incineration could make a considerable contribution to reduced environmental impact. The technology Carbon Capture Storage (CCS) is based on capturing carbon dioxide at the source, and it is considered difficult to bypass if we are to reach the climate targets. In Iceland, researchers are testing Direct Air Capture (DAC), carbon dioxide and other sour gases from emission sources are captured directly from air and permanently stored as rock in the subsurface.

In Sweden, CCS initiatives in the 27 largest emission points could cut the carbon dioxide emissions in half. The cost is estimated to SEK 23 billion annually, which corresponds to the revenue generated by the carbon dioxide tax. The possibility of financing expensive technologies such as CCS are studied in the project Mistra Carbon Exit, with Danske Bank and others contributing their knowledge of financing possibilities.

01

GUSTAV STENBECK

Gustav Stenbeck is a Swedish environmental activist turned risk capitalist. Today he is described as a contractor and business angel and works, among other things, to invest in companies that both have the ability to earn money and make the world better.

PERSPECTIVE

To me, sustainability is not philanthropy, but rather good business.

Our Nordic countries have a high climate and environmental impact globally – this is nothing new. When the subject of sustainability is discussed, the focus tends to be on economic instruments such as climate policy and fiscal policy. I do not believe that the climate crisis will be resolved by policies; instead, I believe it is a matter of realising that companies are happy to find sustainable solutions to these challenges. I am passionate about ensuring that we create the best possible conditions for companies to resolve the problems and convince them to act.

To me, sustainability is not philanthropy, but rather good business. We know that capitalism is the most effective transitional tool in world history. So why not continue to utilise capitalism now that we are facing this enormous transition? Instead of changing the model or governance in the next ten years, I believe in doing more of what we are good at: allowing companies to change the world.

A global change requires better products and services. Unless your product is both better and more sustainable than the next, you have no business being in a commercial landscape, since your marketing is simply lazy. Companies need to give consumers an opportunity to make decisions that are better for the planet while also being better and more convenient for us personally. We need to be able to do both, otherwise we will not achieve any change.

In ten years, I believe that we will have drastically altered our consumption patterns with a carbon footprint that is probably 70 per cent lower than today. I also believe that we will live much better – not only in terms of happiness but also of material standards. We will fly, drive, travel and bring things from China, but in a fundamentally different way and a much better way in terms of sustainability than we are today. Global development is a very important factor: as people's prosperity

Våra nordiska länder har en hög klimat- och miljöpåverkan globalt – det är inget nytt. När det talas om hållbarhet så tenderar fokus att ligga på ekonomiska styrmedel såsom klimatpolitik och ekonomisk politik. Jag tror inte politiken kommer att lösa klimatkrisen, istället tror jag det handlar om att inse att bolagen gärna vill hitta hållbara lösningar på dessa utmaningar. Det jag brinner för är att se till att det skapas så bra förutsättningar som möjligt för företag att lösa problemen samt att få dem att agera.

Hållbarhet för mig är inte filantropi utan hellre en affär. Vi vet att kapitalismen är världshistoriens mest effektiva omställningsverktyg. Så varför inte fortsätta använda kapitalismen nu när vi står inför denna enorma omställning? Istället för att ändra modell eller styrning de närmaste tio åren tror jag på att göra mer av det vi är duktiga på; att låta bolag förändra världen.

En global förändring kräver bättre produkter och tjänster. Om din produkt inte är både bättre och ”hållbättre” (jag kallar det hållbra, hållbättre och hållbäst eftersom hållbar betyder att vi nått vårt mål) har du inte i företagslandskapet att göra eftersom du ägnar dig åt lat produktutveckling. Bolag måste ge konsumenter möjlighet att fatta beslut som är bättre för planeten och samtidigt både bättre och bekvämare för våra liv. Vi måste kunna göra båda samtidigt, annars kommer vi inte att nå förändring.

Om tio år tror jag att vi på individnivå drastiskt ändrat våra konsumtionsmönster med ett klimatavtryck som troligen är 70 procent lägre än idag. Dessutom tror jag att vi kommer leva väsentligt mycket bättre – inte enbart sett till lycka men även till materiell standard. Vi kommer att flyga, köra bil, resa och frakta saker från Kina med skillnaden att det görs fundamentalt annorlunda och ur ett hållbarhetsperspektiv otroligt mycket bättre än tidigare. Global utveckling är en väldigt viktig faktor; i takt med att människor får ett högre välstånd blir vi även bättre kravställare på de bolag och politiska institutioner som finns runtom oss.

BIOSPHERIC CHANGE

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The concentration of carbon dioxide has increased by 40 per cent since the pre-industrial era through the combustion of fossil fuels and changed land use.

"We need wise politicians to make decisions, but the world leaders need to realise that the greatest agents of change for the future are companies, and they need to trust that the companies actually want to make the world better. "

increases, we also become better at making demands on the companies and political institutions around us. This way, we reduce the risks of corruption for example, which makes global climate efforts much more effective.

Another tough challenge is the various levels of emissions and how these are prioritised. Globally, regionally and locally. Four years ago, my parents bought a diesel car. The other day they told me: “Nowadays, diesel is bad for the environment”. And of course, it depends on how you look at it. From a local perspective, it is relatively bad for the environment, but globally speaking, it is better than petrol. The challenge lies in the conflicting goals relating to how the sustainability issue is handled globally, regionally and locally. Global air travel is fairly unsustainable in its present form. If we instead look at the local development opportunities if you travel to places that would otherwise be plunged into misery due to halted economic growth, the local impact is instead positive. Tourism helps small societies out of

På så vis minskar riskerna för exempelvis korruption, vilket gör globalt klimatarbete mycket mer effektivt.

En annan svår utmaning är utsläppens olika plan och hur dessa prioriteras. Globalt, regionalt och lokalt. För fyra år sedan köpte mina föräldrar en dieselbil. Häromdagen sade de; ”Nu är ju diesel miljöovänligt". Och det beror ju på hur man ser det. Ur ett lokalt perspektiv är det relativt miljöovänligt, men globalt sett är det bättre än att köra på bensin. Utmaningen ligger i de stora målkonflikterna kring hur hållbarhetsfrågan tillämpas sett från ett globalt, regionalt eller lokalt perspektiv. Globalt flygresande är tämligen ohållbart i sin nuvarande form. Ser vi istället på de lokala utvecklingsmöjligheterna om du reser till ställen som annars vore nedsänkta i misär genom avstannad ekonomisk utveckling så är den lokala påverkan positiv. Turism hjälper små samhällen ur fattigdom. Att mäta globala koldioxidutsläpp och dess uppvärmning mot lokalt är svårt. Som konsument får du fråga dig själv vad som är viktigast och hur du vill stödja? Därefter får experterna, alltså

MEASURING EMISSIONS

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poverty. Measuring global carbon dioxide emissions and their warming effects against local factors is difficult. As a consumer, you need to ask yourself what is more important and what kind of support you want to give. After that, the experts, meaning those of us claiming to know this stuff, and the politicians need to figure out what we believe is important to invest in.

We need wise politicians to make decisions, but the world leaders need to realise that the greatest agents of change for the future are companies, and they need to trust that the companies actually want to make the world better. The role of politicians today is to ensure that we do not end ourselves and our society. A far-sighted capitalist realises that more than one perspective is required in enterprise. Not only do we need to maximise value for the shareholders, but various stakeholders are needed to create companies that are not only profitable but also responsible. This is the type of company that you can be proud of.

vi som påstår oss kunna det här, och politiker hitta vad vi tycker är viktigt att satsa på.

Vi behöver kloka politiker som fattar beslut men världens ledare behöver inse att framtidens stora förändringsagenter är bolagen och våga ha förtroende för att bolagen faktiskt vill göra världen bättre. Politikernas roll idag är att se till att vi inte tar kål på oss själva och samhället. Den framsynte kapitalisten inser att det behöves fler synsätt i företagandet. Det är inte bara aktieägarnas värde som ska maximeras, olika intressenter behövs för att skapa bolag som inte bara är lönsamma utan också ansvarstagande. Det är just ett sådant bolag som man är stolt över.

KRISTIINA KUMPULAINEN

Kristiina Kumpulainen from Finland is working as Professor of Education at the Faculty of Educational Sciences, University of Helsinki. She is also the founding member and research director of the Playful Learning Center.

PERSPECTIVE

Education as a path to combat climate change and promote sustainability has been underlined by several Nordic institutions and their policies.

When it comes to cultivating and enhancing sustainable ways of living for the wellbeing of the Earth, the Nordic region can inspire and spread knowledge about the power of education. I would like to draw attention to Education for Sustainable Development (ESD) and how it is addressed at the level of policy and practice.

Education as a path to combat climate change and promote sustainability has been underlined by several Nordic institutions and their policies. These policies explicitly state that the starting point for ESD begins already in early childhood and continues through life. Nordic educational policies rest on a social welfare model that is strongly rooted in values that underscore every individual's right to education. Regarding ESD as every individual's right is a starting point towards ecologically and socially just futures.

In addition to having policies for the enhancement of ESD, it is important to consider how sustainability is promoted in educational practice. The Nordic model emphasises holistic learning processes in ESD, which bring attention to the multiple ways in which we humans relate to and build our knowledge about the natural world. From this perspective, ESD is more than teaching knowledge. It is about supporting individuals' emotional, bodily, sensuous, aesthetic, symbolic, scientific and moral sense-making and knowledge building. This requires ESD to be seen as a cross-cutting theme that is promoted throughout the

Pohjoismaat voivat levittää tietoa koulutuksen merkityksestä osana kestävien elintapojen vaalimista ja maapallon hyvinvoinnin edistämistä. Tämän vuoksi kiinnitän puheenvuorossani huomioita koulutuksen merkitykseen kestävän kehityksen voimavarana ja moottorina.

Useat pohjoismaiset instituutiot ja näiden toimintaa ohjaavat periaatteet korostavat koulutuksen merkitystä keinona ehkäistä ilmastonmuutosta ja edistää kestävää kehitystä. Näiden periaatteiden mukaisesti kestävään kehitykseen tähtäävät koulutukselliset toimenpiteet alkavat jo varhaisessa lapsuusiässä ja jatkuvat koko elämän ajan. Pohjoismainen koulutus perustuu sosiaaliseen hyvinvointimalliin. Sen juuret ovat vahvasti arvoissa, jotka korostavat jokaisen yksilön oikeutta koulutukseen. Koulutuksen mieltäminen jokaisen yksilön oikeudeksi on lähtökohta ekologiselle ja yhteiskunnallisesti oikeudenmukaiselle tulevaisuudelle.

Pohjoismainen malli korostaa holistisia oppimisprosesseja. Tästä näkökulmasta katsottuna kestävään kehitykseen tähtäävä koulutus on enemmän kuin tiedollista opettamista ja oppimista. Kyse on ihmisten emotionaalisen, ruumiillisen, aistillisen, esteettisen, symbolisen, tieteellisen ja myös moraalisen järkeistämisen ja tietämyksen rakentumisen tukemisesta. Tämä edellyttää, että kestävää kehitystä pidetään poikkileikkaavana aiheena, jota edistetään kaikkialla opetussuunnitelmassa monitieteellisten, ilmiöpohjaisten oppimisympäristöjen avulla. Pohjoismaissa kannustetaan hankkimaan autenttisia luontokokemuksia sekä muodollisessa että epämuodolli-

Children interacting with nature through augmented story-telling tool MyAr Julle.

"As hope arises, collective actions, educational policies and practices in the Nordic region continue to strive for cultures of sustainability that create transformative spaces for collective imagination, thinking, acting and relationships."

curriculum via inter-disciplinary, phenomenon-based learning activities. Authentic nature experiences are also encouraged in both formal and informal education in the Nordic region through which informed, respectful and caring relationships as well as transformative thinking, practices and relationships between humans and nature can be established.

Last but not least, I would like to point out how ESD in the Nordic region emphasises human creativity, agency and hope. Nurturing human capacity for imagination, wonder, appreciation and sense of belonging are vital aspects of sustainable education. For this purpose, arts-based and design-based pedagogies are valued which appreciate diverse perspectives and modes of expression, while recognising the power of human creativity for change. In this context, citizen science efforts are also important. In my research we have been exploring and designing novel augmented technologies to support young children's interactions and imagination with nature. Our latest innovation is an augmented story-telling tool, MyAr Julle. It immerses children in nature to explore, interact and imagine, and to create and share their stories with others.

As hope arises, collective actions, educational policies and practices in the Nordic region continue to strive for cultures of sustainability that create transformative spaces for collective imagination, thinking, acting and relationships. For a wider impact, these efforts naturally call for global collaboration at the level of policy and practice.

sessa opetuksessa. Näiden lähestymistapojen ja menetelmien avulla voidaan edistää ihmisten tiedollista ja välittävää yhteyttä luontoon sekä kehittää ihmisen ja luonnon välisiä transformatiivisia ajattelutapoja, käytäntöjä ja suhteita.

Viimeisenä muttei vähäisimpänä seikkana haluaisin tuoda esiin, miten Pohjoismaissa kestävään kehitykseen tähtäävä koulutus korostaa ihmisten luovuutta, toimintaa ja toivoa. Erittäin tärkeä osa koulutusta on mahdollisuus vaalia ihmisen kykyä kuvitella, ihmetellä, arvostaa ja tuntea yhteenkuuluvuutta. Koulutuksessa painotetaan taiteisiin ja muotoiluun perustuvia pedagogisia lähestymistapoja. Tämä heijastaa pyrkimystä kunnioittaa monimuotoisia näkökulmia ja ilmaisutapoja sekä tunnistaa inhimillisen luovuuden merkitys muutokselle. Tässä suhteessa korostuu myös ihmisten muutostoimijuuden tukeminen. Omassa tutkimuksessamme olemme tutkineet ja suunnitelleet uusia teknologisia sovelluksia, jotka voivat edistää lasten ja luonnon välistä vuorovaikutusta ja mielikuvittelua. Uusin innovaatiomme on lisättyä todellisuutta hyödyntävä tarinankerrontaväline MyAr Julle. Sovelluksen avulla lapset voivat uppoutua tutkimaan luontoa mielikuvituksen ja todellisuuden vuoropuheluna. He voivat luoda tarinoita ja jakaa niitä muille.

Pohjoismaiden yhteiset toimet, koulutuskäytänteet ja menetelmät pyrkivät luomaan kestävän kehityksen kulttuureja, jotka synnyttävät mahdollisuuksia yhteiselle mielikuvitukselle, ajattelulle, toiminnalle ja suhteille. Laajemman vaikutuksen saavuttamiseksi nämä pyrkimykset edellyttävät luonnollisesti globaalia yhteistyötä suunnittelun ja käytännön tasolla.

02

KNOWLEDGE SHARING AND DISCUSSION

Contribute to debate, discussion and the sharing of knowledge within the subject areas.

Left image:
Andréason & Leibel

02 PHENOMENON

GREENER ECONOMY

How can knowledge sharing, increased debate and dialogue be used as tools in the transition to a greener and more sustainable economy in the long run? Reports indicate that the rate of transition decreases, while a green economy is playing an increasingly important role for banks, investors, pension fund managers and insurance companies. What strategies and tools are at the disposal of the financial sector? How can they be used to disseminate new knowledge to achieve greater global change?

WIND ENERGY

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02 GREENER ECONOMY

During a transition to a greener, more socially sustainable economy, political leadership, regulations and governance are essential to the prioritisation and development of the strategies used in the finance and business sectors. Openness and transparency contribute to public debate and credibility, as well as protection is needed to avoid greenwashing and money laundering.

An active, long-term and courageous policy provides stability and security for private ventures and it is not dependent on changing mandates. Public investments, research initiatives and systems for knowledge and experience sharing could be used as instruments towards a greener economy, along with frameworks, VAT and tariffs. New and interesting parallel economic models are emerging, such as the Donut economy. It is used to measure the performance of an economy in relation to how people's needs are met, without exceeding the ecological limits of the Earth.

Climate changes are becoming a priority on business leader agendas, according to the report produced by auditing and consultancy firm PwC in preparation of the World Economic Forum Annual Meeting in Davos in 2020. Nowadays, this is often at the core of the business sector's initiatives. The shift is based on the realisation of the severity of the climate transition, but also on the idea that whoever is the first to launch new technology and new services will have competitive advantages. Many large investment funds and banks now have established sustainability strategies, and their ranks are growing. Major investors are now also actively distancing themselves from investments in fossil fuels. 130 banks, with Nordea as the only Nordic bank so far, are collaborating with the UN, and in autumn 2019, they have committed to a clear sustainability framework. Íslandsbanki has adopted four of the UN's global sustainable development goals.

Together with Nordic companies, they are part of the alliance "Nordic CEOs for a Sustainable Future". Green bonds are used to offer interest investors to lend money to projects contributing to a smaller carbon footprint. This requires a revision of the regulations, which currently allow environmentally dubious investments. Openness and transparency are required to build credibility and public debate. The regulations within the EU need to be coordinated in order to make trade on comparable terms possible. According to Lars Mac Key, head of sustainable bonds at Danske Bank, Sweden's proportion of green bonds is 15 per cent. During 2019, they had a value of 133 billion, an increase by 85 per cent from 2018. Globally, the proportion is only one per cent. In their book "Responsibility for excess returns on investments", Hanna Silvola and Tiina Landau show how responsible investments lead to competitive advantages. The book contains case studies, including the Swedish pension fund AP2 and Norwegian KLP. These are considered pioneers in the area of responsible investment.

SONY KAPOOR

Sony Kapoor from Norway serves as Managing Director of Re-Define, an international think-tank. He is often described as an influential macro-economist, development practitioner and financial sector expert.

PERSPECTIVE

The Nordic Council needs to become the Nordic Green Council and step in and step up to this unprecedented challenge and opportunity.

Nordic economies rank near the top of most sustainability rankings, but being the one-eyed king in the land of the blind only gets you so far. Truth is that the Nordics have a long way to go before we make our economies truly sustainable, but we begin the new decade with the right intentions, natural resources, human capital and financial wherewithal to make full sustainability by 2030 a realistic ambition.

The Nordic economies have more than USD 2 trillion in long-term capital in the form of pension funds, giving us the highest per capita investment potential in the world. We are the 11th largest economy in the world, with some of the most technologically adept and well-educated workforces, a sustainability mindset, good design and a rich availability of renewable energy resources that include hydropower, wind, biomass and geothermal energy. No other region is better suited to lead the charge of the sustainability brigade.

Between Finland's strategy on the circular economy, Denmark's remarkable green investment plan, Sweden's focus on developing green technologies, Iceland's nearly emissions-free energy system and Norway's drive to make transportation free of emissions, the Nordics, between them, have a vast and growing diversity of complementary policies, expertise and experience, all of which will be needed to achieve true sustainability. The tradition of close co-operation, free movement of talent and ideas between member economies of the Nordic council, high level of mutual trust and a history of learning from each other will serve us well on the sustainability journey.

Nordiske økonomier ligger helt i toppen i de fleste bærekraft-rangeringene, men å være den enøyde kongen i de blindes rike fører ikke særlig langt. Sannheten er at de nordiske landene har en lang vei å gå før økonomiene er virkelig bærekraftige, men det nye tiåret starter med riktige intensjoner, naturressurser, menneskelig kapital og økonomiske midler slik at full bærekraft innen 2030 er en realistisk ambisjon.

De nordiske økonomiene har mer enn to billioner USD i langsiktig kapital i form av pensjonsfond, noe som gir oss verdens høyeste investeringspotensial per innbygger. Vi er den 11. største økonomien i verden, med noen av de mest teknologisk dyktige og veluddannede arbeidsstyrkene, en bærekraftig tenkemåte, god design og rik tilgjengelighet på fornybare energiressurser som vannkraft, vind, biomasse og geotermisk energi. Ingen annen region er bedre egnet til å lede den bærekraftige brigaden.

Med Finlands strategi for sirkulær økonomi, Danmarks bemerkelsesverdige grønne investeringsplan, Sveriges fokus på å utvikle grønne teknologier, Islands nesten utslippsfrie energisystem og Norges satsing på å gjøre transportsektoren utslippsfri, har de nordiske landene et stort og økende mangfold av politikk, ekspertise og erfaring som utfyller hverandre. Alt dette vil være nødvendig for å oppnå fullstendig bærekraft. Tradisjonen med tett samarbeid, fri bevegelse av talenter og ideer mellom medlemsøkonomiene i Nordisk råd, et høyt nivå av gjensidig tillit og en historie hvor vi lærer av hverandre, vil være til stor nytte på reisen mot et bærekraftig samfunn.

Many large investment funds and banks now have established sustainability strategies, and their ranks are growing.

"A first step towards immediately adopting the “best-in-class” present sustainability policies and technologies from the other Nordic economies would already take the Nordic economies much further towards full sustainability."

Despite offering such fertile grounds for full sustainability, none of the Nordic economies has begun the journey in earnest. We are missing grand ambition, a Nordic strategy, a co-ordinated approach, learning from each other and pooling of adequate financial resources. The Nordic Council needs to become the Nordic Green Council and step in and step up to this unprecedented challenge and opportunity.

As useful as Norway’s unique policy on electric cars and vehicles has been in setting an example, no one doubts that it would have been far more effective and efficient if rolled out at a Nordic level. Denmark’s “green foreign policy” and “green investment plan” would be far more effective if pursued at the Nordic level. Sweden’s experimentation with technologies such as fossil-fuel free steel, passively heated buildings and ESG-investment – Environmental, Social and Governance –should be replicated and improved. Finland’s digital prowess and early economy-wide strategy for a fully circular economy is applicable across all of the Nordics.

A first step towards immediately adopting the “best-in-class” present sustainability policies and technologies from the other Nordic economies would already take the Nordic economies much further towards full sustainability. A second step where the most ambitious policies on sustainability across each of the economies automatically become the default for the whole of the Nordic region will push us even closer to the frontier. A third step involves a commitment to full sustainability by 2030.

A five per cent allocation from all Nordic long-term investors should provide USD 100 billion in financial support in the form of a Nordic Green Investment Fund. This would provide through-the-cycle funding for developing and scaling sustainable technologies and is a sound investment in a world where sustainability is a competitive advantage.

If we show the way, the rest of the world will follow.

Selv om vi tilbyr et fruktbart grunnlag for full bærekraft, er sannheten at ingen av de nordiske økonomiene har begynt reisen for alvor. Vi mangler store ambisjoner, en nordisk strategi, en koordinert fremgangsmåte, læring av hverandre og sammenslåing av adekvate økonomiske ressurser. Nordisk råd må bli til Nordisk grønt råd og ta tak i denne helt spesielle utfordringen og muligheten.

Selv om Norges unike politikk for elektriske biler og kjøretøy har vært nyttig som et eksempel, er det ingen tvil om at det ville vært mye mer effektivt hvis politikken ble gjennomført på nordisk nivå. Danmarks "grønne utenrikspolitikk" og “grønne investeringsplan” ville være langt mer effektive hvis de ble fulgt på et nordisk nivå. Sveriges eksperimentering med teknologier som stål uten fossilt brennstoff, passivt oppvarmede bygninger og ESG-investeringer (miljø, samfunnsansvar og eierstyring) bør kopieres og forbedres. Finlands digitale dyktighet og tidlige økonomiske strategi for en fullstendig sirkulær økonomi kan brukes i hele Norden.

Et første trinn mot umiddelbart å ta i bruk de "beste” bærekraftige retningslinjene og teknologiene fra de øvrige nordiske økonomiene, ville ta de nordiske økonomiene mye nærmere full bærekraft. Et andre trinn der de mest ambisiøse retningslinjene for bærekraft i alle økonomier automatisk blir standarden for hele Norden, vil plassere oss enda mer i front. Et tredje trinn innebærer en forpliktelse til full bærekraft innen 2030.

En allokering på fem prosent fra alle de nordiske, langsiktige investorene bør gi en økonomisk støtte på 100 milliarder USD i form av et nordisk grønt investeringsfond. Dette ville gi finansiering gjennom hele syklusen for utvikling og skalering av bærekraftige teknologier, og er en fornuftig investering i en verden der bærekraft er et konkurransefortrinn.

Hvis vi viser vei, vil resten av verden følge etter.

GUNNAR S. MAGNÚSSON

Gunnar S. Magnússon from Iceland works as the Sustainability Manager for Íslandsbanki where he leads the bank's sustainability efforts. He holds a master's degree from London School of Economics and has previously worked for the International Monetary Fund.

PERSPECTIVE

One of the key elements to a successful green and sustainable transition is cooperation and knowledge sharing among key stakeholders.

In a transition to a greener and more sustainable future, the UN Sustainable Development Goals (SDGs) provide a platform for stakeholders to work together. Private sector buy-in is crucial to achieve the 17 Goals by 2030 and companies are starting to recognise the value of linking their business with sustainability. There is plenty to be gained by doing so: lower costs, easier access to capital, greater innovation, stronger business relationships and attracting and retaining qualified personnel.

As for financial institutions and investors, they can play a big role in the green transition through their lending and investment activities, by matching funding with green and sustainable projects. Green bonds are a good example. According to the World Bank, green bonds are a form of debt security issued to raise capital specifically to support climate related or environmental projects.

Green bonds, initially used primarily by multilateral development banks, have seen a proliferation in issuances in recent years due to greater interest from the private sector. This is evidenced by the rapid growth of the green bond market, which according to the Climate Bonds Initiative, reached USD 257.7 bn in 2019. That is a new global record and an increase of 51 per cent from the previous year. This was primarily driven by the wider European market, which accounted for 45 per cent of global issuance. This trend is expected to continue in the coming years, bolstered by a new EU Taxonomy, designed to help market participants to navigate the transition to a low-carbon, resilient and resource-efficient economy and to boost transparency across the market.

Heimsmarkmið Sameinuðu þjóðanna um sjálfbæra þróun skapa gagnlegan vettvang fyrir ólíka hagsmunaaðila til að vinna saman að grænni og sjálfbærri framtíð. Til að ná heimsmarkmiðunum 17 fyrir árið 2030 er nauðsynlegt að virkja einkageirann til þátttöku. Mörg fyrirtæki eru orðin meðvitaðri um kosti þess að leggja áherslu á sjálfbærni í rekstri enda getur það haft í för með sér margs konar ávinning svo sem lægri kostnað, greiðara aðgengi að fjármagni, aukna nýsköpun og sterkari viðskiptatengsl auk þess að auðvelda fyrirtækjum að laða til sín og halda í hæft starfsfólk.

Fjármálastofnanir og fjárfestar gegna mikilvægu hlutverki í sjálfbærri þróun með lánum og fjárfestingum sem beina auknu fjármagni til grænna og sjálfbærra verkefna. Græn skuldabréf eru gott dæmi um þetta en samkvæmt skilgreiningu Alþjóðabankans eru þau ein gerð skuldabréfa sem gefin eru út sérstaklega í þeim tilgangi að styðja verkefni sem tengjast loftslagsmálum eða umhverfisvernd.

Útgáfa grænna skuldabréfa var í upphafi aðallega nýtt af fjölþjóðlegum þróunarbönkum en hefur í kjölfar aukins áhuga frá einkafyrirtækjum vaxið verulega undanfarin ár. Þetta sést vel á hröðum vexti markaðsins með græn skuldabréf en samkvæmt Climate Bonds Initiative nam verðmæti slíkra bréfa 257,7 milljörðum bandaríkjadollara árið 2019. Það er nýtt heimsmet og aukning sem nemur 51 prósenti frá fyrra ári. Þessa hækkun má einkum rekja til Evrópumarkaðarins en þar voru um það bil 45 prósent allra slíkra bréfa gefin út. Búist er við að þessi þróun haldi áfram á komandi árum, m.a. fyrir tilstilli nýrra evrópskra reglna (EU Taxonomy) en þeim er ætlað að auðvelda aðilum á markaði að innleiða rekstrarlausnir sem valda minni losun kolefna, bæta nýtingu auðlinda og auka gagnsæi.

One of the key elements to a successful green and sustainable transition is cooperation and knowledge sharing among key stakeholders. Global initiatives launched by the UN, such as the Global Compact, Principles for Responsible Investments and for Responsible Banking, were designed for doing just that. Íslandsbanki has been a proud participant in these initiatives over the years, as well as in the domestic initiatives of Festa, Icelandic Centre for Corporate Social Responsibility and Iceland Sustainable Investment Forum.

The bank is also part of a unique coalition of Nordic companies, “Nordic CEOs for a Sustainable Future“ in which large Nordic companies are working jointly towards the SDGs. The group has initiated a dialogue with the prime ministers of the Nordic countries, centred on the challenges shared by governments and companies in relation to sustainability, climate action and the importance of diversity and inclusion in the economy. The coronavirus pandemic calls for strong cross-sector and multi-country cooperation, with the UN asking for global solidarity to respond to what it says is the greatest test since the formation of the organisation.

The mobilisation of sustainable finance will be key during the post COVID-19 rebuilding efforts, with the first COVID-19 social bonds already being issued. Hopefully, these bonds will be received favourably by market participants, paving the way for more long-term sustainable investment options and thus providing much needed support during troubling times.

Lykilþættir í þróun grænna og sjálfbærra viðskiptahátta er samvinna og gagnkvæm miðlun þekkingar milli helstu hagsmunaaðila. Alþjóðlegum aðgerðaráætlunum sem Sameinuðu þjóðirnar hafa staðið fyrir líkt og Global Compact, viðmið um ábyrgar fjárfestingar og viðmið um ábyrga bankastarfsemi er einmitt ætlað að stuðla að þessu. Íslandsbanki er stoltur af því að hafa verið aðili að slíkum áætlunum um árabil og hafa stutt við innlend verkefni á borð við Festa – miðstöð um samfélagsábyrgð og IcelandSIF.

Bankinn er einnig aðili að einstöku samstarfi norrænna fyrirtækja, „Nordic CEOs for a Sustainable Future“ þar sem ýmis stórfyrirtæki á Norðurlöndunum vinna saman að heimsmarkmiðunum. Þessi samstarfshópur hefur komið af stað samtali við forsætisráðherra Norðurlandanna þar sem lögð er áhersla á þær áskoranir sem stjórnvöld og fyrirtæki standa sameiginlega frammi fyrir að því er varðar sjálfbærni, loftslagsaðgerðir og mikilvægi fjölbreytileika og jafnréttis. Kórónuveirufaraldurinn kallar á öfluga samvinnu þvert á atvinnugreinar og landamæri þar sem Sameinuðu þjóðirnar kalla eftir samstöðu við því sem þau kalla mestu þolraun sem samtökin hafa staðið frammi fyrir frá upphafi.

Að virkja fjármagn til að styðja við sjálfbærni er einn lykilþáttanna í endurreisnarstarfinu vegna covid-19 og hafa fyrstu félagslegu skuldabréfin í tengslum við faraldurinn þegar verið gefin út og er það vonandi að fjárfestar taki þeim vel á þessum óvissutímum.

"The group has initiated a dialogue with the prime ministers of the Nordic countries, centred on the challenges shared by governments and companies in relation to sustainability, climate action and the importance of diversity and inclusion in the economy."

One of the key elements to a successful green and sustainable transition is cooperation and knowledge sharing among key stakeholders.

03

PARTNERSHIPS

Foster collaboration between different stakeholders to contribute to innovative and sustainable interdisciplinary solutions.

Left image:
Andréason & Leibel

03 PHENOMENON

RURBAN POSSIBILITIES

The relationship between city and countryside is out of balance. Large differences are found, for example, in terms of labour market, services and income. The effects of urbanisation include increased stress and exploitation of natural resources, while the need for rural production of food and energy increases. How can collaboration contribute to sustainable solutions for improving the interaction between city and countryside? Could the digital tools, which are essential to the smart and sustainable city, also contribute to development of smaller cities and rural areas?

BRONDBY HAVEBY, DENMARK

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Small communities near major cities are increasing due to lower costs and a higher quality of life.

03 RURBAN POSSIBILITIES

Today, one in five Nordic citizens is living in one of the five largest urban regions. As the cities grow, it adds to the strain on the environment, housing, energy and infrastructure. This drives the need for digitalised solutions to utilise resources efficiently. Waste bins signal when they are full, buildings save energy, and the flow of fresh water is streamlined. At the same time, warnings are being raised about the constantly connected city, with risks of breaches and vulnerability. And not least stress.

Density does not necessarily lead to closeness, but can instead create crowdedness and friction. Many choose to live outside of the cities because of lower costs and a higher quality of life, and small communities near the major cities are growing. The current immigration can also entail an opportunity for the rural areas. When relationships are formed with the rest of the world, the exchange of experiences can lead to a new development.

The need for increased production of high-yielding and varied foods grows in a time of a growing population and an increasingly warm global climate. This provides new conditions and the rural areas may come to play an important role in a sustainable development. The rural areas of the Nordics can become an important food production hub, as nearly two thirds of Denmark's surface consists of arable land, and Norwegian fishing and fisheries are already world-leading industries.

The countryside will also be important in the transition to a fossil-free and renewable electricity production, where large areas are required for solar panels and wind turbines. An increased use of wood, the importance of slowing the decrease in biodiversity and of preserving nature as a place of recreation and health are other social changes that require creative solutions. The countryside as a food and energy producer entails requirements for interaction with the cities, where digitalisation makes it possible to create a "glocal" market.

Digitalisation and AI can really redraw the map and they entail great opportunities for a "rurban" Nordic region. E-commerce, e-health and coordinated transports simplify and place services closer to the citizens. Digital business solutions and online distance working could strengthen the business sector in smaller communities and improve the possibilities of choosing where you want to live. The Finnish survey "Smart countryside" highlights digitalisation as a way of uniting local forces, but at the same time, residents must have a chance to improve their digital know-how. A robust digital infrastructure with learning opportunities is a must for taking the next step.

Is collaboration between the cities and the countryside the solution for a more social and sustainable life for the individual and the society alike?

MOA BJÖRNSSON

Moa Björnsson works as Head of Development for the Norwegian municipality of Træna. Using her extensive knowledge of innovation processes and urban development, Moa challenges urban norms and preconceived ideas on where innovation can take place.

PERSPECTIVE

When you no longer commute to a city centre or a main office, each person is in a way just as close or far away as the next.

I live in one of Norway's smallest municipalities. With its 450 residents, Træna is an island a few hours out to sea, on level with the Arctic Circle. From my position in the strait of Northern Norway, I see several possibilities for a digitalisation that can benefit city and country alike.

The pandemic that spread around the world in 2020 has had consequences on many levels. Our major cities became centres of infection and the smaller municipalities with their limited resources became fearful of not being able to handle a local breakout. There were many uncertainties and negative aspects, but we also noted some positive effects. In just a few weeks, we saw an express digitalisations, both in the major cities and in the furthest corners of the countryside. In these very strange times, I have seen something we have never seen before: a greater understanding of how the city and the countryside are connected.

The coronavirus crisis clarifies what we believe is important and what we would struggle to give up. City life with cafés, restaurants and culture on the one hand. And cottage life with nature, outdoor activities and family time on the other. The ban here in Norway to go to your cottage was a bitter pill for many to swallow, but it also gave insight into how resources are distributed in the country and how important the ability to shift between urban and rural surroundings seem to be to so many people.

When everyone is working from home, the common perception of city centre and peripheral areas also changes. When you no longer commute to a city centre or a main office, each person is in a way just as close or far away as the next. Only the bandwidth of your internet connection makes the difference. With

Jeg bor i en av Norges minste kommuner. Træna med 450 innbyggere er en øygruppe noen timer ut i havet ved polarsirkelen. Fra min plass i havgapet i Nord-Norge ser jeg flere muligheter for en digitalisering som kan være gunstig for både by og land.

Pandemien som spredte seg over hele verden i 2020, fikk konsekvenser på mange områder. Det var stor smittespredning i storbyene, og småkommunene med sine knappe ressurser var redde for ikke å kunne håndtere situasjonen ved et lokalt utbrudd. Mye ble usikkert og negativt, men vi så også positive effekter. På bare noen uker fikk vi for eksempel en ekspressdigitalisering – både i storbyene og langt ute på landsbygda. I denne svært spesielle tiden synes jeg at jeg ser noe vi ikke har sett før: en større forståelse for hvordan by og land henger sammen.

Coronakrisen tydeliggjør hva vi synes er viktig, og hva vi har vanskelig for å gi avkall på. Bylivet med kafeer, restauranter og kultur på den ene siden. Og hyttetid med natur, friluftsliv og familie på den andre. Hytteforbudet i Norge var et hardt slag for folk, men ga også innsikt i hvordan ressursene er fordelt i landet, og hvor viktig det ser ut til å være for mange at de kan veksle mellom den tettbefolkede byen og den tynt befolkede bygda.

Når alle jobber hjemmefra, endres også den tradisjonelle oppfatningen om sentrum og periferi. Når man ikke lenger pendler inn til en bykjerne eller et hovedkontor, er alle på en måte like nære og like langt borte. Bare båndbredden på internett utgjør en forskjell. Med denne massive øvelsen i fleksi-kontor har vi også fått nye oppfatninger om hvor og hvordan arbeid kan utføres effektivt og kreativt. På en gård på landet, i en leilighet i sentrum eller på en øy i havgapet? Kanskje kan en større fleksibilitet i lokalisering være en positiv effekt av pandemien?

this massive exercise in flexible offices, we have perhaps also been given a new idea of where and how work can be conducted effectively and creatively. At a countryside farm, in a city apartment or on an island in the sea? Perhaps a greater flexibility in localisation can be a positive effect of the pandemic? This crisis also helped show that your registered address matters. Society's functions are planned based on where you live in order to provide services according to need. Being in locations outside your home municipality or region can potentially make you a burden on society.

Flexible population register
Here in Norway, it is evident that most of us have more than one place that we consider home. Imagine if you, administratively speaking, could choose to be a "resident" of more than one place? Would it then be possible to distribute taxes and charges to more municipalities, so that they are not as dependent on only the population registered there. Then the part-time residents (cottage owners, alpine adventurers and part-time surfers) with their freelance offices would also "count" as resources in public planning. Perhaps a company can also consider new concepts for office localisation. With expensive rents in the inner cities, it should be more attractive to share offices and facilities in other locations in the country.

Digitalisation in the schools
When the schools closed in Norway, we saw how quickly a transition to digital schooling could actually be. Perhaps we can keep this in mind when planning the school system, making it more flexible so that families can alternate between the countryside and the city in the future. That way, we could achieve a valuable distribution between smaller villages (in need of a larger population) and the major cities. It would also affect the year-round finances of the countryside, which could to a greater extent provide a service for more people around the year.

So far, we have only seen the outlines of what digitalisation could achieve. There are definitely opportunities here that would benefit both rural and urban areas, if we want them to.

I løpet av krisen ble det også tydelig at folkeregistrert adresse er viktig. Samfunnets funksjoner er planlagt for å kunne tilgodese tjenester og behov, basert på hvor du bor. Å befinne seg på steder utenfor egen kommune eller region er altså potensielt en samfunnsbelastende aktivitet.

Fleksibel folkeregistrering
I Norge er det klart at de fleste av oss har mer enn bare én plass vi kaller hjemme. Tenk om man administrativt sett kunne velge å være "hjemmehørende" på flere steder? Kunne man da fordele skatter og avgifter til flere kommuner, slik at de ikke ble så avhengige av de som var 100 prosent folkeregistrert i kommunen? Da kan halvtidsinnbyggerne (hytteeiere, fjellfolk og deltidssurfere) med sine frilanskontorer også "regnes med" som ressurser i den offentlige planleggingen. Kanskje bedrifter også kan tenke på nye konsepter for kontorlokalisering. Med dyr husleie i bykjernen burde det bli mer attraktivt med delte kontorer og fasiliteter andre steder i landet.

Digitalisering på skolene.
Med skolestengingen i Norge har vi sett hvor raskt en omstilling til digital skolegang faktisk kan gjøres. Kanskje kan man ta dette med inn i planleggingen av skolesystemet og bygge inn økt fleksibilitet, slik at familier kan veksle mellom landsbygda og byen i fremtiden. På den måten kan man få en verdifull delingstid mellom småsteder (i sterkt behov for folk) og store byer. Det ville også påvirke året-rundt-økonomien på landsbygda, som i større grad kunne bygge opp en tjeneste for flere året rundt.

Til nå har vi bare sett konturene av hva digitaliseringen kan gjøre. Her ligger det definitivt muligheter som er gunstige for både land og by, hvis vi bare vil.

"Imagine if you, administratively speaking, could choose to be a "resident" of more than one place? Would it then be possible to distribute taxes and charges to more municipalities, so that they are not as dependent on only the population registered there."

Located off the northern coast of Norway, the island group Træna is Norway's third smallest municipality.

PEKKA KOPONEN

Pekka Koponen is the Development Director at Forum Virium Helsinki, Finland. Pekka also built the smart city team at Forum Virium with the aim to make cities better places to live – streamlined, sustainable and fun.

PERSPECTIVE

A smart city is not solely a matter of having the newest technology, sensors everywhere and smart traffic lights. It is also about building trust between the city and the citizens, transparency, learning together what works and what does not, failing fast and improving.

Helsinki's vision is to become the most functional city in the world. Forum Virium Helsinki, the City of Helsinki's own innovation company, is helping to reach that goal by co-creating urban futures in partnership with companies, universities, other public sector organisations and residents. The organisation has been pushing the agenda for Helsinki to become a smart city for over a decade already. The starting point has been openness, not only in technical terms, like supporting open data or open source development, but also as a general attitude, to be open to new ideas and engage the whole community, being curious and quickly getting our hands dirty.

A smart city is not solely a matter of having the newest technology, sensors everywhere and smart traffic lights. It is also about building trust between the city and the citizens, transparency, learning together what works and what does not, failing fast and improving. Forum Virium Helsinki has developed participatory methods to involve both citizens and organisations as well as the public and private sector. Our method for agile piloting with the companies has proved to work well.

A functional city is a pleasant place to be and allows people to be more creative and live better lives. Not many cities in the Nordic region experience the immense urban pressure that other places do worldwide. Even though Helsinki is pretty clean and close to nature, it is fast-growing with an increasing amount of traffic, and our mission is to maintain its easy-goingness and functionality.

At the moment, my team is focusing on smart mobility: how people and goods move in the urban environment as sustainably as possible.

Helsingin visiona on tulla maailman toimivimmaksi kaupungiksi. Helsingin oma innovaatioyritys Forum Virium Helsinki auttaa tämän tavoitteen saavuttamisessa rakentamalla yhdessä yritysten, yliopistojen, muiden julkisen sektorin organisaatioiden ja kaupungin asukkaiden kanssa urbaania tulevaisuutta. Olemme jo yli kymmenen vuoden ajan pyrkineet tekemään Helsingistä älykkäämpää kaupunkia. Lähtökohtana on ollut avoimuus, ei vain teknisesti miellettynä, kuten avoimen tiedon tai avoimen lähdekoodin kehityksen tukemisena, vaan myös toimintaperiaatteena yleisemminkin. Tavoitteena on suhtautua avoimesti uusiin ideoihin, hyödyntää koko yhteisön kyvykkyys ja päästä kokeilemaan nopeasti.

Älykäs kaupunki ei merkitse pelkästään uusinta teknologiaa, antureita kaikkialla ja älykkäitä liikennevaloja. Kyse on myös luottamuksen rakentamisesta kaupungin ja kaupunkilaisten välille, läpinäkyvyydestä sekä yhdessä oppimisesta ja oppien hyödyntämisestä. Forum Virium Helsinki on kehittänyt osallistamismenetelmiä saadakseen kehittämiseen mukaan sekä kansalaisia että julkisen ja yksityisen sektorin organisaatioita. Nopeiden kokeilujen metodimme on osoittautunut toimivan hyvin yritysten kanssa.

Toimiva kaupunki on miellyttävä paikka, jossa ihmiset voivat olla luovempia ja elää parempaa elämää. Vain harvoissa pohjoismaisissa kaupungeissa urbaani paine on yhtä voimakas kuin muualla maailmassa. Vaikka Helsinki on vehreä ja luonnonläheinen, se kuitenkin kasvaa nopeasti ja sen liikenne vilkastuu. Tavoitteenamme on säilyttää kaupungin rentous ja toimivuus.

Tällä hetkellä tiimini keskittyy älykkääseen liikenteeseen, eli siihen, kuinka ihmiset ja tavarat liikkuvat urbaanissa ympäristössä mahdollisimman sujuvasti ja kestävästi.

HELSINKI, FINLAND

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Helsinki is growing quickly with increasing traffic, Forum Virium Helsinki's mission is to maintain the city's 'easy-goingness' and functionality.

In the context of mobility we are facing three future trends:

- Electric mobility – leading to more efficient and locally emission-free transport
- Automation – changing how streets and parking spaces are used, as well as the business models of the transportation industry
- Sharing resources – how to use vehicles more effectively and provide more choices meeting the changing needs of individuals

What these three trends have in common is digital technology and connectivity. Almost everybody has a smart phone already to reserve or pay services and to get the GPS location. And these services generate more data to be analysed, helping to develop urban services further.

Liikkumisen kontekstissa meillä on edessämme kolme yhtäaikaista tulevaisuuden trendiä, merkittävää murrosta:

- Sähkö käyttövoimana, joka johtaa energiatehokkaampaan ja paikallisesti päästöttömään liikenteeseen
- Automaatio, joka muuttaa mm. katujen ja pysäköintialueiden käyttötapoja ja liikenteen liiketoimintamalleja
- Resurssien jakaminen, eli kuinka ajoneuvoja voidaan käyttää tehokkaammin ja kuinka voidaan tarjota enemmän vaihtoehtoja muuttuvien yksilöllisten tarpeiden täyttämiseksi

Näille kolmelle trendille on yhteistä digitaalinen teknologia ja liitettävyys. Lähes kaikilla on älypuhelin, jolla voi varata tai maksaa palveluja ja määrittää sijainnin. Uudet palvelut puolestaan tuottavat lisää analysoitavaa dataa ja auttavat kehittämään urbaaneja palveluja entisestään.

"To speed up digital development, you need enough early adopters and critical mass to make the services financially sustainable."

Many strategies and solutions developed for dense urban areas can also be applied in smaller settings. To speed up digital development, you need enough early adopters and critical mass to make the services financially sustainable. You will find these in larger cities, but digital services are by nature easy to scale, so smaller towns will benefit too.

Digitalisation would allow us to live a still pleasant life in more and more dense environments, but perhaps the recent pandemic will turn the tide again? So far, we have been trying to get people to share more resources. We have been working to counteract Elon Musk's personal bubble vision, where people are moving in their own automated electric Tesla. Where they can work or have a nap, alone. Filling the streets again with cars. But maybe that is exactly what we need now? And these automated vehicles work well in rural environment too, providing on-demand services for people who cannot drive themselves.

Digitalisation and new situations push us towards a world we could not even imagine a few decades ago. In our fast-paced world, what we believe is needed tomorrow might change overnight. We need to keep on experiencing and learning.

Monet tiiviitä kaupunkialueita varten kehitetyt strategiat ja ratkaisut soveltuvat myös harvemmin asutuille alueille. Digitaalisen kehityksen vauhdittamiseksi tarvitaan tarpeeksi varhaisia kokeilijoita ja kriittistä massaa, jotta palveluista tulisi taloudellisesti kannattavia. Niitä löytyy suurista kaupungeista, mutta digitaaliset palvelut ovat luonnostaan helposti skaalattavia, joten myös pienet kaupungit hyötyvät niistä.

Digitalisaatio tarjoaa meille mahdollisuuden elää edelleen miellyttävästi yhä tiiviimmissä ympäristöissä, mutta tämänhetkinen pandemia voi muuttaa jälleen trendin suuntaa. Tähän asti olemme yrittäneet saada ihmiset jakamaan enemmän resursseja. Olemme pyrkineet poispäin Elon Muskin kuplavisiosta, jossa ihmiset liikkuvat omilla automaattisilla Tesloillaan, joissa he voivat työskennellä tai ottaa nokoset, yksin, täyttäen kadut uudelleen autoilla. Mutta ehkäpä sille onkin nyt vahvemmin tilausta? Ja toisaalta nämä automaattiset ajoneuvot toimivat hyvin myös maaseudulla ja tarjoavat tarvittaessa palveluja myös niille, jotka eivät voi ajaa itse.

Digitalisaatio ja muuttuva ympäristö johtavat maailmaan, jota emme voineet edes kuvitella muutama vuosikymmen sitten. Nopeatempoisessa maailmassamme se, mitä luulemme tarvitsevamme huomenna, voi muuttua yhdessä yössä. Meidän on jatkettava kokeilemista ja oppimista.

04

SUSTAINABLE METHODS AND MODELS

Share and export the Nordic methods and processes for sustainable production and consumption internationally.

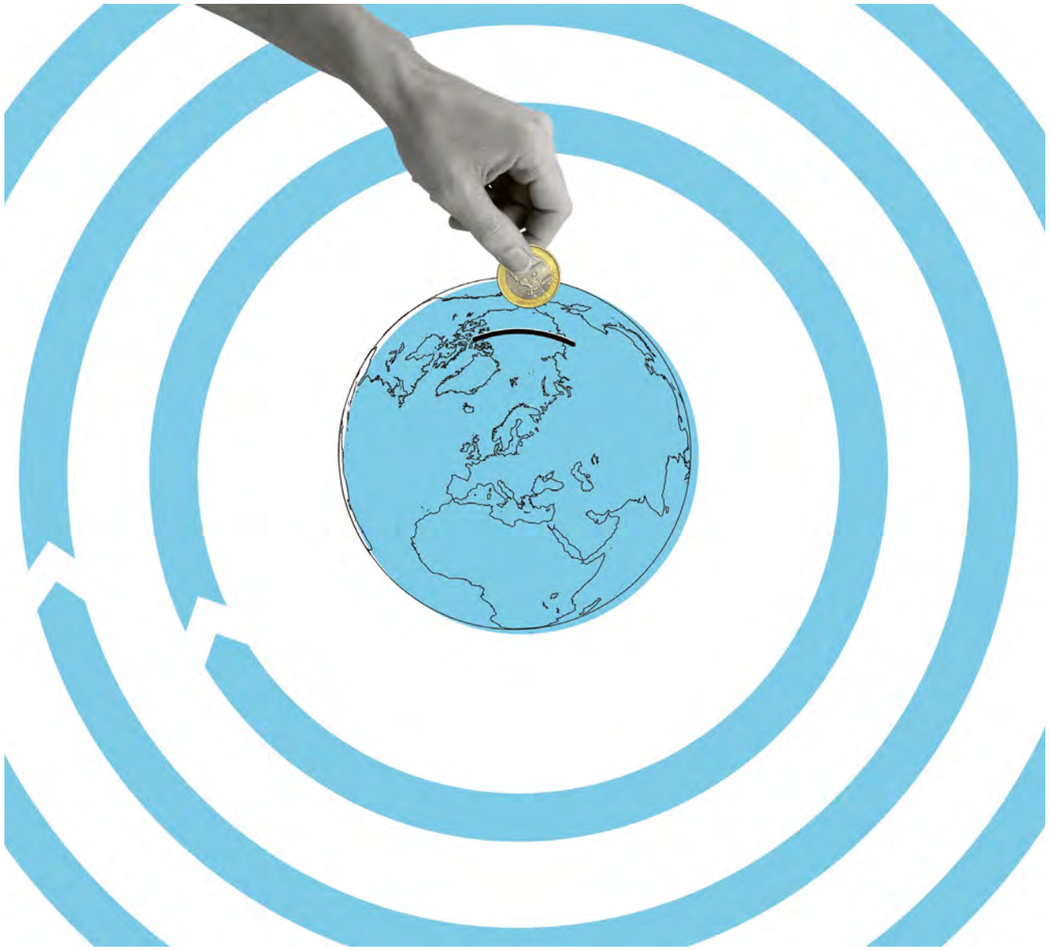
Left image:
Andréason & Leibel

04 PHENOMENON

PARADIGM SHIFT

We are currently in a paradigm shift heading from a linear economy towards a circular one, where the value of materials and resources is maintained for as long as possible. Material loss and the amount of waste can be minimised, which in the long term can increase both commercial benefit and sustainability. The goal is to use new, sustainable and efficient business models, innovative methods and updated policy frameworks in order to move towards a more cyclical approach, where products and materials are used more efficiently. How can Nordic methods and processes be raised to inspire such a shift?

INVEST IN THE PLANET



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Sitra, a Finnish future fund, is working towards a fair and competitive carbon-neutral circular economy.

04 PARADIGM SHIFT

In today's linear economy, raw materials are being extracted to make new products which can be consumed and discarded. This has a clear negative impact on the environment. According to a report from the Ellen MacArthur Foundation, 45 per cent of emissions from the production of food, clothing, cars and other consumer products emanate from industry and agriculture.

This development is not sustainable, considering the environmental impact and the ongoing climate change. Each year, 100 billion tonnes of raw material is turned into products worldwide. Less than ten per cent is reintroduced into a circular economy. A mobile phone, for example, which weighs 169 grams as a finished product, generates approximately 86 kilos of waste in the form of mining waste and leftover material. All industries must assume their share of the responsibility and get on board the transition train – otherwise it may be too late. A transition to a circular economy would entail economic advantages in the long run, such as resource efficiency, reduced climate impact and increased growth, competitiveness and employment.

Despite the benefits entailed by a shift, the Circularity Gap Report 2020 shows that the global economy is becoming less circular. The reason is that not enough is done, primarily in terms of mining and ongoing stock build-up, and that materials and products are not designed for disassembly, meaning that they cannot be taken apart, deconstructed or repaired.

Smaller economies like Sweden, Finland, Denmark, Norway and Iceland have good conditions for collaborating and cooperating to achieve a paradigm shift. Individually, these economies are relatively small, but the Nordic region as a whole has enormous potential. For this reason, it is important that we learn from one another, dare to challenge and question the current system, share Nordic examples worldwide and exchange policy proposals at the governmental level.

At the initiative of Minister for Environment and Climate Isabella Lövin, the Swedish Government has decided that Sweden shall have a national strategy to transition to a more sustainable production and consumption of goods and services. Through proposals for new legislation and policy instruments, this strategy will contribute to the realisation of the climate objectives and to the EU's circular economy initiatives.

Finland is viewed as a circular economy pioneer and it is the Nordic country that has applied the circular approach to the greatest extent. Many principles of the circular economy have already been used in the country for a long time, for example within the forest industry. In 2019, a strategic programme was initiated to promote a circular economy. Through this programme, which will be adopted in 2020, the Government intends to reinforce Finland's role as an international role model.

HRUND GUNNSTEINSDÓTTIR

Hrund Gunnsteinsdóttir is a creative and driven Icelandic consultant, filmmaker, entrepreneur and writer. Today, Hrund is the Managing Director at Festa – Icelandic Center for Social Responsibility and Sustainability.

PERSPECTIVE

We can make the paradigm shift happen and go circular today - if we set our minds to it.

If rational and creative thinking were combined more often, and we worked and used more cross-disciplinary thinking, I believe a bigger effort to create future scenarios would be made. If we had done this, we could have been better prepared for COVID-19. COVID-19 was not an unforeseen event but a predictable pandemic. Since March we have seen how drastically we actually can change our behaviour in a very short period of time.

As I see it, the main challenge in terms of the shift towards a circular economy, is the change of mindsets. We can make the paradigm shift happen and go circular today - if we set our minds to it. Regulations, structures and processes also need to be put in place in order to enable companies - new and old - to move towards a circular economy.

The Nordic countries are already globally leading by example in terms of equality and as welfare states. Aiming for a regenerative circular economy can create many interesting and valuable spin-offs such as new jobs, spurred innovation and drastically reduced negative impact on nature and climate. One example is Orkey and Vistorka's work in Akureyri in North Iceland, where biodiesel is produced from waste cooking oil and used in buses, fishing vessels and asphalt production.

Ef við værum meðvitaðri um að nota rökhugsun og skapandi hugsun meira í bland og með markvissari hætti, gætum aukið samstarf og miðlað meira hugmyndum þvert á geira og sérgreinar held ég að okkur tækist betur að skapa sterkari framtíðarsýn fyrir atvinnulífið. Það hefði líklega undirbúið okkur betur fyrir covid-19. Covid-19 var ekki ófyrirsjáanlegur atburður, heldur faraldur sem hafði verið spáð fyrir um. Frá því í mars höfum við upplifað hve mikið við getum raunverulega breytt hegðun okkar og samfélagi á mjög skömmum tíma.

Hugarfarið, er að mínu viti, stærsta áskorunin við að fara úr línulegu hagkerfi yfir í hringrásarhagkerfi. Við getum breytt viðhorfum okkar og skipt yfir í hringrásarhagkerfi á skömmum tíma – ef við bara ákveðum að gera það. Einnig þarf að breyta reglugerðum og skapa ramma til að gera fyrirtækjum – jafnt nýjum sem rótgrónum – kleift að skipta yfir í hringrásarhagkerfið.

Norðurlöndin hafa þegar tekið forystu í heiminum með því að sýna fordæmi á sviði jafnréttismála og velferðarkerfa. Með því að stefna að sjálfbæru hringrásarhagkerfi getum við skapað fjölmörg áhugaverð og verðmæt afleidd áhrif, svo sem ný störf, nýsköpun og dregið úr skaðlegum áhrifum á náttúru og loftslag. Gott dæmi um þetta er starfið hjá Orkey og Vistorku á Akureyri, þar sem matarolíu er ekki hent, heldur er hún notuð til að framleiða lífdísil sem knýr strætisvagna og fiskibáta og er notaður við framleiðslu á malbiki.

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Young women speaking at Festa's largest conference of the year.

The circular economy also extends the product life - Philips has for example been transformed from a one-time electronic and lighting producer into a health technology service company. By taking back sold or rented products, Philips expands their revenue and maintains the same customer group by reusing the old products to create new ones. Furthermore, I believe there is a need for many different versions of circular economy companies and organisations in the future; the most important thing is that that we design companies, goods and services in a way that does not create waste or pollution.

Hringrásarhagkerfi lengir einnig líftíma vöru – Philips hefur til dæmis breyst úr fyrirtæki sem framleiðir raftæki og ljós í þjónustufyrirtæki fyrir heilbrigðistækni. Með því að taka aftur við seldum eða leigðum framleiðsluvörum hefur Philips aukið tekjur sínar og haldið í tryggan hóp viðskiptavina með því að nýta gömlu vörurnar við framleiðslu á nýjum. Ég tel að í framtíðinni verði líka þörf fyrir margar og ólíkar tegundir fyrirtækja og stofnana sem starfa í anda hringrásarhagkerfisins. Mestu skiptir að þróa fyrirtæki, vörur og þjónustu með það fyrir augum að draga úr sóun og mengun.

"A strong private sector commitment is needed, together with political decision-making and policy makers who understand what a circular economy is."

Finland is an amazing example of a country that has created a roadmap for circular economy, together with the organisation Sitra. Part of the reason why Finland has been successful is because it invests in piloting circular businesses and is also able to think long-term, under the parliament, instead of one Ministry. How can the Nordic region and the rest of the world learn from Finland in the role as a laboratory?

There are challenges with going circular, but these can quite easily be overcome as long as we agree on circular economy as a strategic vision. A strong private sector commitment is needed, together with political decision-making and policy makers who understand what a circular economy is. Entrepreneurs running businesses will see amazing opportunities in the circular economy.

Personally, I celebrate the fact that more and more leaders say; "I'm a leader who thinks about the welfare of something much bigger than my own company, and I am running a profitable company". There is a unique opportunity now to make short and long-term decisions in the whirlwind of factors entailed by COVID-19 that will definitely change our behaviour in the future.

Finnland er stórkostlegt dæmi um land sem hefur skapað fordæmi fyrir þróun hringrásarhagkerfisins, meðal annars undir forystu nýsköpunarsjóðsins Sitra. Ástæðurnar fyrir góðum árangri í Finnlandi eru að hluta til þær að þar er fjárfest í tilraunaverkefnum sem byggja á hringrásarhagkerfinu og áhættur teknar sem nýtast svo einkafyrirtækjum og opinbera geiranum. Finnar hafa líka gert áætlanir til lengri tíma með aðkomu þingsins, en ekki aðeins eins ráðuneytis. Hvað geta hin Norðurlöndin, og heimurinn allur, lært af tilraunum Finnlands í þessum efnum?

Umskipti yfir í hringrásarhagkerfi fela í sér ýmsar áskoranir, sem við getum auðveldlega sigrast á, ef við mörkum sameiginlega stefnu um hringrásarhagkerfi til framtíðar. Til að það geti orðið þarf ríkan vilja innan einkageirans, samfara markvissri ákvarðanatöku stjórnvalda og sameiginlegan skilning á því hvað felst í hringrásarhagkerfinu og hvernig það virkar. Frumkvöðlar í viðskiptum og stjórnendur fyrirtækja munu sjá, og sjá nú þegar, stórkostleg tækifæri sem felast í þróun í átt að hringrásarhagkerfi.

Sjálf fagna ég því að æ fleiri stjórnendur stíga fram og segja: „Ég er stjórnandi sem rek fyrirtæki með hagnaði, en læt mig um leið varða stærra samhengi en bara fjárhagslega afkomu míns fyrirtækis.“ Í dag, í þeim ólgusjó sem fylgir covid-19, gefst okkur einstakt tækifæri til að taka sjálfbærar ákvarðanir bæði til lengri og skemmri tíma, sem munu hafa mikil áhrif á þróun atvinnulífs og samfélög okkar inn í framtíðina.

Petra Lilja is a researcher, industrial designer and curator from Sweden with a strong foundation in sustainability. She divides her time between her studio Petra Lilja Design Studio, academic work and as a senior lector in design.

PETRA LILJA

PERSPECTIVE

To reach sustainability* and reasonably equitable prosperity, we need to undo the idea of humanity being the dominant species, free to exploit.

A circular economy has served as a great tool to start rethinking waste. However, its assumptive connections between the laws of nature and the capitalist economy need to be questioned in order to reach prosperous futures for not only humans, but also for the nonhuman animals, organisms and entities on which our survival depends.

The problem with models of circular economy in general is that they are fundamentally based on a view where 'nature', or the environment, is essentially understood as a resource base. This view separates human from nature and underpins the prevailing economic system where profit and growth are the top priorities. The danger of such a system is that waste is made into just another commodity, repeating and reinforcing the real problem which in my view is the growth paradigm. It is urgent that we put political categorisations and other dissents aside and seriously start discussing how to change something as over-arching, permeating and dominant as the human-centric and capitalistic worldview.

To reach sustainability* and reasonably equitable prosperity, we need to undo the idea of humanity being the dominant species, free to exploit. To undo, or decenter the human is perhaps not even possible; after all, we will always depart from our human perspective. But it can function as a thinkable, to rethink what it means to be human. That can lead to the cultivation of more respectful and humble relations with our surroundings and to deeper understandings of the environment as something that is in us, and concurrently we humans are fully integrated in the environment.

For example, think about how a chemical from a plastic product is leaking and being absorbed by the bodies of humans or

Cirkulär ekonomi har varit ett utmärkt verktyg för att börja tänka om gällande avfall. Dess antaganden om kopplingarna mellan naturlagar och den kapitalistiska ekonomin behöver dock ifrågasättas för att uppnå en välmående framtid, inte bara för människor men även för de icke-mänskliga djur, organismer och entiteter som vår överlevnad hänger på.

Problemet med cirkulära ekonomimodeller i allmänhet är att de i grunden baseras på en syn på ”naturen”, eller miljön främst som en resursbas. Detta separerar människan från naturen och utgör grunden för det rådande ekonomiska systemet där vinst och tillväxt är de högsta prioriteringarna. Faran med detta är att man gör avfallet till vilken handelsvara som helst och därmed upprepar och förstärker de verkliga problemet, vilket jag skulle säga är tillväxtparadigmet. Det är viktigt att vi bortser från politiska kategorier och andra meningsskiljaktigheter och börjar föra en seriös diskussion om hur vi kan ändra på något så övergripande, genomsyrande och dominerande som den människo-centrerade och kapitalistiska världssynen.

För att uppnå hållbarhet* och rimligt välstånd så behöver vi frångå idéen om människan som den dominanta arten med rätt att exploatera. Att frångå eller skifta fokus från människan på detta sätt är kanske inte ens möjligt, vi kommer trots allt alltid att utgå från ett mänskligt perspektiv. Men det kan fungera som ett tankeexperiment, att ompröva vad det är att vara mänsklig. Detta kan leda till en mer respektfull och ödmjuk hållning till våra omgivningar och till en djupare förståelse för miljön som något som finns i oss, samtidigt som vi människor är en del av miljön.

Tänk till exempel på hur kemikalier från en plastprodukt läcker ut och tas upp av mänskliga och icke-mänskliga kroppar och därmed sprids på okontrollerbara sätt i miljön. Inom så pass komplexa

"Values that give way to scenarios where a tree is not only a ‘standing log’, but is allowed to grow for the decades necessary to co-create the ultimate smart system called a forest rather than being cut clear and made into disposable napkins, no matter what technological opportunities there are for recycling."

non-humans, and hence distributed in, for humans, incontrollable ways throughout the environment. In such complex entanglements, circular economy models that compartmentalise waste as a mistake that can be fixed are suddenly rendered insufficient. Acknowledging this entanglement calls into question the reductive circular economy model, still based on a growth logic.

In order to transition to futures that are inclusive for all, where human and non-human animals, plants and other-than-human entities like rocks and minerals, water and air, can flourish, we need to find values beyond the production and consumption-driven lifestyle. Values that give way to scenarios where a tree is not only a ‘standing log’, but is allowed to grow for the decades necessary to co-create the ultimate smart system called a forest rather than being cut clear and made into disposable napkins, no matter what technological opportunities there are for recycling. A shift from this humancentric growth paradigm, towards ways that radically rebalance human-nature relations is necessary and can be reached through transdisciplinary research and collaborations across societal sectors, paying attention to values, feminist ethics, anti-colonial justice, and especially, post-growth and more-than-human politics. Unfortunately, there is a lack of good exemplary large-scale projects that act upon the fact that we need a new economic system. To find inspiration on true circular models, we need to look at grass-root level, for example to the rapidly growing transition network where knowledge on permaculture, food-making and lifestyles beyond the consumer-driven, is shared across the Nordic countries.

* In this text I use the word sustainability as the opposite of the ‘growth’ doctrine of capitalism and the over-consumption of natural resources.

samband blir cirkulära modeller som isolerar avfall som ett korrigerbart misstag genast otillräckliga. Erkännandet av dessa samband ifrågasätter den reduktiva cirkulära ekonomimodellen som fortfarande grundas på en tillväxtlogik.

För att skifta till en framtid som inkluderar alla, i vilken människor och icke-mänskliga djur, växtliv och andra icke-mänskliga ting, såsom stenar, mineraler, vatten och luft kan frodas, behöver vi finna värden utanför en produktions- och konsumtionsdriven livsstil. Värden som banar väg för scenarier där ett träd inte bara är en ”stående stock”, utan tillåts växa i de årtionden som krävs för att bidra till att skapa det ultimata smarta systemet vi kallar en skog. Istället för att fällas och användas i tillverkningen av engångsservetter, oavsett vilka teknologiska möjligheter som finns för återvinning. En övergång från detta människocentrerade tillväxtparadigm till metoder som radikalt återställer balansen människa-natur är nödvändig och kan uppnås genom tvärvetenskaplig forskning och samarbete över samhällssektorer, med fokus på värderingar, feministisk etik, antikolonial rättvisa, och särskilt på en icke-tillväxtbaserad ekonomi samt en politik som inte enbart fokuserar på människan. Tyvärr råder det brist på goda exempel av storskaliga projekt som svarar på behovet av ett nytt ekonomiskt system. För att finna inspiration till modeller som verkligen är cirkulära behöver vi se till gräsrotsrörelser som till exempel det snabbt växande omställningsnätverk som delar kunskap om permakultur, matlagning och livsstilar utan konsumtionsfokus i Norden.

* I det här sammanhanget ställer jag ”hållbarhet” i motsats till den kapitalistiska doktrinen av ”tillväxt” och överkonsumtionen av naturresurser.

TICKA

‘To reach sustainability and reasonably equitable prosperity, we need to undo the idea of humanity being the dominant species, free to exploit’.

05

CIRCULAR ECONOMY

Promote a circular economy by improving the overall performance of products throughout their life cycle.

Left image:
Andréason & Leibel

05 PHENOMENON

CLOSING THE LOOP

Every second, a waste collection vehicle full of textile waste goes to an incineration facility or landfill somewhere in the world. In the transition to a more circular economy, the textile sector is focusing on innovations within material development and recycling processes. The goal is to create a closed-loop recycling process, where waste is turned into the same quality as new production, without any waste. Most of the environmental impact created by textiles comes from the production stage, and since 97 per cent of textiles are made with virgin materials, it is important to reduce the need for new production.

FIBRE REGENERATION

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JEANS WASTE BALE

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05 CLOSING THE LOOP

Since the dawn of civilisation, humans have used animal and plant materials to manufacture textiles, but due to the development of the petrochemical sector in the last century, an abundance of textile fibres of a fossil origin have taken over.

Petroleum-based fibres such as polyester, nylon and acrylics, also known as synthetic fibres, are now dominating the global production of textile fibres. There are currently very limited fibre-2-fibre recycling processes for synthetic fibres on a commercial scale, even though some of these fibres have great potential to continuously retain the same quality as in new production following chemical recycling. Synthetic fibres can be incredibly wear resistant, and could have a long life with a relatively small environmental impact if the microplastic pollution that many synthetic fibres contribute to in the wash could be minimised. The cotton fibre from the cotton plant is in a shared second place on the global list of textile fibre production. The manufacturing of commercial cotton also has a large environmental impact; making one pair of jeans requires approximately 10,000 litres of water.

One of the greatest challenges of closed-loop recycling is the mixture of different materials and components (fibres, colouring, surface coating and zips, etc.). In order to recycle textiles in a closed loop, the various parts of the garment must be easily separated. In the last few years, chemical recycling processes have been invented which enable the recycling of common fibre blends, such as polyester and cotton textiles. Most of these processes are in the research stages.

An abundance of recycled and biobased textile fibres are now headed towards the market. These new fibres are made from Nordic forests, textile waste and other waste streams, and unlike their predecessor, rayon fibre, they require fewer harmful chemicals in closed systems. One example of this is Infinited Fibre from Finland, which transforms old cardboard and agricultural waste into textile fibres. The company is planning to produce fibres at a commercial scale by 2022. Another example is the new, Swedish-made fibre Circulose, which is made from textile waste. H&M is the first company to use this fibre in their Conscious Exclusive Collection SS20.

Finally, it should be pointed out that closed-loop recycling does not mean that consumption can continue at the same rate as today. Recycling consumes energy, water and uses harmful chemicals. Textiles of good quality, in combination with new business models, provide consumers with the opportunity to extend the life of their clothes through repairs or to update their style through rentals and redesign. The combination of a longer life cycle and closed-loop recycling creates a sustainable textile industry.

HANNA DE LA MOTTE

Hanna De La Motte is a Swedish researcher and project manager at the Materials and Production Division at RISE. She has a broad expertise in cellulose science and textile recycling with a PhD in organic chemistry.

PERSPECTIVE

In order to attain the global sustainability goals, which requires sustainable and viable infrastructures, I believe that it is absolutely necessary to collaborate more both within and between value chains.

I didn't always know that I would be a researcher. I grew up in a home where art and music played a large part. In school, I discovered that I was interested in chemistry, and I am convinced that it was the combination of theory and practical work that appealed to me. After my doctoral education, I had the chance to apply my knowledge of chemistry in the textile sector, for example as a leader for the textile recycling projects in the research programme Mistra Future Fashion. Doing research on how new sustainable materials and recycling processes can be created is highly motivating, as the challenges relate to a spectrum of chemical methods.

In my opinion, there are five major challenges for a functioning textile recycling process. The first is the lack of large-scale collection and sorting, which is able to send the right material to the right place with high precision. The second is managing the lost quality of worn-out textile. A worn-out garment has been affected down to the molecular level, and the material needs to be refined to create recycled products which are attractive in the market and able to replace virgin materials. The third is fibre mixes that currently comprise a large proportion of the textiles. In a fully circular recycling, processes that separate different fibres probably need to be created. The fourth challenge is to handle the chemicals that enter the recycling processes due to the large number of different chemicals being added to the textile fibres during production. The fifth challenge is to ensure that the new recycling processes are sustainable, both from an ecological, social and financial perspective.

Det var inte alls självklart att jag skulle bli forskare. Jag växte upp i ett hem där konst och musik fick ta mycket plats. I skolan upptäckte jag att kemin intresserade mig, och jag är övertygad om att det var kombinationen av teori och praktiskt arbete som tilltalade mig. Efter min doktorsutbildning fick jag chansen att applicera mina kemikunskaper inom textilsektorn, bland annat som ledare för textiltervinningsprojekten i forskningsprogrammet Mistra Future Fashion. Att forska på hur nya hållbara material och återvinningsprocesser kan skapas är väldigt motiverande eftersom utmaningarna berör ett spektrum av kemiska metoder.

Det finns, som jag ser det, fem stora utmaningar för en fungerande textiltervinning. Den första är bristen på storskalig insamling och sortering, som med hög precision kan sända rätt material till rätt ändamål. Den andra är att hantera den förlorade kvalitén hos uttjänt textil. Ett utslitet plagg är påverkat ända ner på molekylnivå, och materialet behöver förädlas så att vi skapar återvunna produkter som är attraktiva på marknaden och ersätter jungfrulig råvara. Den tredje är fiberblandningar som idag utgör en stor del av textilierna. I en cirkulär återvinning behöver processer som separerar olika fibrer sannolikt skapas. Den fjärde är att hantera de kemikalier som äntrar återvinningsprocesserna, då en mängd olika kemikalier sätts till textilfibrerna i produktionen. Den femte utmaningen är att försäkra att de nya återvinningsprocesserna är hållbara, både ur ett ekologiskt, socialt och ekonomiskt perspektiv.

En av mina drivkrafter är att hitta lösningar för att separera och återvinna nyttiga fiberblandningar. Ett exempel är bomull/

FIBRE SEPARATION

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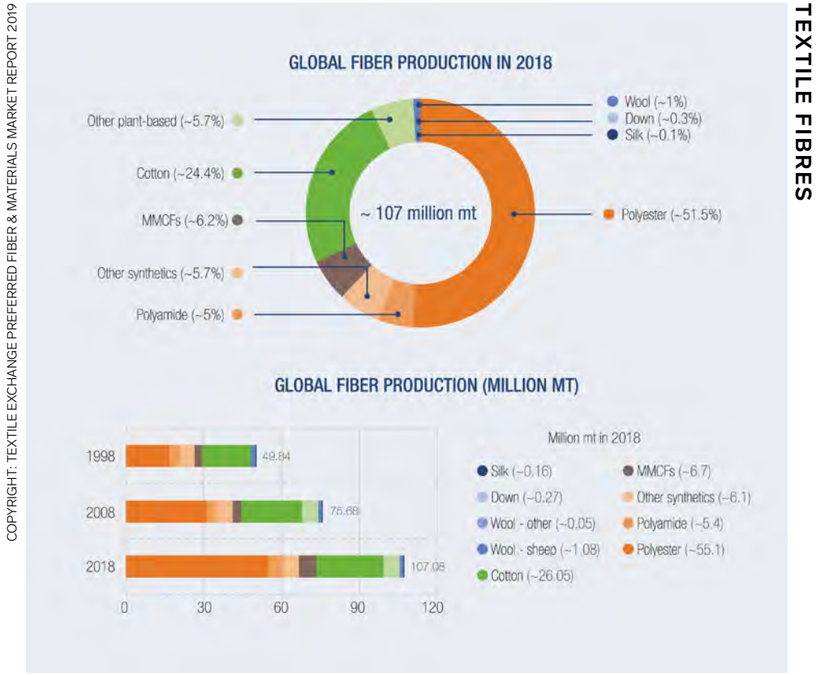
The recycling process OnceMore™ is turning worn out poly-cotton hospitable sheets into new textile fibre.

"This process has recycled 20 tonnes of worn-out hospital sheets made from cotton/ polyester, and over the next year, it will be used to recycle 300 tonnes with the ambition to scale up to 25,000 tonnes by 2025."

One of my own motivations is to find solutions for separating and recycling benefical fibre mixes. One example is cotton/ polyester, where cotton contributes to transporting perspiration and comfort against the skin, while polyester is quick-drying and more durable. It is a good combination, especially in the service sector. For several years, Mistra Future Fashion worked on a solution that meant the mix could be recycled in Swedish forest industry, where the material cellulose was processed on a commercial scale. As cellulose is the main component of both paper and cotton, we realised that textile recycling could be integrated with existing processes, which is often cost-efficient. Our research inspired the forest company Södra, and in 2019 they launched the process OnceMore™ in Sweden. This process has recycled 20 tonnes of worn-out hospital sheets made from cotton/polyester, and over the next year, it will be used to recycle 300 tonnes with the ambition to scale up to 25,000 tonnes by 2025.

polyester, där bomull bidrar med vätsketransport och en behaglig känsla mot huden, medan polyester torkar snabbt och är mer slitbar. Det är en bra kombination, speciellt inom servicesektorn. Under flera år jobbade vi i Mistra Future Fashion med en lösning som innebar att blandningen skulle kunna återvinnas i svensk skogsindustri, där materialet cellulosa hanteras i kommersiell skala. Då cellulosa är huvudbeståndsdelen i både papper och bomull såg vi att textilåtervinning skulle kunna integreras med befintliga processer, vilket ofta är kostnadseffektivt. Forskningen inspirerade skogsföretaget Södra och 2019 lanserade de processen OnceMore™ i Sverige. Processen har demonstrerat återvinning av 20 ton uttjänta sjukhuslakan av bomull/polyester, och kommer det närmaste året att återvinna 300 ton med ambitionen att skala upp till 25 000 ton till 2025.

Jag drivs också av att hitta lösningar som förädlar uttjänt textil till återvunna och attraktiva produkter. Inte bara inom den textila



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TEXTILE FIBRES

I am also driven to find solutions to refine worn-out textiles into recycled and attractive products. Not only within the textile value chain, but in complex cases, we may need to break down the textiles to their smallest components, so that the molecules can replace virgin materials in other value chains. In order to attain the global sustainability goals, which requires sustainable and viable infrastructures, I believe that it is absolutely necessary to collaborate more both within and between value chains. My experience from cross-disciplinary projects has been that they are incredibly rewarding when successful, but that it requires both humility and patience to collaborate across different knowledge areas.

The Nordic countries rank highly when it comes to sustainability and innovation. This, in combination with our knowledge of textile and cellulose, puts us at the forefront of sustainable textiles. We truly have the potential to be a role model region and we already are when it comes to textile recycling and sorting for example. In order to accelerate further, I believe that large-scale collection and adequate sorting are critical steps, so that we use our resources efficiently and according to the waste hierarchy. Both in this respect and in later recycling, I think that innovations that concern transparency and traceability of content can be of importance. And I do not think that one winning process will be the solution, but that we need different processes for different materials and conditions. It is therefore incredibly inspiring to follow all of the initiatives and progress that is now happening globally for a more circular textile sector.

värdekedjan, utan i komplexa fall kommer vi kanske behöva bryta ner textilierna till dess minsta beståndsdelar, så att de molekylerna kan ersätta jungfrulig råvara även i andra värdekedjor. För att lyckas möta de globala hållbarhetsmålen som efterfrågar hållbara och livskraftiga infrastrukturer, tror jag att det är absolut nödvändigt att samverka mer både inom och mellan olika värdekedjor. Min erfarenhet från tvärdisciplinära projekt är att det är oerhört givande när det lyckas, men att det kräver både ödmjukhet och tålamod att samverka mellan olika kunskapsområden på systemnivå.

Norden är högt rankat inom hållbarhet och innovation. Det i kombination med vår kunskap inom textil och cellulosa gör att vi ligger i framkant inom hållbar textil. Vi har verkligen potential att agera föregångsregion, och gör det redan med satsningar inom exempelvis textilåtervinning och sortering. För att accelerera ytterligare tror jag att storskalig insamling och adekvat sortering är kritiskt, så att vi nyttjar våra resurser effektivt och enligt avfallshierarkin. Både där och i en senare återvinning tror jag att innovationer som rör transparens och spårning av innehåll kan bli viktiga. Och jag tror inte att en vinnande process kommer vara lösningen, utan istället olika processer för olika material och förutsättningar. Det är därför oerhört inspirerande att följa alla de initiativ och framsteg som nu görs globalt för en mer cirkulär textilsektor.

05

KIRSI NIINIMÄKI

Kirsi Niinimäki is an Associate Professor in Design, specialising in Fashion Research and the leader of the research group Fashion/Textiles Futures at Aalto University.

PERSPECTIVE

While the recycling of textile materials is becoming more common, it is worth noting that it is also possible to recycle chemicals and colours in the textile waste.

The textile and fashion sector needs a bigger and faster change towards sustainability. This change requires a wider perspective and new innovations. Lately, the discussion about the impacts of this industry has moved towards carbon footprint, climate change, chemical and energy use, and the increasing consumption rates ending up in huge textile waste figures. A circular economy approach can ease the transition towards a new balance in this industry, yet it is important to critically observe the production and consumption rates while trying to create a better understanding of sustainability in the connection of consumption-production. These issues have been studied in the Fashion/Textile Futures research group that I am leading at Aalto University (FTF).

While the aim in the circular economy is to construct a closed loop system in the textile and fashion industry, we have to select materials and chemicals that can be recycled. Recycling saves not only material resources and virgin materials but also decreases the environmental impact of the industry. It is especially important to focus on recycling technologies which can result in high level fibres, so that we do not down-cycle the material but try to keep the quality as high as possible to save the value. There are already technologies suitable to recycle natural textile materials and man-made cellulosic materials (e.g. Ioncell® technology, developed at Aalto University). New scalable innovations are needed in this sector to enable effective recycling of polyester garments and even blended materials. All these aspects have been studied in Nordic collaborations, for example in the Trash-2-Cash project.

Tekstiili- ja muotisektorin on otettava suurempia ja nopeampia muutosaskelia kohti kestävää kehitystä. Tämä edellyttää laajempaa näkemystä ja uusia innovaatioita. Viime aikoina keskustelu alan vaikutuksista on siirtynyt kohti hiilijalanjälkeä, ilmastonmuutosta, kemikaalien ja energian käyttöä sekä kasvavia kulutusmääriä, joiden tuloksena syntyy valtavat määrät tekstiilijätettä. Kiertotalouden soveltaminen voi helpottaa siirtymistä kohti uutta tasapainoa. On kuitenkin tärkeää tarkastella kriittisesti tuotanto- ja kulutusmääriä jasamalla pyrkiä ymmärtämään paremmin kulutuksen ja tuotannon yhteys kestävään kehitykseen. Näitä ongelmia on tutkittu Fashion/Textile Futures -tutkimusryhmässä (FTF), jota johdan Aalto-yliopistossa.

Kiertotalouden tavoitteena on rakentaa tekstiili- ja muotiteollisuuteen suljettu järjestelmä, jossa materiaalit ja kemikaalit kiertävät. Kierrätys säästää materiaalisia varoja ja neitseellisiä materiaaleja. Lisäksi se myös vähentää teollisuuden ympäristövaikutuksia. Erityisen tärkeää on keskittyä kierrätysteknologioihin, joiden avulla voidaan luoda korkealaatuisia kuituja. Emme siis kierrätä materiaalia, vaan pyrimme pitämään materiaalin laadun mahdollisimman korkeana arvon säilyttämiseksi. On jo olemassa teknologioita, jotka sopivat uusiutuvien tekstiilimateriaalien ja selluloosamuuntokuitujen kierrätykseen (esim. Aalto-yliopistossa kehitetty Ioncell®-teknologia). Tällä alalla tarvitaan uusia skaalattavia innovaatioita, jotta myös polyesterivaatteita ja jopa sekoitemateriaaleja voidaan kierrättää tehokkaasti. Kaikkia näitä seikkoja on tutkitt u yhteistyössä Pohjoismaissa, esimerkiksi Trash-2-Cash -projektissa.

While the recycling of textile materials is becoming more common, it is worth noting that it is also possible to recycle chemicals and colours in the textile waste. This is an improvement, as fewer treatments and chemicals are needed, but it also provides new innovation possibilities while creating recycled textiles with new attributes (i.e. adding value to recycled materials). For example, we studied how to keep the colour in the fibre while recycling textile waste in the Trash-2-Cash project. The success of this aspect depends on the dye type and also on the recycling technology. We noticed that while recycling textile waste from cotton and man-made cellulosic materials, the best dye type which did not change the colour shade during the recycling process was vat dye.

In my own research, I am combining the information from the circular economy with the information of the bioeconomy to construct a new understanding of sustainability in the textile and fashion sector. The previously mentioned information about vat dye, suitable for recycling, can be adapted to a bioeconomy context by using plant based natural colours. In my study, I used woad plant (Isatis tinctoria) which can be cultivated in Nordic countries and which gives a blue indigo colour, BioColour. Combining renewable plant-based fibres

Vaikka tekstiilimateriaalien kierrätys on yhä tavallisempaa, on hyvä huomata, että myös tekstiilijätteiden kemikaaleja ja värejä voidaan kierrättää. Tämä on parannus, sillä näin ollen tarvitaan vähemmän käsittelyjä ja kemikaaleja. Kierrätys tarjoaa myös uusia innovaatiomahdollisuuksia kehittämällä kierrätystekstiilejä, joissa on uusia ominaisuuksia (ts. se kehittää lisäarvoa kierrätysmateriaaleille). Tutkimme esimerkiksi, miten me voimme säilyttää värin kuiduissa, kun kierrätämme tekstiilimateriaalia Trash-2-Cash -projektissa. Tämän onnistuminen riippuu väriainetyypistä ja myös kierrätysteknologiasta. Kun puuvillasta ja selluloosamuuntokuiduista koostunutta tekstiilijätettä kierrätettiin, huomattiin, että paras väriainetyyppi oli kyyppiväri – sen väri muuttui vähiten kierrätysprosessin aikana.

Omassa tutkimuksessani pyrin yhdistämään kiertotaloudesta ja biotaloudesta saatuja tietoja luodakseni uutta ymmärrystä tekstiili- ja muotisektorin kestävyydestä. Aiemmin mainittu tieto koskien kierrätykseen soveltuvia värejä voidaan siirtää biotalouden kontekstiin käyttämällä kasvipohjaisia luonnonvärejä. Tutkimuksessani käytin värimorsinkoa (Isatis tinctoria), jota voidaan kasvattaa jopa Pohjoismaissa ja joka tuottaa indigonsinistä väriä. Uusiutuvien kasvipohjaisten kuitujen, kuten pellavan, hampun ja nokkosen, sekä kasvipohjaisten luonnonvärien yhdistäminen kiertotalouden lähestymistapaan tarjoaa mahdollisuuden suunnitella uutta kes-

"Combining renewable plant-based fibres such as linen, hemp and nettle and plant-based natural colours with a circular economy approach is the way to design new sustainable luxury."

such as linen, hemp and nettle and plant-based natural colours with a circular economy approach is the way to design new sustainable luxury. Moreover, using natural colours and natural fibres instead of synthetic ones is one way to slow down climate change by decreasing CO2 emissions from this industry and create more local and recyclable fashion.

This provides new innovative ways to design in a circular economy context. Perhaps even design added value through new luxury products, which are valued higher by consumers than the current fast and easy disposable fashion.

tävää luksusta. Lisäksi luonnonvärien ja -kuitujen käyttö synteettisten vaihtoehtojen sijaan on yksi keino hidastaa ilmastonmuutosta vähentämällä teollisuuden CO2-päästöjä sekä luoda paikallisempaa ja kierrätettävämpää muotia.

Tämä tarjoaa uusia innovatiivisia kiertotalouteen perustuvia suunnittelutapoja. Ehkä uuden luksuksen myötä voidaan jopa tuottaa lisäarvoa, kun kuluttajat arvostavat sitä enemmän kuin nykyistä nopeaa kertakäyttömuotia.

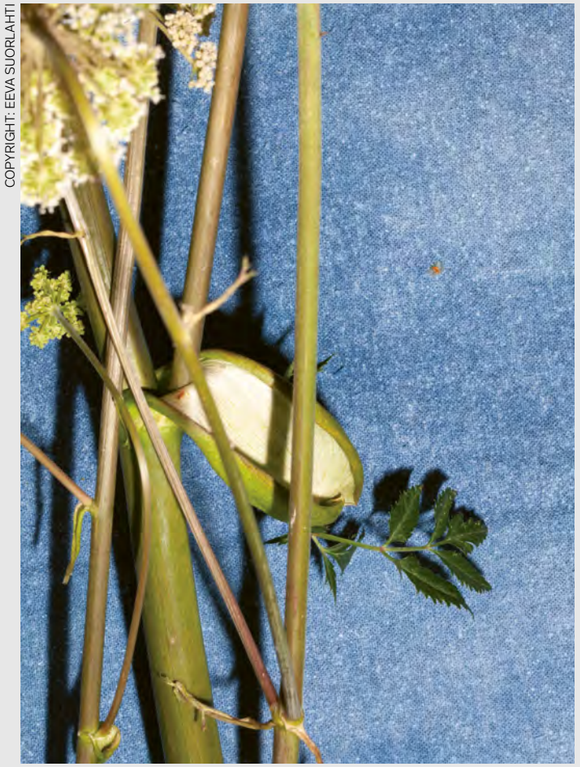
PLANT BASED OUTFIT

Linen dress dyed with blue from Woad, Arela design.

PLANT BASED DYE

Man's outfit from viscose material and blue colour from Woad Design by Arttu Åfeld and Kirsi Niinimäki.

WOAD AND LINEN



Linen fabric dyed with woad.

06

REDUCED WASTE

Create incentives for reduced waste and wastage in the production chain.

Left image:
Andréason & Leibel

06 PHENOMENON

MAKE IT RIGHT!

As much as 80 per cent of a product's environmental impact and the waste it will generate is already determined in the design stage. Which incentives are there in product development to minimise waste and recycle waste products? This is a matter of far more radical and proactive solutions than traditional waste recycling.
How can waste instead simply be eliminated by design at an early stage of the design process?

216 PIECES

Disassembled power drill.

06 MAKE IT RIGHT!

In 2017, the EU produced 486 kilos of household waste per person. In the Nordic countries, the most household waste was produced in Denmark, with 781 kilos per person. The Nordic countries need to recycle more than what they do today, and find ways to reduce their waste, according to a report from Eunomia.

How can we close the loop and think circular rather than linear already at the drawing table? How can materials be reintroduced into the system with a circular flow? And how can waste be minimised and eliminated by design, rather than being recycled through waste sorting?

All products and materials designed and manufactured need to have a longer lifespan, by either reusing or recycling their parts. This requires companies to change their business models and working methods to make them more circular, and that legislation and political frameworks are developed at the same rate as new production needs arise. Understanding the material flow of a product is the basis of making sustainable decisions, which have an impact on the entire life cycle and lifespan of the product, and thereby on the amount of waste it will generate. AI and big data are often used as tools in this process.

An effective solution is to already at an early stage of design process minimise the material consumption required for the creation of a product to reduce material waste. Waste minimising can be planned preventively before the waste is created at all, and it is environmentally preferable and more cost-efficient than recycling.

Disassembly, deconstruction and reparability means making smart material choices and using fewer environmental substances to extend the life of a product. The product is constructed to be repaired if it breaks, and specific parts can be simply replaced. By equipping products with sensors, information can be provided about how they are used and when they are in need of maintenance. In modular design, the product parts are individually designed in order to be replaced, reused or upgraded if needed. Using an open-source approach, the product becomes not only modular, but also modifiable. One person's waste is another's resource. "Material brokers" are a way to ensure flows for reused materials and to coordinate contacts between buyers and sellers. This way, residual products are put to use.

The Icelandic Government has initiated the strategy "Combating Waste Together" for the period between 2016 and 2027, the goal of which is to develop preventive measures to reduce the amount of waste in the country. The focus is on developing circular business models to reduce waste in the food and textile industries, and to develop tourism in harmony with nature and the island's population.

06

BIRTA RÓS BRYNJÓLFSDÓTTIR & HREFNA SIGURÐARDÓTTIR

Birta Rós Brynjólfsdóttir and **Hrefna Sigurðardóttir** from Iceland run the conceptual design studio Flétta. With focus on sustainability, the duo is using recycled materials and turn them into design treasures.

PERSPECTIVE

Through waste we reflect on our society; how we design, consume and produce.

At Flétta design studio in Reykjavík, we use design as a medium for storytelling - to tell stories about our society, consumption and production. Flétta was established in early 2018 by Birta Rós Brynjólfsdóttir and Hrefna Sigurðardóttir, two of the many designers who are concerned about the environment and believe there is a great need for rethinking the way we structure our society. Furthermore, we believe it is important to slow things down.

At Flétta, products are made by hand. Design works as a medium to start a dialogue and address difficult topics. Among Flétta's latest works are rugs made from used denim jeans, collected by the Red Cross in Iceland, in collaboration with fashion designer Steinunn Eyja Halldórsdóttir, and furniture made from old trophies sourced from athletes and sports clubs. Each product is designed so that the chosen material is fully utilised. After use, the product can be returned to us to be repaired or reused, since we are in the best position to do so.

Through our work we have become familiar with waste materials. For example, we have worked with Sorpa recycling centre to establish a material bank offering excess materials to individuals, with the Icelandic Red Cross reusing textiles they have collected and with manufacturing companies finding use for the large amount of industrial waste produced. Through waste we reflect on our society; how we design, consume and produce. But working with waste materials can be tricky. While collaborating with manufacturing companies we experienced an inner battle – by reusing the excess materials of these companies, are we at the same time giving them an excuse to continue their wasteful production?

Reusing waste can sometimes feel like finding temporary solutions to symptoms of a larger problem. A more radical approach

Hjá Fléttu hönnunarstofu lítum við á hönnun sem frásagnaraðferð - leið til þess að tala um samfélag okkar, neysluhætti og framleiðslu. Flétta var stofnuð í byrjun árs 2018 af Birtu Rós Brynjólfsdóttur og Hrefnu Sigurðardóttur sem tilheyra hópi þeirra fjölmörgu hönnuða sem láta sig umhverfismál varða og telja ríka þörf á að endurhugsa það hvernig við lifum. Við trúum því að það sé nauðsynlegt að við skiptum um gír og HÆGJUM á okkur.

Allar vörur Fléttu eru handgerðar. Hönnunin er nýtt til þess að skapa samtal um margþætt viðfangsefni. Meðal nýjustu verka Fléttu eru mottur gerðar í samstarfi við fatahönnuðinn Steinunni Eyju Halldórsdóttur úr gömlum gallabuxum sem safnast hjá Rauða krossi Íslands og húsgögn úr notuðum verðlaunagripum frá afreksmönnum og íþróttafélögum. Vörur Fléttu er hannaðar þannig að hráefnið sé fullnýtt. Að notkun lokinni gefst fólki kostur á að koma með vöruna aftur til okkar þar sem hráefnin verða svo endurnýtt, þar sem við erum í góðri aðstöðu til að nýta þau aftur.

Í gegnum vinnu okkar höfum við fengið að kynnast fráfallsefnum. Við höfum meðal annars unnið fyrir Sorpu endurvinnslustöð að því að koma á fót efnismiðlun þar sem einstaklingar geta keypt hráefni sem skilað hefur verið til endurvinnslustöðvarinnar, einnig með Rauða krossinum að því að endurvinna textíl sem þar hefur safnast og með framleiðslufyrirtækjum á Íslandi að því að finna not fyrir umframefni sem verða til við daglegan rekstur þeirra. Með því að skoða úrgangsefni má varpa ljósi á ákveðna anga samfélagsins, svo sem eins og það hvernig við hönnum, neytum og framleiðum vörur. Það getur þó verið flókið að vinna með þessi hráefni. Í gegnum samstarf okkar við nokkur framleiðslufyrirtæki á Íslandi upplifðum við innri baráttu. Við spurðum okkur hvort við værum að gefa viðkomandi fyrirtæki einhvers konar syndaaflausn með því að finna not fyrir umframefni sem skapaðist við rekstur þess, afsökun til að halda áfram viðteknum hætti og með því jafnvel að viðhalda óábyrgri framleiðslu?

is needed. We desperately need to move away from models relying on relentless growth based on overproduction and over-consumption. We need to stop wasting valuable resources and materials, stop designing and making single use products and just stop making products that cannot be repaired.

During this year, we have experienced the world changing in an unbelievably short time. The Coronavirus pandemic has put something big to a halt. Our capitalistic economic system that has been criticised, loved, even religiously worshipped, the system that has shaped our world for decades, has probably never been as close to its freezing point. This shock has had very serious effects on billions of people around the world. Unemployment rates are skyrocketing and many industries have experienced an overnight disappearance of all business. But, at the same time, there have been positive changes. We have slowed down and as a result we have seen ecological benefits, most notably less pollution and better air quality, as the amount of soot particles and the level of nitrogen dioxide has decreased significantly.

Endurnýtingu má stundum líkja við skyndilausnir á afleiðingum af mun stærra vandamáli. Þörf er á róttækari aðgerðum. Við þurfum að hverfa frá efnahagskerfi sem drifið er áfram af ofneyslu og of-framleiðslu. Við verðum að hætta að sóa dýrmætum auðlindum og hráefnum, hætta að hanna og búa til einnota varning og vörur sem ekki er hægt að gera við.

Á þessu ári höfum við gengið í gegnum miklar breytingar. Covid19 hefur sett eitthvað stórt úr skorðum. Efnahagskerfi okkar, sem hefur í gegnum tíðina verið gagnrýnt, elskað, jafnvel tilbeðið, kerfið sem hefur mótað líf okkar í áratugi, hefur sennilega aldrei verið eins nálægt frostmarki. Þetta áfall hefur haft alvarlegar afleiðingar fyrir þúsundir manna um allan heim. Atvinnuleysi hefur aukist verulega og margir atvinnugeirar tapað öllum viðskiptum. Á sama tíma hafa líka orðið jákvæðar breytingar á lífi okkar. Við höfum hægt á fram-leiðslu og neyslu og nú þegar séð jákvæð vistfræðileg áhrif þess. Þar ber helst að nefna minni mengun og að sumu leyti betri loftgæði.

MIX AND MATCH

COPYRIGHT: JONAS LINDSTRÖM STUDIO

A sound absorbing, modular wall made out of environment-friendly and recyclable materials by Swedish BAUX.

DESIGNING OUT WASTE

COPYRIGHT: LILLA ÅLAND: JESPER MOLIN

Swedish furniture producer Stolab transforms the waste from the chair Lilla Åland into the stool Lilla Snåland (Marie-Louise Hellgren).

So, while national leaders talk about the importance of restarting the economy, it is hard to imagine everything falling back into the same routine.

We are now living in a world where everything has changed overnight, experiencing a moment where rethinking and redesigning our society is not only realistic but very much needed. Both in terms of global warming and in order to be able to deal with similar shocks in the future.

We have been given a perfect chance to restart the economy in a different version. Let's make this year's difficulties lead to positive development.

So, what do we want the future to be like?

Þegar leiðtogar heims tala um mikilvægi þess að endurræsa hagkerfið er erfitt að ímynda sér að við ætlum okkur að falla aftur í sama gamla farið.

Við erum þáttakendur í heimi þar sem allt hefur breyst á skömmum tíma, við erum að upplifa augnablik þar sem það að endurhugsa og endurhanna samfélag okkar er ekki bara raunhæft verkefni, heldur líka nauðsynlegt. Bæði á grundvelli umhverfismála og til þess að geta tekist á við sambærileg áföll í framtíðinni.

Okkur hefur verið fært einstakt tækifæri til þess að endurræ-sa hagkerfið í nýrri útgáfu. Látum erfiðleika þessa árs leiða til jákvæðrar þróunar.

Hvernig framtíð viljum við?

06

JURATE MILIUTE-PLEPIENE

Jurate Miliute-Plepiene holds a PhD and works as a Project Manager at IVL, The Swedish Environmental Research Institute. She possesses a great knowledge in waste prevention – with a specific interest in e-waste, household waste and human behaviour.

PERSPECTIVE

Planned obsolescence has been used as an intentional strategy by the industry since the beginning of the last century.

Today it is largely the norm to design products for a linear consumption or the throw-away economy. Economic value is generated by large material throughputs thanks to under-priced materials. Some businesses engage in unsustainable strategies based on concepts, such as “planned obsolescence” designing products with an artificially limited lifespan. Product obsolescence could also be an unintentional result of the desire to cut production costs (by using cheaper materials, over-simplified designs or poor production techniques, which eventually restrict the possibilities for reuse or recycling).

Technological obsolescence means that products age faster and are discarded due to rapid technology innovation. Psychological obsolescence is driven by the perceptions of the demand side, where new products can be perceived as old or “out of fashion”. Through a systemic obsolescence, functioning products may lack support from the supporting systems (e.g. operational system for IT products) which undercuts their performance, functionality, or serviceability. Products could also be poorly designed which results in premature failures. In some cases, this could be intentional, such as introducing chips in IT products to restrict their performance after a certain time or using cheap materials that break easier.

Planned obsolescence has been used as an intentional strategy by the industry since the beginning of the last century. Early examples include the cartel agreements of the lightbulb industries in the early 1920s. There are also examples of printers being programmed to “fail” after a certain number of copies printed. Smartphones with the technological life spans of 4-7 years, may become unusable when updates are no

Idag är normen att designa produkter för linjär konsumtion eller för "slit-och-släng-ekonomin". Ekonomiskt värde skapas genom stort materialgenomflöde tack vare undervärderade material. Vissa företag ägnar sig åt ohållbara strategier och koncept, som "planerat åldrande", där produkter utformas för att ha en konstgjort kort livstid. Produkters åldrande kan också vara en oavsiktlig konsekvens av de genvägar som tas för att hålla produktionskostnaderna nere (användandet av billigare material, överdrivet förenklad formgivning eller dåliga tillverkningstekniker som i slutändan begränsar möjligheterna att återanvända eller återvinna produkter).

Teknologisk föråldring innebär att produkterna åldras snabbare och kasseras på grund av den snabba teknologiska utvecklingen. Psykologisk föråldring drivs av konsumenternas uppfattningar, där nya produkter kan ses som gamla eller omoderna. Genom systematisk föråldring kan fullt fungerande produkter sakna stöd i andra system (till exempel operativsystem för IT-produkter) vilket försämrar deras prestanda, funktionalitet eller underhåll. Produkter kan också vara dåligt utformade vilket leder till att de slutar fungera i förtid. I vissa fall kan detta vara avsiktligt, exempelvis när man installerar chip i IT-produkter för att begränsa deras prestanda efter en viss tid eller använder billiga material som lätt går sönder.

Planerat åldrade har använts av näringslivet som en avsiktlig strategi sedan början på förra århundradet. Tidiga exempel var bland annat kartellbildning inom glödlampsindustrin på 1920-talet. Det finns också exempel på hur skrivare designats för att "sluta fungera" efter ett visst antal utskrifter. Smartphones med en teknologisk livslängd på 4-7 år kan bli oanvändbara när uppdateringar slutar komma efter 2-3 år, eller när en ny produkt erbjuds efter att ett abonnemang på 1½-2 år gått ut.

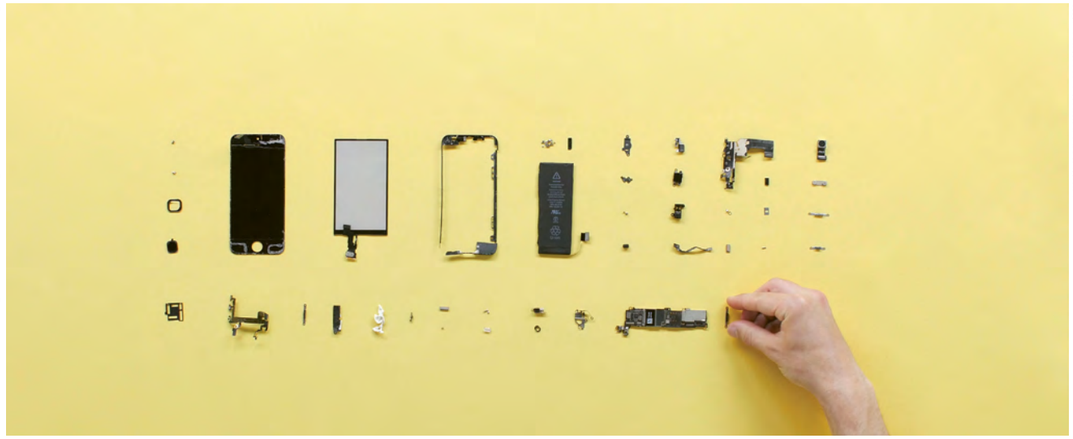
longer available after 2-3 years, or when a new product is offered once a 1.5—2-year subscription expires.

Product obsolescence fuels new “virgin” production which conflicts with the goals of the circular economy based on resource efficiency, product reuse and waste recycling. These goals can be pursued by strategies, such as dematerialisation, mono-material designs, phaseout of hazardous materials, the use of high-quality and long-lasting materials, design for dismantling, remanufacturing, reuse and waste elimination. Such strategies have been exploited in the post-war period but have been gradually “forgotten” in modern days of “abundance”. It is much easier to renovate and reuse a kitchen from the 1960s that has been designed with solid wood, than to do the same with a kitchen from the late 1990s made with plywood and composites.

Produkters åldrande driver en nyproduktion som krockar med målen i en cirkulär ekonomi baserad på resurseffektivitet, återanvändning av produkter och återvinning av avfall. Dessa mål kan uppnås via strategier som dematerialisering, mono-materiell design, utfasning av farliga ämnen, användande av högkvalitativa och beständiga material, design för avveckling, återtillverkning och återanvändning, och design som eliminerar avfall. Sådana strategier användes under efterkrigstiden, men har "glömts bort" i den moderna tidens resursrikedom. Det är mycket enklare att renovera och återanvända ett kök från sextiotalet, som formgivits i massivt trä, än ett från nittiotalet som består av plywood och komposit.

Ansvaret för cirkulära strategier ligger delvis hos näringslivet men andra aktörer är minst lika viktiga. Till exempel är 15-20 procent av produkter och material som lämnas på återvinningscentraler i Sverige fullt fungerande. Detta skulle gå att ändra på om

SMARTPHONE IN PIECES



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It is hard to recycle an iPhone. From the project Ore Streams by Formafantasma.

Circular strategies are partly the responsibility of the industry, but other actors’ actions are equally important. For instance, about 15-20 per cent of products and materials discarded by consumers at recycling centres in Sweden are still fully functioning. This would not have to be the case, if the consumers were more responsible and if there was an affordable remanufacturing option in place. The psychological obsolescence may have a role to play, but at the same time higher quality, more durable and a bit more valuable products may counteract this trend. Such a shift requires multiple circular strategies to be encouraged, including more sustainable design, product information (e.g. environmental labelling, information about a product’s life span, better product warranties, repair manuals, remanufacturing infrastructure, etc.). In this respect, there is a significant playing field for policy makers on different levels — from the EU down to national and local decision makers. There is also a substantial role of public procurement to create markets for more sustainable and circular offerings.

konsumenter tog större ansvar och ett prisvärt alternativ för återtillverkning fanns tillgängligt. Det psykologiska åldrandet kan spela en roll men samtidigt kan produkter, som är av bättre kvalitet och mer hållbara, motverka denna trend. Detta kräver att vi främjar flera cirkulära strategier, inklusive mer hållbar design, produktinformation (exempelvis miljömärkning, information om produkters livstid, bättre produktgarantier, reparationsmanualer, infrastruktur för återtillverkning och mera). Här finns ordentligt med manövreringsutrymme för makthavare på olika nivåer, från EU-nivå till nationell nivå, hela vägen ner till lokala beslutsfattare. Offentlig upphandling spelar också en stor roll i att skapa mer hållbar och cirkulära anbud.

DISASSEMBLING ELECTRONICS

COPYRIGHT: FORMAFANTASMA

Inefficiencies in the recycling process often comes down to product design, from the project Ore Streams by Formafantasma.

07

SHARING ECONOMY

Boost the sharing economy for more efficient use of products, services and places.

Left image:
Andréason & Leibel

07 PHENOMENON

FUTURE TRANSPORTATION

Incineration of fossil fuels is at the top of the list of things that contribute to an increased greenhouse effect, and the world's transporters are currently using fuels that are 96 per cent fossil in origin. Major changes are needed to attain the climate objectives that have been set. The transport sector has great environmental benefits to gain from using the principles of the sharing economy. With the help of the sharing economy, more effective transport solutions can be developed, where multi-modality is combined with innovations in vehicle and fuel technology.

GO BY TRAIN

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Cars and lorries jointly represent nearly 75 per cent of the transport sector's total carbon dioxide emissions, while trains represent 4 per cent.

07 FUTURE TRANSPORTATION

Transport sector represents 14 per cent of the global carbon dioxide emissions. In broad strokes, it can be divided into five subsectors: cars, lorries, airplanes, ships and trains. Cars and lorries jointly represent nearly 75 per cent of the sector's total carbon dioxide emissions, while trains represent a mere 4 per cent. According to a study from the Nordic Council of Ministers, the transport sector would see the greatest environmental benefits if it transitioned to the sharing format and actively applied sharing economy principles.

The Swedish Government has developed a climate action plan to reduce emissions and streamlining transport sector is one of the three focus areas. Transport activities are to be as efficient as possible from the perspectives of energy, environment and economy, in order to make the current and future solutions available, sustainable and competitive. In a more transport-efficient society, availability increases in terms of greater accessibility while vehicle-kilometre driven on private cars is reduced.

Sharing economy means sharing, renting and borrowing products and services, rather than owning them individually. A cornerstone is digital platforms that create new business opportunities and models. Sharing economy creates opportunities for more efficient use of goods through services, as many individuals do not use their possessions to their fullest capacity; private cars are often parked or driven half-empty. Sharing economy has the potential to streamline parts of the transport sector by increasing walking, cycling and public transport usage, along with making ridesharing easier and more available. A combined effect will result in fewer car-based trips and reduced emissions.

E-commerce consumption has increased significantly in the last few years. Bulky packaging along with customer demands for quick delivery and returns has led to an exponential jump in the vehicle-kilometre driven and associated emissions. According to Swedish Transport Analysis' new report, e-commerce might be handled with fewer trips and reduced energy consumption if individual shopping trips by car can be replaced by more efficient and consolidated goods transports. A number of Nordic companies in the sharing economy are moving towards specialising in goods transports. Digital platforms are used to match one person's transport needs with another person's travel agenda. These initiatives can be further employed to streamline goods transports and create job opportunities.

A problem of this scale requires harnessing the (positive) additive effects of multiple solutions. For example, though electrical vehicles or vessels use only a fifth of the energy that a conventional vehicle does, the consumption of resources can be greater in other parts of the vehicle's life cycle. According to the UN's "Emissions Gap Report 2019", it is a greater challenge to electrify and decarbonise freight and air transport which together represent fifty percent of emissions associated with the transport sector. Along with electrification, innovations within biofuel and hydrogen fuel needs further attention.

TANU PRIYA UTENG

Tanu Priya Uteng is a senior researcher at The Institute of Transport Economics in Norway and holds a PhD. She does extensive work across a host of urban and transport planning topics and does research on how to make smart mobility truly 'smart'.

PERSPECTIVE

Planning for future mobility and transportation needs to be bundled with land use planning.

The transport sector has a lot to gain from adopting the sharing economy principles. It levels the playing field of daily mobility by replacing ownership with access to mobility, be it car sharing, ride sharing, bike sharing or other upcoming modalities. But sharing has new challenges to address in light of the COVID-19 pandemic. Previously unknown vulnerabilities, mistrust and fear related to sharing have begun to emerge. Balancing the gains of promoting shared transport against these challenges will need a conscious, well-researched and coordinated execution. If shared mobility is to survive and thrive in the aftermath of COVID-19, then providers and public authorities must keep in mind future crises and plan for both physical and psychological limitations. Ensuring health risk management and alleviating the safety concerns of users are vital aspects.

Planning for future mobility and transportation needs to be bundled with land use planning. High-density land use has been under the loupe in light of the COVID-19 outbreak, but it is not only density per se, but behavioural responses that determine the spread of the disease. So, let's keep the density agenda alive and build for pedestrians, transit users and cyclists to ensure a high quality of life for all, irrespective of age, gender, disability, income etc. An overwhelming inertia of the system of automobility is ever-present in the Nordic region and globally. For example, the Norwegian Minister of Transport and Communications recently stated that the primary reason for the

Transportsektoren har mye å tjene på å innføre prinsippene om delingsøkonomi. Den gjør daglig mobilitet mer likestilt ved å erstatte eierskap med tilgang til mobilitet, enten det gjelder bildeling, samkjøring, sykkeldeling eller andre kommende fremkomstmåter. Men deling møter nye utfordringer i lys av covid-19-pandemien. Tidligere ukjente sårbarheter, mistillit og frykt relatert til deling har begynt å dukke opp. Å balansere gevinstene av å fremme delingstransport opp mot disse utfordringene vil kreve en bevisst, godt underbygget og koordinert utførelse. Hvis delingsmobilitet skal overleve og blomstre i etterkant av covid-19, må leverandører og myndigheter ta hensyn til fremtidige kriser og planlegge for både fysiske og psykiske begrensninger. Det er svært viktig å sikre helserisikohåndtering og redusere brukernes bekymring for sikkerheten.

Planlegging for fremtidig mobilitet og transportbehov må kombineres med planlegging av arealbruk. Covid-19-utbruddet har satt tett arealbruk på dagsorden, men det er ikke bare tettheten i seg selv som bestemmer spredningen, det gjør også atferdsresponsen. Så la oss holde tetthetsagendaen i live og bygge for gående, kollektivreisende og syklister for å sikre høy livskvalitet for alle, uavhengig av alder, kjønn, funksjonshemming, inntekt osv. En overveldende treghet i systemet for biltransport er stadig fremtredende både i Norden og globalt sett. Den norske samferdselsministeren sa for eksempel nylig at hovedhensikten med ekstrabevilgningen på 600 millioner kroner til drift og vedlikehold av norske

recent NOK 600 million stimulus for road work in Norway was to support the domestic construction industry. We seem to be stuck in a cycle of road construction and maintenance because these are among the easiest ways to mobilise state resources when the government needs to jumpstart the economy.

In future, it would be best to build and maintain infrastructure where it is needed and best suited – not because it provides a handful of jobs at a politically convenient time. If you want to stimulate the economy in a crisis, don't just spend. Invest!

veier, var å støtte bygg- og anleggssektoren. Vi ser ut til å stå fast i en syklus med bygging og vedlikehold av veier, fordi dette er blant de enkleste måtene å mobilisere statlige ressurser på når regjeringen må stimulere økonomien.

I fremtiden er det best å bygge og vedlikeholde infrastruktur der det er nødvendig og best egnet – ikke fordi det gir en håndfull jobber på et tidspunkt som er politisk gunstig. Hvis du vil stimulere økonomien i en krise, må du ikke bare bruke penger. Invester!

"If you want to stimulate the economy in a crisis, don't just spend. Invest!"

Furthermore, autonomous vehicles (AVs) are increasingly being positioned as future shared vehicles as opposed to private car ownership. The sharing agenda needs to be proactive in imaging the role of AVs, and one way forward could be through assigning them routine tasks such as parcel delivery. Humans can then enjoy the better aspects of mobility and a more active lifestyle, like taking a walk in the park or going to the local bakery. But this obviously presupposes that accessibility to green spaces and local businesses are prioritised and that cities are designed to serve more walking and bicycling.

The Nordic Region recognises the principles of equal (and green) accessibility for all but is grappling with the execution part. Linking the concepts and solutions proposed for multimodality and sharing is essential. The next steps should entail breaking down the different solutions in small workable parts to clearly plot the geographic areas, demographic groups, trip purposes etc. which will benefit from coupling multimodality and sharing solutions. Citing concrete examples and regular updates of the gains is important to ensure public acceptance of sharing solutions.

To exemplify, e-scooters and shared bikes have great potential both to act as the first-last kilometre carriers of public transport and as independent modes of transport in daily lives, and to encourage the uptake of car sharing instead of car ownership. This nexus needs to be better understood and promoted. Adoption and retention of shared mobility are two different ball games which depend not only on individual behavioural responses, but which are deeply interlinked with policy and infrastructural responses being put forth.

Videre blir selvkjørende kjøretøy i økende grad fremmet som fremtidens delingskjøretøy, i motsetning til privateide kjøretøy. Delingsagendaen må være proaktiv når det gjelder rollen til selvkjørende kjøretøy, og én vei fremover kan være å gi dem rutineoppgaver som pakkelevering. Da kan menneskene nyte de beste sidene ved mobiliteten og en mer aktiv livsstil, som en tur i parken eller til det lokale bakeriet. Dette forutsetter selvfølgelig at tilgang til grøntområder og lokale bedrifter prioriteres, og at byene legger bedre til rette for gående og syklister.

Norden anerkjenner prinsippene om lik (og grønn) tilgjengelighet for alle, men strever med å sette prinsippene ut i livet. Det er avgjørende å knytte sammen konsepter og løsninger som foreslås for multimodalitet og deling. De neste trinnene bør handle om å bryte ned de ulike løsningene til små, realistiske deler for å planlegge for de geografiske områdene, de demografiske gruppene, turformålene osv. som vil dra nytte av en sammenkobling av multimodalitets- og delingsløsninger. Det er viktig å gi konkrete eksempler og regelmessig formidle forbedringene for å sikre at publikum godtar delingsløsninger.

For eksempel har elsparkesykler og bysykler et stort potensial til å brukes både til og fra kollektivtransport og som uavhengige fremkomstmidler i dagliglivet, og å oppmuntre til å delta i bildeling i stedet for å eie en bil. Denne forbindelsen må både forstås og fremmes bedre. Innføring og bevaring av delingsmobilitet er to forskjellige ting som ikke bare avhenger av individuell atferdsrespons, men som er sterkt knyttet til den gjeldende politikken og infrastrukturen.

The world's transporters are currently using fuels that are 96 per cent fossil in origin. Major changes are needed to attain the climate objectives that have been set.

SAMPO HIETANEN

Sampo Hietanen from Finland is the CEO of MaaS Global, the world's first mobility-as-a-service operator. Sampo is involved in developing new business models in the transport sector and promoting the shift in changing system structures with new technology.

PERSPECTIVE

As passenger cars constitute a lion's share of transport emissions, we need to find an attractive alternative to privately owned, single occupancy vehicles.

The transport sector was immediately hit by the COVID-19 pandemic. As the virus' tidal wave progressed from one continent to another, its first ripples were seen as a paralysis of transport services.

Transport was also one of the first sectors to scale sharing economy. One might argue that the sharing economy has existed in transport for decades. Public transport has always been the most efficient way to transport people en masse. However, in many cases it is not the most convenient or most valued way of moving, and hence more alternatives are being developed to meet customers' growing mobility demands.

What will shared mobility look like after this unprecedented era of #stayathome? With many mobility companies ceasing all services and public transport ridership dropping close to zero, what will be the new post-pandemic normal? Yet, the rigorous emission reduction targets are not going anywhere. We all know that to reach those targets, more efficient mobility, including more sharing, will have to become a reality in our everyday transport behaviour. Will the era of social distancing make our targets even harder to attain?

Technology, alternative fuels and improvements in public transport are a necessity they are not capable of solving our climate change issues on their own. We are also in dire need of large-scale behavioural shift in the way people move and consume mobility. As passenger cars constitute a lion's share of transport emissions, we need to find an attractive alternative to privately owned, single occupancy vehicles.

Covid-19-pandemia iski välittömästi kuljetussektoriin. Viruksen hyökyaallon edetessä mantereelta toiselle sen ensimmäiset liplatuksetkin olivat halvaannuttavia kuljetuspalveluille.

Kuljetusala on myös yksi ensimmäisistä jakamistaloutta skaalanneista sektoreista. Joku voisi väittää, että jakamistaloutta on ollut kuljetusalalla jo vuosikymmeniä. Julkiset kulkuvälineet ovat aina olleet tehokkain tapa kuljettaa paljon ihmisiä kerralla. Monesti se ei kuitenkaan ole kätevin tai arvostetuin liikkumistapa, minkä vuoksi asiakkaiden kasvanaan liikkumiskysyntään vastaamiseksi kehitetään lisää vaihtoehtoja.

Miltä yhteinen liikkuminen näyttää tämän ennennäkemättömän #pysykotona-aikakauden jälkeen? Monet kuljetusyritykset vähentävät palveluitaan, ja julkisten liikennevälineiden matkustajamäärät putoavat lähelle nollaa. Mikä on uusi pandemian jälkeinen normaali? Ankarat päästöjen vähennystavoitteet eivät katoa mihinkään. Tiedämme kaikki, että jotta nämä tavoitteet saavutettaisiin, tehokkaammasta liikkuvuudesta ja myös laajemmasta jakamisesta on tultava todellisuutta jokapäiväisessä kulkuvälinekäyttäytymisessämme. Tekeekö sosiaalisen etäisyyden aikakausi tavoitteidemme saavuttamisesta entistä vaikeampaa?

Teknologia, vaihtoehtoiset polttoaineet tai parannukset julkisessa liikenteessä ovat välttämättömiä, mutta yksin ne eivät pysty ratkaisemaan ilmastonmuutokseen liittyviä ongelmia. Tarvitsemme myös kipeästi laajamittaista muutosta ihmisten tavassa liikkua ja kuluttaa liikkuvuuspalveluita. Koska henkilöautot muodostavat leijonanosan kuljetuspäästöistä, meidän on keksittävä houkutteleva vaihtoehto yksityisomistuksessa oleville, yhden henkilön käyttämille ajoneuvoille.

"More importantly, by leveraging digital technology and service design, it seamlessly combines and covers all mobility needs, even when those needs are changing on a daily basis."

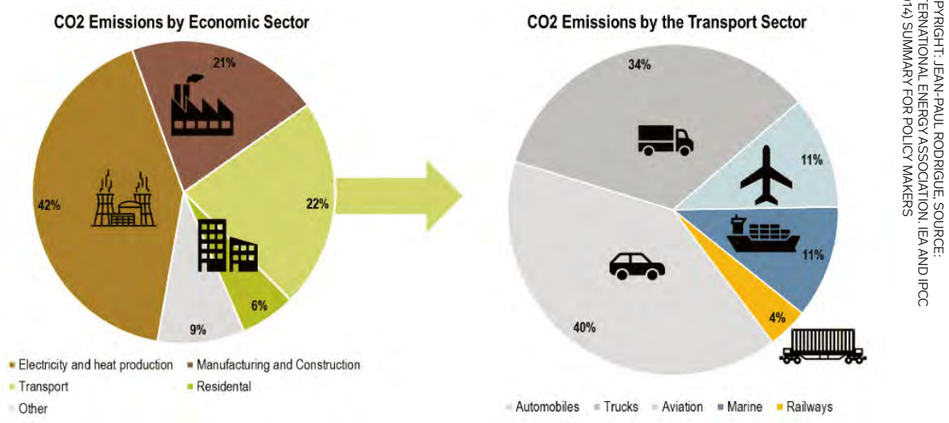
The OECD's International Transport Forum (ITF) provided insights and simulations in its Transport Outlook 2019 on what a critical effect shared mobility could have for the future of sustainable transport. That is, if it is supported by Mobility as a Service (MaaS). MaaS represents an emerging shift away from individually owned modes of transport. It integrates various forms of transport services into a single mobility service accessible on demand. It offers riders the most efficient, seamless way to book and pay for all of their mobility needs.

With MaaS, ITF sees that we are finally closer to finding a solution to the particularly persistent issues of private car ownership and the usability of public transport. If shared mobility uptake is deployed by MaaS, integrated to public transport offering and coupled with a strong regulatory framework, it can lead to drastic reductions in both vehicle-kilometres travelled and CO2 emission levels. The differences compared to current ambition levels are more than -50 percent and -30 per cent respectively by 2050.

OECD:n kansainvälisen kuljetusfoorumin (ITF) Transport Outlook 2019 -julkaisu sisältää tietoja ja simulaatioita siitä, millaisia kriittisiä vaikutuksia yhteisellä liikkuvuudella voisi olla kestävän liikenteen tulevaisuudelle. Edellytyksenä on, että sitä tukevat liikkumisen palvelut, kuten Mobility as a Service (MaaS). MaaS edustaa kasvavaa siirtymistä pois yksityisesti omistetuista kuljetusvälineistä. MaaS integroi erityyppiset kuljetuspalvelut yhdeksi, tarpeen mukaan käyttöön otettavaksi liikkumispalveluksi. Se tarjoaa matkustajille tehokkaan ja saumattoman tavan varata ja maksaa kaikki heidän liikkumistarpeensa.

MaaS:n myötä ITF katsoo, että ihmiskunta on lopultakin lähempänä ratkaisua yksityisautojen omistuksen ja julkisen liikenteen jatkuviin ongelmiin. Jos jaettujen kulkuvälineiden käyttäminen lisätään MaaS:iin, integroidaan julkisen liikenteen palveluihin ja liitetään tehokkaaseen sääntelyjärjestelmään, sekä kulkuvälineellä kuljettuja kilometrejä että CO2-päästöjä voidaan vähentää huomattavasti. Ero nykyiseen tavoitteeseen on tässä järjestyksessä yli 50 prosentin vähennys ja 30 prosentin vähennys vuoteen 2050 mennessä.

GREENHOUSE GAS EMISSION



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The mobility app Whim by MaaS Global, offers a subscription service for public transportation, ridesharing, bike rentals, scooter rentals, taxis or car rentals.

MaaS is a crucial piece in the puzzle as a prime example of circular economy. It aims to use all existing mobility services and infrastructure on the ground more efficiently. More importantly, by leveraging digital technology and service design, it seamlessly combines and covers all mobility needs, even when those needs are changing on a daily basis. MaaS is the sustainable, convenient and attractive alternative to private car ownership.

As the founder of the world's first MaaS operator, it is not just a vision anymore, but a joint mission, that with just a click of a button our customers can have true freedom of mobility and also save the planet.

Predicting the future is nearly impossible but we can take action to ensure the post-COVID mobility world is better for everyone. By working together with the whole ecosystem, we can reset and guarantee sustainable growth in the transport sector.

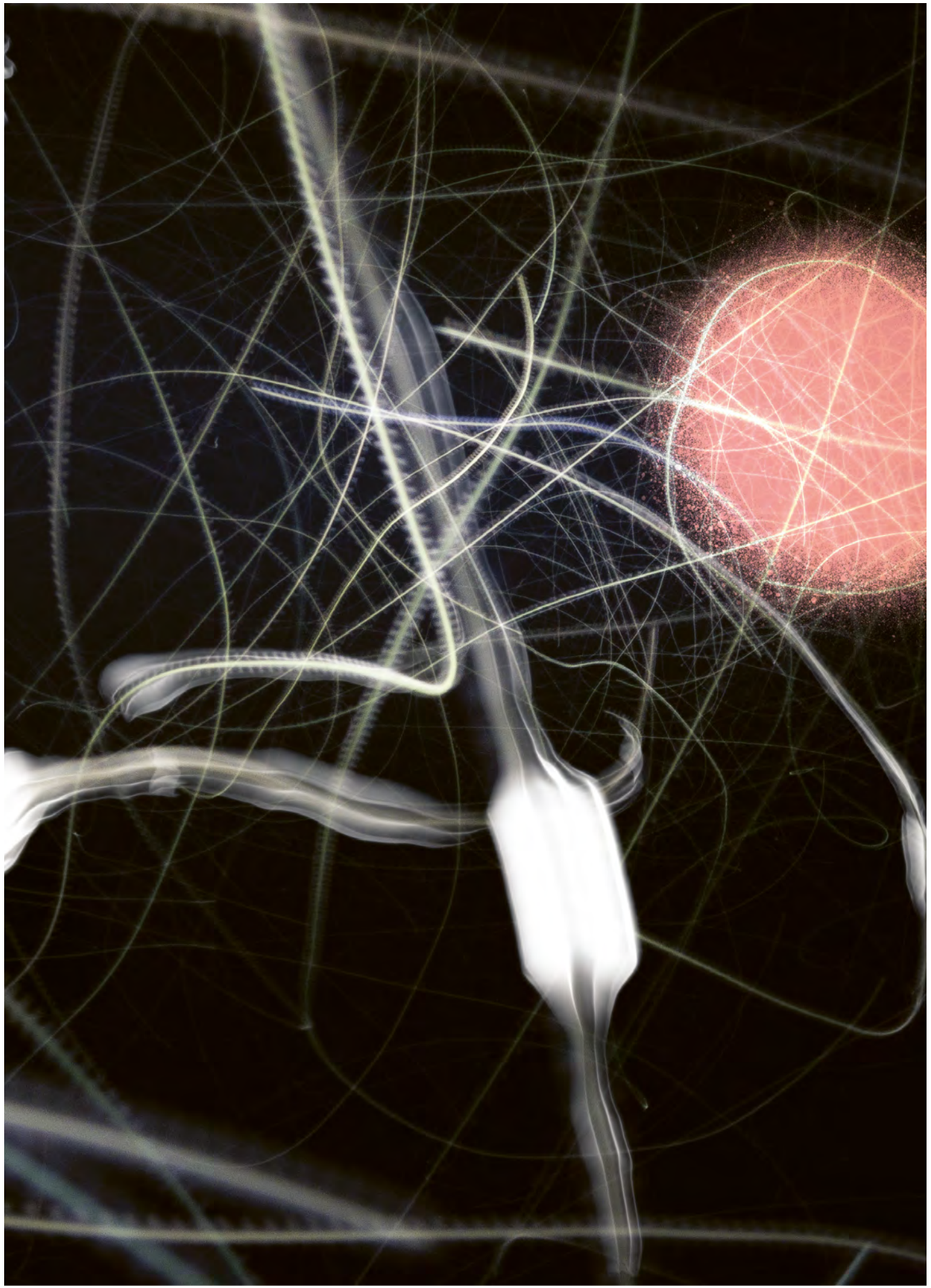
I challenge regulators, public transport operators, and shared mobility service providers to join this mission.

MaaS on tärkeä osa palapeliä, sillä se on hyvä esimerkki kiertotaloudesta. Sen tavoitteena on hyödyntää tehokkaammin kaikkia nykyisiä liikkuvuuspalveluja ja paikallisia infrastruktuureja. Lisäksi hyödyntämällä digitaalista teknologiaa ja palvelusuunnittelua MaaS yhdistää saumattomasti ja kattaa kaikki liikkuvuustarpeet – myös silloin, kun nämä tarpeet muuttuvat päivittäin. MaaS on kestävä, kätevä ja houkutteleva vaihtoehto yksityisauton omistamiselle.

Maailman ensimmäisen MaaS-operaattorin perustajalle se ei enää ole pelkkä visio, vaan yhteinen missio. Vain yhden napin painalluksella asiakkaamme voivat nauttia aidosta liikkumisen vapaudesta ja samalla toimia planeettamme hyväksi.

Tulevaisuuden ennustaminen on lähes mahdotonta, mutta voimme ryhtyä toimiin sen varmistamiseksi, että koronakriisin jälkeinen liikkuvuusmaailma on kaikkien kannalta parempi. Toimimalla yhdessä koko ekosysteemin kanssa voimme nollata kuljetussektorin ja taata sille kestävän kasvun.

Haastan lainsäätäjät, julkisten kulkuvälineiden operaattorit ja yhteisten liikkuvuuspalveluiden tarjoajat jakamaan tämän mission.



08

ROBOT LOVE

Encourage the use of new technology, digitalisation, robots and AI as tools for more sustainable solutions.

Left image:
Andréason & Leibel

08 PHENOMENON

TECH REVOLUTION

We are in the middle of the fourth industrial revolution, with artificial intelligence affecting how we live our lives. Since computers quickly analyse large amounts of information to find patterns and correlations, for the first time the possibility exists to overcome the limitations of the human mind. This creates hope for new, creative solutions and more secure and effective production, but at the same time, there are concerns regarding discrimination, surveillance and abuse.

A BETTER UNDERSTANDING

COPYRIGHT: HOLOCARE

Norwegian HoloCare creates solutions and builds knowledge at the intersection between medicine and holographic computing.

SUPERPOWER

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Is AI the superpower needed for a more human society? The Finnish AuroraAI programme implements a model based on people's needs.

08 TECH REVOLUTION

Where earlier industrial revolutions have involved steam and oil, this one is centred around self-learning computer systems. Artificial intelligence (AI) has a great potential to create new sustainable solutions and to simplify our lives. For 12 of the UN's Sustainable Development Goals, AI is the most important tool of fulfilment, according to Lucid Analytics. AI also lays the foundation for the transition to circular economy.

Technology is already a part of our everyday lives. We use smartphones as identification documents, while cities and companies are operated and planned with the help of insights from large data volumes. By coordinating data, we can discover correlations and reduce the waste of resources. Powerful antibiotics have been discovered using algorithms and 3D printing of materials offers possibilities to reduce waste and environmental impact. In Norway, HoloCare is the world's first innovation centre using mixed reality as a help to find future healthcare solutions, and AuroraAI is underway in Finland, a national programme where society's services are coordinated using AI. The residents do not need to go between government agencies, instead, the public services are connected in a "service ecosystem".

When machines carry out increasingly complicated tasks, our societies change. According to a survey conducted by the World Economic Forum, technologies such as automatised software, AI and robotisation are expected to eliminate 75 million jobs and tasks globally. At the same time, the hope is that even more jobs can be created, which requires a shift in education programmes, among other things.

If education, research and a strong industry are three of the cornerstones of AI, the ethical aspect is the fourth. Because while the new technology creates staggering opportunities, it also makes us vulnerable to manipulation. We share large amounts of data about ourselves, and our digital footprint is carefully monitored by various actors. AI can also reinforce stereotypes and give incorrect results due to bias in data or algorithms. Not least in companies whose goal it is to see what behaviours create profit, there is a great risk that the self-learning algorithm makes decisions that lead to discrimination or which are based on prejudice. The ethical, social, and not least legal challenges are many, and they require clear standards of transparency and liability. In the Nordics, the citizens' trust in the public administration can be affected by how these ethical aspects are handled. Where is the line between good service and surveillance? There is much to gain from collaboration across national borders, as a combined expertise lays the foundation for better decisions when difficult considerations must be made. Transverse collaborations are needed to respond to the impact on our societies from multi-facetted and complex AI.

GÖRAN LINDSJÖ

Göran Lindsjö from Sweden is an international senior AI advisor at Lime Tree Lake. He currently resides in the United States where he works with an extensive network of leading universities, companies and analysts within AI.

PERSPECTIVE

AI needs to be democratised, not only to create a more human society, but also to prevent negative consequences.

You have probably become more dependent on AI than you may realise. Perhaps you search on Google, use a credit card, make new friends on social media, receive product recommendations, unlock your mobile with face recognition or use automated translation. Perhaps you already talk to your appliances. In the cases above, and many more, you are probably already using AI. Is this something for you to be concerned with? The easy answer is that you do not need any deeper knowledge of how it works, much in the same way that you can drive a car without knowing the technical aspects of the car. But the harder answer is that you actually need to understand the possibilities and consequences of AI. The reason is that, for good or bad, AI changes our existence. It creates services and products that just up until recently, we could not even imagine. This is happening at a rapid rate, and the actors controlling this development are very few. This is only one reason, we need to democratise AI and use it as a tool to create a more human world.

But how does AI create a more human world? One way is by eliminating tedious, dangerous and administrative tasks. This means that many people can work with what made them choose their profession in the first place; for example, inter-personal relationships, problem-solving or strategic tasks. One example is hospital staff, who will have more time to spend with patients. Another is that machines can adapt to people, rather than the opposite. Instead of choosing between predetermined categories, we can describe our wishes in a way that suits us.

Du har troligen gjort dig mer beroende av AI än vad du inser. Kanske du googlar, använder kreditkort, skaffar nya vänner på sociala media, får produktrekommendationer, låser upp telefonen med ditt ansikte eller automatöversätter mellan olika språk. Kanske pratar du med olika apparater istället för att använda tangentbord och skärm. I alla dessa fall och många fler använder du troligen redan AI. Är det något du ska bry dig om? Det bekväma svaret är att du inte behöver ha någon djup kunskap om hur det fungerar, lite som att du kan köra bil utan att veta något tekniskt om bilen. Men det jobbigare svaret är att du faktiskt behöver förstå möjligheter och konsekvenser av AI. Orsaken är att det på gott och ont förändrar din och andras tillvaro. Det skapar tjänster och produkter som nyss inte ens fanns i vår fantasi. Det sker snabbt och det är alldeles för få som styr den utvecklingen. Därför behöver vi demokratisera AI så det blir ett verktyg för att skapa en mänskligare värld.

Men hur skapar AI en mänskligare värld? Ett sätt är att ta bort repetitiva, farliga och administrativa uppgifter. Det gör att många kan jobba med det som gjorde att de valde sitt yrke; till exempel mellan-mänskliga relationer, problemlösning eller strategiska uppgifter. Ett exempel är sjukvårdspersonal som får mer tid med patienter. Ett annat är att maskiner kan anpassa sig till människor snarare än vice versa. Istället för att välja bland förutbestämda kategorier kan vi beskriva vår önskan på det sätt som passar oss. Ett tredje sätt är att den service vi får blir skräddarsydd. Vi får svar, undervisning, behandling och mycket annat efter våra egna behov snarare än generella lösningar.

A third example is that the service we receive is tailored to us. We receive answers, training, treatment and many other things according to our own needs rather than general solutions.

AI also creates a more human world by supporting the UN's Sustainable Development Goals. It is used within climate research to reduce energy consumption, but also to prevent deforestation, overfishing, poaching, food waste, money laundering and plastics in the sea. It is used by urban planners to create more human cities and by having self-driving feeder buses to achieve a car-free environment. Predictive maintenance is used to avoid unnecessary replacement of functional machine parts. Transports and material consumption in manufacturing are optimised while sharing resources.

We do not know how the COVID-19 pandemic will develop. AI is used partly to reduce the uncertainty, but also to develop vaccines, secure medical supplies, follow infection patterns, diagnose coughs, manage distance teaching and social distancing.

But AI is not only a powerful tool to improve our lives, it is also used to manipulate us in various ways. By customising advertisement and news flows, our consumption can be increased and our prejudices reinforced. This, along with surveillance, runs the risk of becoming particularly dangerous in the hands of a totalitarian regime. AI needs to be democratised, not only to create a more human society, but also to prevent negative consequences.

AI skapar också en mänskligare värld genom att stötta FN:s hållbarhetsmål. Det används inom klimatforskning och för att minska energianvändning, men också för att förhindra skogsskövling, utfiske, tjuvjakt, matsvinn, penningtvätt och plaster i havet. Det används av stadsplanerarare för att skapa mänskligare städer och genom att självkörande små matarbussar ger en bilfri miljö. Man använder prediktivt underhåll för att slippa onödigt utbyte av fungerande maskindelar. Man optimerar transporter och materialåtgång i tillverkning och man delar resurser.

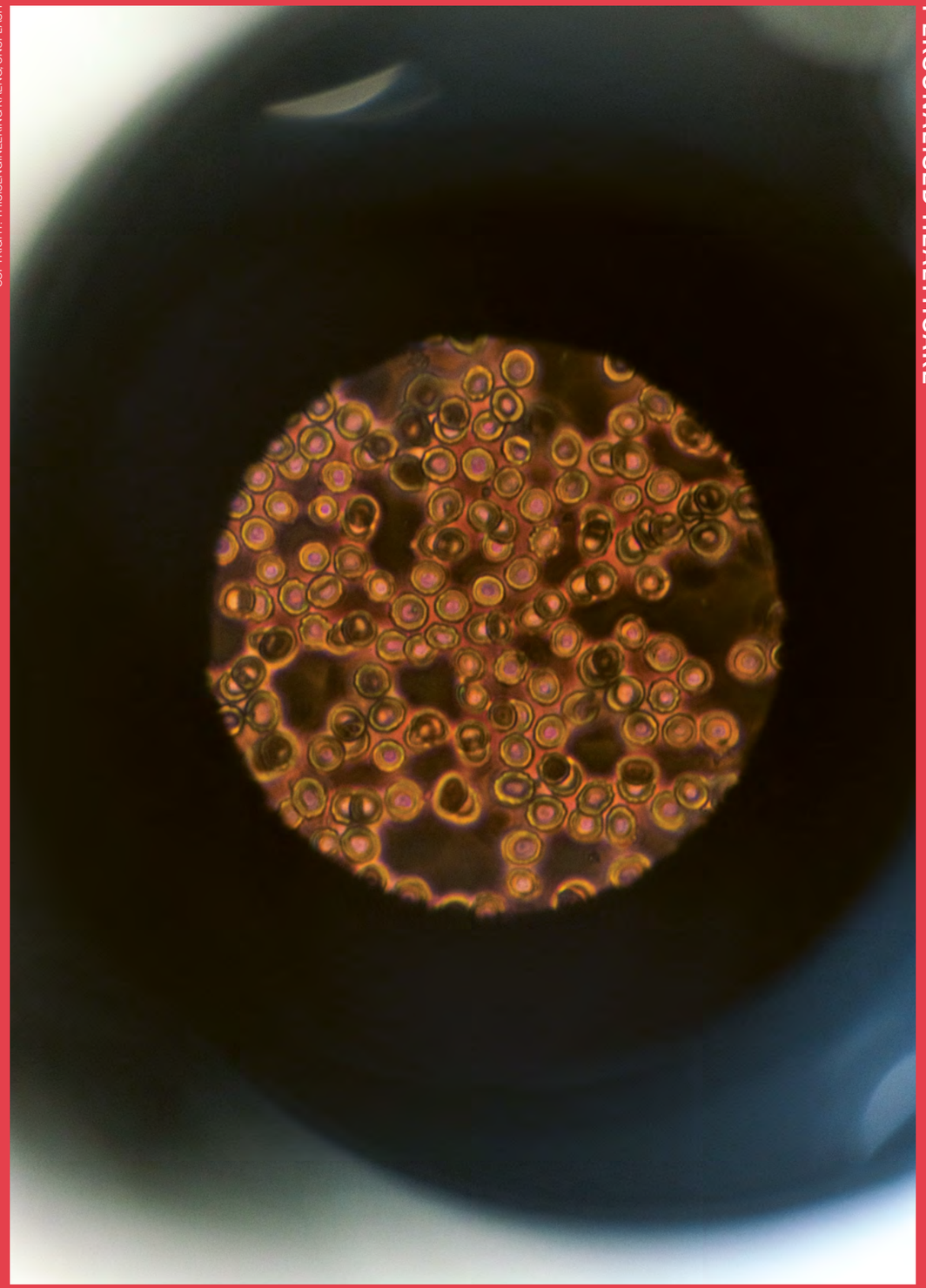
Vi vet inte hur covid-19 pandemin kommer att utvecklas. AI används dels för att minska osäkerheten men också för att exempelvis utveckla vaccin, säkra läkemedelsförsörjning, spåra smittspridning, diagnosticera hosta, hantera distansundervisning och social distansering.

Men AI är inte bara ett kraftfullt verktyg för att förbättra vår tillvaro, det används också för att på olika sätt manipulera oss. Genom att individanpassa annonser och nyhetsflöde kan vår konsumtion öka och våra fördomar förstärkas. Detta tillsammans med övervakning riskerar att bli särskilt farlig i händerna på totalitära regimer. Så AI behöver demokratiseras, inte bara för att skapa ett mänskligare samhälle utan också för att förhindra negativa konsekvenser.

"Since AI creates growth, competitiveness and enables improved welfare and societal services, business leaders and politicians need to get much more involved."

Asien och Nordamerika har kommit att dominera AI-utvecklingen. Särskilt är det USA och Kina, med några mycket starka företag, som har ett rejält försprång. EU och Norden har hamnat på efterkälken. Eftersom AI skapar tillväxt, konkurrenskraft och möjliggör bättre välfärd och samhällsservice behöver företagsledningar och politiker engagera sig betydligt mer. Den kultur som finns i Norden att delegera viktiga arbetsuppgifter har tjänat oss väl hittills, men de närmaste åren står mycket på spel om ledare inte förstår sin roll. Förutom Finland, som tidigt började resan, är det för få ledare i övriga Norden som har kompetens att leda det förändringsarbete som AI-revolutionen innebär.

Asia and North America have come to dominate the AI development. The US and China in particular have a strong head start with a number of very prominent companies. The EU and the Nordic countries have fallen behind. Since AI creates growth, competitiveness and enables improved welfare and societal services, business leaders and politicians need to get much more involved. The culture that exists in the Nordic countries of delegating important tasks has served us well thus far, but there is much at stake in the next few years if leaders fail to understand their role. Other than Finland, which started this journey early on, not enough leaders in the other Nordic countries have the expertise necessary to lead the change process that the AI revolution entails.



AI can be used to develop vaccines, set diagnostics and track infection spreading.

KRISTINN R. ÞÓRISSON

Kristinn R. Þórisson from Iceland is the Managing Director at The Icelandic Institute for Intelligent Machines. He is also professor at The Department of Computer Science at Reykjavík University.

PERSPECTIVE

Done right, AI has great potential to improve our lives, just like automation by other means has done in the past 200 years.

Today's artificial intelligence (AI), as someone said, is perhaps closer to stupidity than to intelligence. A case in point for that view is Windows 95's animated "Clippy"— a computer character that tried to guess your plans when you e.g. opened a new Word document, proposing to format it for you. Because it guessed wrong much too often, Clippy's biggest accomplishment was perhaps teaching people to hate AI. In 2001, four years after its introduction, Clippy was removed by its maker.

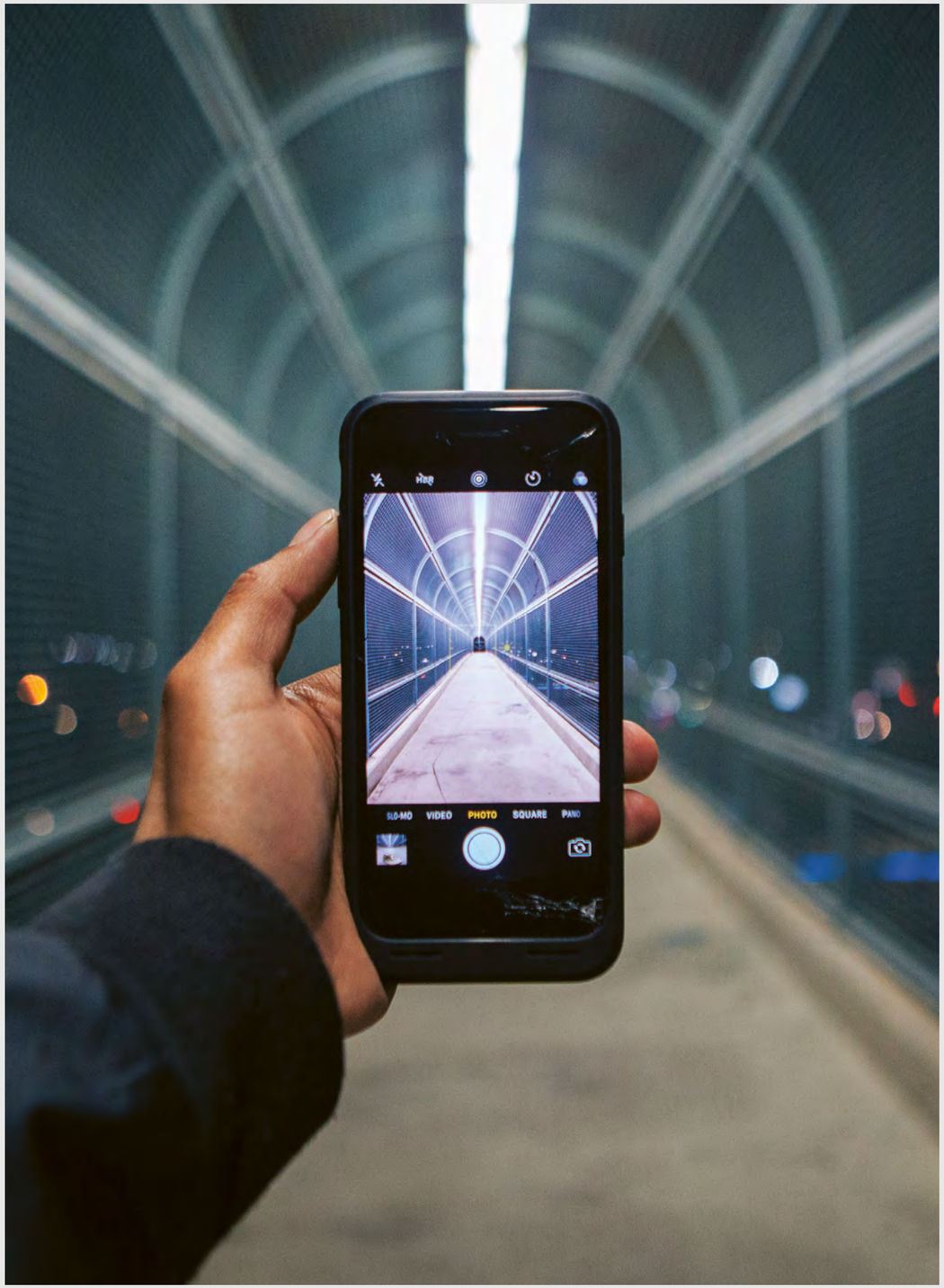
Numerous companies and government agencies are now asking themselves "What can automation through AI help us with, if anything?". Well, AI technologies can be applied to a wide array of problems, situations, tasks, and processes. Done right, AI has great potential to improve our lives, just like automation by other means has done in the past 200 years. Yet, like other technologies, it can also do harm and waste our time – well beyond what Clippy ever did – if applied unwisely. The mechanisation of thought is a relatively new frontier in automation; careful consideration of the potential implications of applied AI is strongly advised before any such undertaking.

The Icelandic Institute for Intelligent Machines (IIIM) is a non-profit research centre, founded in 2009, with the charter to speed up knowledge transfer between academic research and industry R&D. Our experts bring together companies, academics, and government institutions to use cutting-edge AI that can automate anything, from analysing zebrafish behaviour to controlling artificial knees, managing Iceland's national power grid or finding tourists lost in the highlands. IIIM's open-source collaboration model provides possibilities for flexible knowledge-sharing: Our Knowledge Fountain contract allows new knowledge created in projects to be

Stundum er sagt að gervigreind (AI) samtímans sé í raun nær því sem kalla má fávisku en því sem kalla má greind. Því til stuðnings má nefna „Clippy" – tölvugerða fígúru sem fylgdi stýrikerfinu Windows 95 og reyndi að geta sér til um fyrirætlanir notenda, t.d. þegar nýtt Word-skjal var opnað, og bauðst þá til að forsníða skjalið fyrir notandann. Clippy var hins vegar ekkert sérstaklega góður í að giska og helsta afrek hans var kannski að kenna almenningi að þola ekki gervigreind. Forritararnir létu Clippy svo hverfa árið 2001, fjórum árum eftir að hann var kynntur til leiks.

Í dag spyrja fjölmargir stjórnendur fyrirtækja og ríkisstofnana sig að þessu: „Hvað getur sjálfvirkni með gervigreind gert fyrir okkur – ef eitthvað?" Ja, það er reyndar hægt að nota gervigreind til að bregðast við fjölmörgum vandamálum, aðstæðum og ferlum. Ef vel er að verki staðið gæti gervigreind bætt líf okkar allra umtalsvert, rétt eins og margs konar sjálfvirkni hefur einmitt gert undanfarin 200 ár. Eins og önnur tækni getur gervigreind líka gert skaða og eytt tíma okkar að óþörfu – miklu meira en Clippy nokkru sinni gerði – sé henni ekki beitt á réttan hátt. Vélvæðing hugsunar er tiltölulega nýtt svið í þróun sjálfvirkni. Það þarf því að stíga gætilega til jarðar og hugleiða allar hugsanlegar afleiðingar af notkun gervigreindar.

Vitvélastofnun Íslands er rannsóknarmiðstöð sem ekki er rekin í hagnaðarskyni. Hún var stofnuð árið 2009 og samkvæmt stofnskrá er henni ætlað að greiða fyrir miðlun þekkingar og tækni milli fræðimanna og rannsóknar- og þróunaraðila í iðnaði. Sérfræðingar okkar leiða saman fyrirtæki, fræðimenn og ríkisstofnanir með það að markmiði að nýta sér nýjustu gervigreindina til að gera allt sem hugsast getur sjálfvirkt, hvort sem er greiningu á atferli sebradanna (tegund örlítilla fiska), stjórnun gervihnjáliða eða nýtingu raforkudreifikerfis Íslands til að finna ferðamenn sem týnast á



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'We are at the very beginning of the AI revolution.'

"Our experts bring together companies, academics, and government institutions to use cutting-edge AI that can automate anything, from analysing zebrafish behaviour to controlling artificial knees, managing Iceland's national power grid or finding tourists lost in the highlands."

freely moved from one sector to another, as well as furthering AI research inside IIIM, which in turns makes IIIM better equipped to help in the future. IIIM gives a royalty-free license to prototypes resulting from such collaboration.

The benefits of AI automation result from four main categories: New revenue creation, cost cutting, risk reduction, and increase in safety. AI may create new sources of revenue through brand new processes and methods. Improved efficiency of existing processes may also result, reducing expenses. The former category may create new jobs; the latter category may threaten job security, if the automation is extensive, but more often, the job descriptions simply change without disappearing. Improving the safety of life-critical systems, such as hospital management, reduces need for repairs and insurance expenses, but even more importantly, it can reduce the risk of deaths and give us a better, safer society.

AI is neither a one-hit-wonder nor a one-size-fits-all. It is rarely obvious how, or which, AI technology should be used, simply because all automation is done in the context of other processes and operations, which likely depend on existing workforce, safety and privacy issues. At IIIM, we invest significant time with collaborators in analysis and long-term planning to get these aspects right before writing a single line of code. When correctly implemented, AI automation frees up time for people to work on things that matter more than what they did before—since work that cannot currently be mechanised is by definition more valuable. We are at the very beginning of the AI revolution. Many jobs will change in the coming years and decades, and because AI involves the automation of thinking, some may lose their job to machines. Sometimes, though, it is the AI that loses its job. And often that is a good thing. Like in the case of Clippy.

hálendinu. Samstarfslíkan Vitvélastofnunarinnar er opið öllum og auðveldar sveigjanlega þekkingar- og tæknimiðlun: Samningsform okkar og viskubrunnur auðveldar greiða nýtingu tækni og þekkingar sem verður til í tilteknum verkefnum, frá einum geira til annars, og eflir rannsóknir Vitvélastofnunarinnar á gervigreind um leið, sem gerir stofnunina um leið betur í stakk búna til að verða þjóðfélaginu að liði í framtíðinni. Vitvélastofnun gefur endurgjaldslaust nýtingarleyfi þeim sem taka þátt í slíkri samvinnu.

Ávinningnum af sjálfvirkni með gervigreind má skipta í fjóra flokka: Öflun nýrra tekna, lækkun kostnaðar, minni áhætta og aukið öryggi. Gervigreind getur skapað grundvöll fyrir öflun nýrra tekna í gegnum ný ferli og aðferðir. Einnig er hægt að auka skilvirkni fyrirliggjandi ferla og draga þannig úr kostnaði. Fyrri flokkurinn getur skapað ný störf, sá seinni kann að ógna atvinnuöryggi, ef sjálfvirknivæðing er víðtæk, en stundum breytast starfslýsingar fremur en að störf hverfi. Að auka öryggi lífsnauðsynlegra kerfa, svo sem við stjórnun sjúkrahúsa, minnkar viðhald, viðgerðir og tryggingakostnað, en það sem meira er getur það fækkað dauðsföllum og gert samfélagið allt öruggara.

Gervigreind er hvorki dægurfluga né heldur getur hún verið öllum allt: Það er sjaldnast alveg augljóst hvernig, eða hvort, æskilegt sé að nota gervigreindartækni í ákveðnum tilgangi, ekki hvað síst vegna þess að öll sjálfvirkni fer fram í samhengi við önnur ferli og aðgerðir, sem eru að öllum líkindum háð fyrirliggjandi vinnuafli, öryggismálum og persónuverndarmálum. Áður en forritið er svo mikið sem ein lína af kóða hjá Vitvélastofnun Íslands fer verulegur tími í greiningu og gerð langtímaáætlana, í samstarf við fjölbreytta sveit aðila og stofnanir, í því skyni að huga sem allra vandlegast að öllum slíkum þáttum. Þegar vel tekst til færir gervigreind okkur aukinn tíma sem nota má til að vinna að þeim þáttum sem skipta meira máli nú en þeir gerðu áður – því vinna sem er ekki hægt að vélvæða enn er verðmætari en sú sem hægt er að sjálfvirknivæða. Gervigreindarbyltingin er rétt að hefjast. Á komandi árum og áratugum munu fjölmörg störf breytast og þar sem gervigreind felur í sér sjálfvirkni hugsanaferla munu margir missa störf sín í hendur véla. Stundum er það samt gervigreindinni sem er sagt upp. Og oft er það af hinu góða. Eins og dæmið um afdrif Clippys sannar.

09

RESPONSIBLE PROCUREMENT

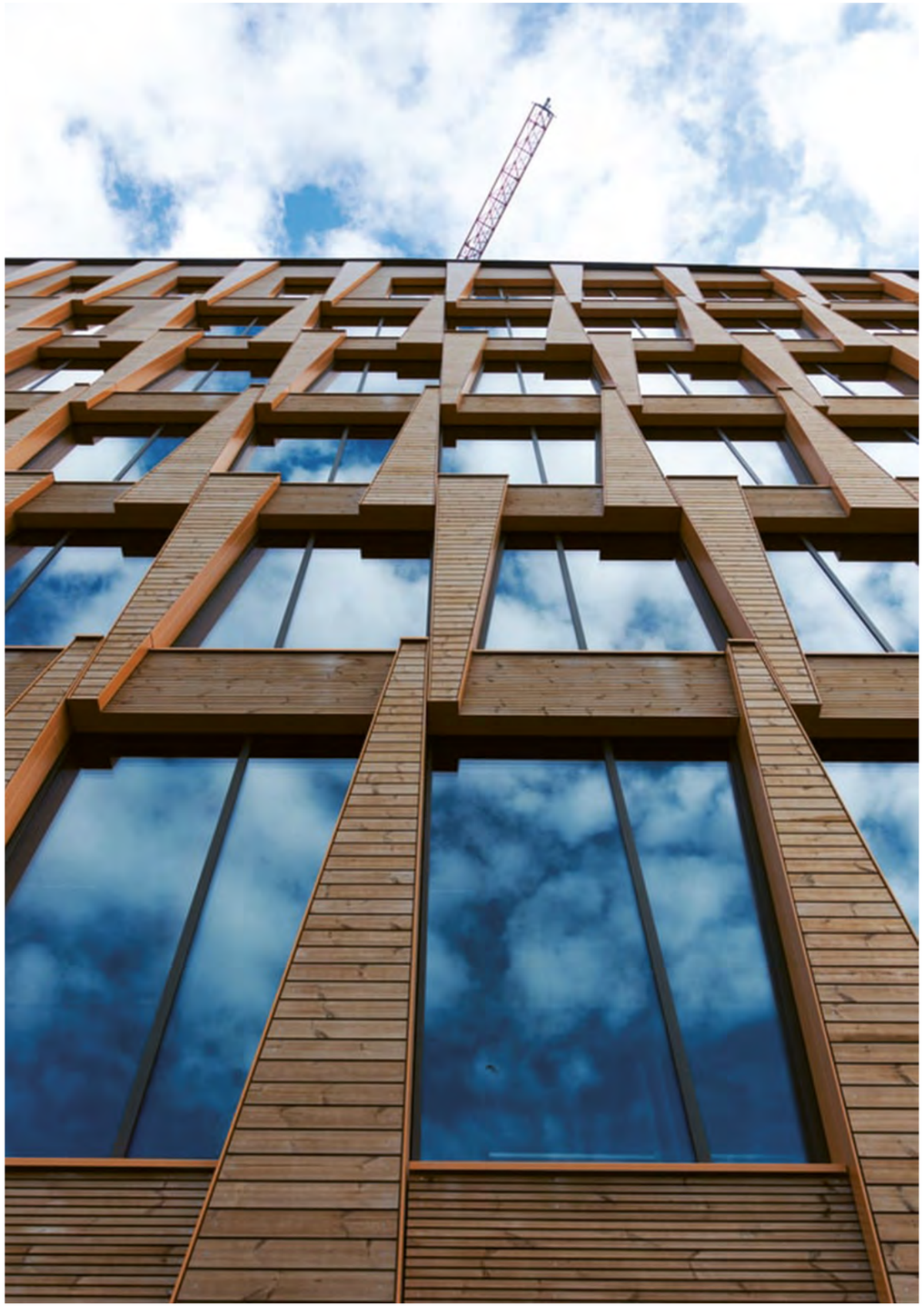
Encourage and support government agencies and private organisations to consider sustainability in procurement.

Left image:
Andréason & Leibel

09 PHENOMENON

MEASURE CHANGE

In order to make strategical choices in public procurements, being able to measure the sustainability of a product is essential. Procurement of buildings and civil engineering work deal with large values. Objectivity and measurability must be defined and certified in order for the world of construction to become more innovative and climate smart.



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Valle Wood office building, constructed in massive wood, Oslo, Norway.

09 MEASURE CHANGE

In the Nordic countries, more than one third of the emissions of greenhouse gases that people generate come from housing and construction. Reducing the emissions will require collaboration and radical initiatives from both industry and politics. Public procurement is of great importance to the climate transition in the construction industry, where sustainable materials and processes can be prioritised. One step in the right direction is to use life cycle analyses – the LCA method – to identify and quantify a building's climate impact. The website "Architects Declare" aims to join the architectural industry's forces on climate issues, in collaboration with contractors and clients.

The design of homes and public spaces is very important in promoting not only sustainability but also people's health and well-being. Examples of public spaces where design is especially important includes the healthcare sector, school, and preschool. However, public sector actors are currently unsure about how aspects of architecture and designed living environments can be safeguarded in public procurements. In Sweden, the National Agency for Public Procurement has therefore been ordered by the Government to improve the competence of public sectors.

If the development towards a more circular approach is to be implemented on a large scale, new measuring methods will be required. Researchers at the RISE Research Institutes of Sweden suggest three dimensions: material circularity – the proportion of the product value that comes from reused parts, market entropy – the proportion of the product value that is consumed in keeping it in demand on the market, and utilisation ratio – how much of the product's consumption comes from customer use, rather than the material being destroyed. Internationally, there is also the system Environmental Product Declaration (EPD).

Extending the life of a building is the most efficient way to operate sustainably. However, in new production the choice of material is of great importance. In later years, the use of cross-laminated timber in large constructions has become popular. With its 85.4 meters and 18 floors, Mjøstårnet in Norwegian Brumunddal is officially the world's tallest wooden building. Advanced measuring techniques and digitalisation tools streamline the use of raw materials from the forest to finished wood product. The Division of Wood Science and Engineering at Luleå University of Technology uses a unique CT scanner, which allows them to study processes in the wood that have previously been impossible to see, and they are an important component of CT Wood, a ten-year strategic research programme within wood science. There are also material developments within other construction materials, such as fossil-free steel manufacturing and "green concrete".

In order to transition to a circular construction, where building materials can be preserved and reused, certifications are required where digital apps can be used to assess the condition and function, and indicate climate savings in reuse. The Danish construction group Lendager Group has specialised in the use of recycled materials. The Norwegian architecture firm Snøhetta designs buildings with solar cells and solar panels, which during their life generate energy which fully offset the carbon dioxide emissions from the production.

ANDERS VESTERGAARD JENSEN & NIC CRAIG

Anders Vestergaard Jensen is a Danish Senior Project Manager at Climate-KIC where he is managing the Nordic project, Wood in Construction.

Based in Copenhagen, **Nic Craig** is a Climate, Energy and Sustainability Researcher at Climate-KIC.

PERSPECTIVE

Embodied carbon emissions from construction materials and processes make up eleven per cent of the global total; five times more than from aviation!

Using wood as a building material is not a new idea rather, it is a deeply rooted tradition in the Nordics. The image of a red, wooden summerhouse is something that we instantly recognise as 'Nordic'. However, wood as a 21st-century construction material is a high-tech engineered product that is increasingly being procured as a greener, lighter, and healthier material for the multi-storey buildings of today.

Embodied carbon emissions from construction materials and processes make up eleven per cent of the global total; five times more than from aviation! What fascinates us is that wood addresses this in two ways. Firstly, using wood allows us to avoid the emissions from steel and cement production, and as wood is lighter, transport emissions are reduced too. Secondly, it can transform buildings into carbon sinks, storing carbon absorbed during forest growth.

The Nordic wood sector is leading the way in climate-smart forestry where data from drones, lasers and satellites enables more sustainable resource use, as well as millimetre-precision pre-fabrication of large wooden construction elements, all of which leads to less waste and faster assembly times on site.

We are witnessing a shift to wood construction, but scale is now critical; we need many more large wooden buildings. In Sweden, the industry is starting to realise this, with a 51 per cent increase in timber apartment blocks built in 2019. Much of this change is driven by public procurement spurring the

At bygge med træ er ikke et nyt koncept, men derimod en dybt forankret tradition i Norden. Billedet af et rødt træsommerhus er noget, vi øjeblikkeligt genkender som "nordisk". Men som et byggemateriale i det 21. århundrede er træ imidlertid et højteknologisk og forarbejdet produkt, der i stigende grad vælges som et grønnere, lettere og sundere materiale til moderne fleretagers bygninger.

Udledning af CO_2 fra byggematerialer og -processer udgør 11 prosent af den samlede globale mængde – fem gange mere end luftfarten! Det fascinerende er dog, at træ håndterer det på to måder. Ved at bruge træ undgår man for det første udledning fra fremstilling af stål og cement, og da træ er lettere, reduceres udledningen også i forbindelse med transport. For det andet kan det omdanne bygninger til CO_2-dræn og lagre kulstof, der absorberes under skovvækst.

Den nordiske træbranche er førende inden for klimaintelligent skovbrug, hvor data fra droner, lasere og satellitter muliggør en mere bæredygtig ressourceanvendelse samt præfabrikation med millimeterpræcision af store trækonstruktionselementer, hvilket alt sammen resulterer i mindre affald og hurtigere montagetider på stedet.

Vi er vidne til et skift til trækonstruktioner, men skalaen er nu kritisk: Vi har brug for mange flere store træbygninger. I Sverige er det ved at blive til virkelighed, med en stigning på 51 prosent i antallet af byggede trælejlighedskomplekser i 2019. En stor del af denne ændring er drevet af offentlige indkøb, der fremmer

development of local supply chains and expertise, setting off a virtuous cycle of investment and accepted norms in the industry. This is being compounded by new legislation across the Nordic countries that requires higher sustainability standards in materials, boosting demand for wood construction.

With buildings standing for the better part of a century, procurement in this area will have a legacy impact unlike many other areas. Measuring buildings' emissions over that lifecycle, wood consistently outperforms conventional building materials. We often forget that as our only renewable building material, it takes just minutes – yes, minutes – for Nordic forests to grow the mass needed to build green, modern and liveable schools, apartment buildings and libraries.

There are potential disadvantages, however, which mostly occur in forest ecosystems where increased demand could impact on biodiversity, climate resilience, soil degradation, and carbon storage. Procuring certified wood such as FSC

udviklingen af lokale forsyningskæder og ekspertise, hvilket har sat gang i en sund investeringscyklus og godkendte standarder i branchen. Det understøttes bl.a. af ny lovgivning i hele Norden, der kræver højere bæredygtighedsstandarder for materialer, hvilket øger efterspørgslen på trækonstruktioner.

Med bygninger, der holder i næsten 100 år, vil indkøb på dette område have en markant indvirkning i modsætning til mange andre områder. Ved målinger af bygningers udledning i løbet af deres livscyklus klarer træ sig konsekvent bedre end konventionelle byggematerialer. Vi glemmer ofte, at det som det eneste fornyelige byggemateriale kun tager få minutter – ja, minutter – for de nordiske skove at dyrke den mængde træ, der skal bruges til at bygge grønne, moderne og behagelige skoler, lejlighedskomplekser og biblioteker.

Der forekommer dog en række potentielle ulemper, primært i skovøkosystemer, hvor den øgede efterspørgsel kan påvirke biodiversiteten, klimarobustheden, jordforringelsen og kulstoflagrene.

"Procurement that mandates traceability and local production and processing sets the gold standard in enhancing the wood's potential for good."

DURABLE, LOW IMPACT, BIOBASED

COPYRIGHT: MAIJU SUNI

Wave-layered timber is a new innovation from the Finnish company Aalto Haitek. It creates extremely strong structures.

TOP OF THE LIST

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The 85.4 m and 18 storeys high Mjøstårnet is officially the world's tallest timber building.

and PEFC is a good place to start to minimise such risks, but certification standards still fall short in certain areas.

With everything in modern timber construction becoming increasingly digitised, it is now possible to trace the wood from the forest floor to the building site. Procurement that mandates traceability and local production and processing sets the gold standard in enhancing the wood's potential for good.

While wood is a part of the solution, we know that it is no silver bullet. From a lifecycle view, there is often a need to procure hybrid constructions. As such, the industry needs to come together to embrace the full spectrum of material solutions.

To accelerate the transition to low-carbon construction, we need to utilise policy levers both nationally and locally to make public procurement in the public interest easier. Lastly, we believe that improved Nordic coordination and collaboration will help to achieve efficiencies that would otherwise be impossible, sharing the knowledge – as well as human and natural resources – to realise this transition.

Indkøb af certificeret træ som FSC og PEFC er et godt sted at begynde for at minimere disse risici, men disse standarder er stadig mangelfulde på visse områder.

Med digitaliseringen, der anvendes til alt inden for moderne tømmerkonstruktion, er det nu muligt at spore al træ fra skovbunden til byggepladsen. Indkøb, der giver mulighed for sporbarhed samt lokal produktion og forarbejdning, sætter en gang for alle standarden for forbedringer af træs potentiale.

Mens træ er en del af løsningen, ved vi dog, at det ikke er en mirakelløsning. Når vi tager et kig på livscyklussen, så kan vi se, at der er behov for at indkøbe hybridkonstruktioner. Det kræver dog, at vi går væk fra "os kontra dem"-mentaliteten, når det kommer til materialer. Industrien må gå sammen, på tværs af byggematerialerne, for at omfatte det fulde spektrum af materialeløsninger.

For at fremskynde overgangen til bygninger med lavt CO2 er vi nødt til at anvende politiske virkemidler både nationalt og lokalt for at gøre offentlige indkøb i offentlighedens interesse nemmere. Slutteligt mener vi, at en forbedret nordisk koordinering og samarbejde vil bidrage til at opnå en effektivitet, der ellers ville være umulig, ved at dele viden – samt menneskelige og naturlige ressourcer – for at gennemføre omlægningen.

JONAS OLSSON

Jonas Olsson is the CEO of Swedish Industrial Design Foundation, with a background in policy making, networking and Nordic collaborations. He has a great interest in the fields of design and architecture, always with one foot in sustainability.

PERSPECTIVE

80 per cent of a product's entire environmental impact is decided already in the design stage.

Public procurement may come to play a key part in moving towards a circular and biobased economy. Extending the life of goods and purchasing functions instead of products will help the Nordic countries to fulfil the Sustainable Development Goals of the 2030 Agenda. In order to do so, we need clear, measurable requirements and the client must have a high level of expertise combined with the right design methods. 80 per cent of a product's entire environmental impact is decided already in the design stage.

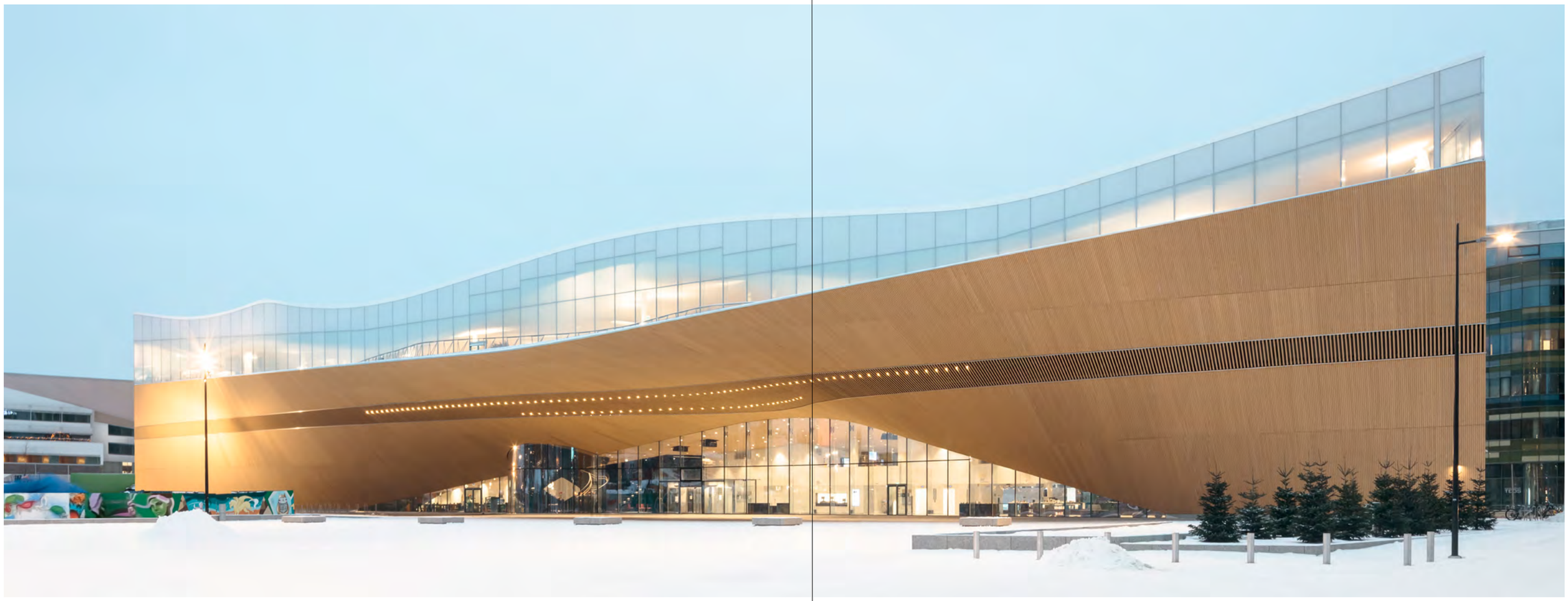
In 1994, Sweden introduced the Public Procurement Act (LOU). The act is intended to ensure that public operations deliver the best possible value for the citizens' taxes. The act is applicable to purchasing, renting and leasing of goods and services, and not least to construction contracts, where the procurement of buildings and infrastructure deals with very large sums. In Sweden, buildings represent roughly 40 per cent of the country's energy consumption and just over one fifth of the greenhouse gas emissions, seen from a life cycle perspective. In Norway, Statsbygg was able to reduce the CO2 emissions in its construction projects by 36 per cent in 2019, which corresponds to one million flights between Oslo and Bergen. Green procurement and stricter supplier requirements led to this result, but also an increased recycling and reuse of construction materials.

The Nordic countries wish to see an increased use of wood in architecture, as the construction sector is representing an increased share of the world's carbon dioxide emissions. Replacing conventional construction materials with wood can lead towards a more circular economy, where the material is used in several stages and waste has been designed out into the system. Preserving the full potential of the wood throughout the value chain is still a challenge however. Problems also arise if you solely focus on one material without a holistic

Offentlig upphandling kan komma att spela en nyckelroll för att gå mot en cirkulär och biobaserad ekonomi. Att förlänga livslängden hos varor och köpa funktioner i stället för produkter hjälper Norden att uppfylla de globala hållbarhetsmålen i Agenda 2030. För att lyckas krävs tydliga mätbara krav och att beställaren har hög kompetens, kombinerat med rätt designmetoder. Redan i designstadiet avgörs 80 procent av en formgiven produkts hela miljöbelastning.

1994 fick Sverige LOU, Lagen om offentlig upphandling. Den syftar till att offentlig verksamhet ska leverera bästa möjliga värde för medborgarnas skattepengar. Lagen gäller vid köp, hyra eller leasing av varor och tjänster och inte minst vid byggentreprenad, då upphandling av byggnader och anläggningar omsätter stora värden. I Sverige står byggnader för ungefär 40 procent av landets energianvändning och sett ur ett livscykelperspektiv för en dryg femtedel av utsläppen av växthusgaser. I Norge kunde Statsbygg reducera CO2-utsläppen i sina byggprojekt med 36 procent 2019, vilket motsvarar en miljon flygresor mellan Oslo och Bergen. Grön upphandling och skärpta leverantörskrav drev fram resultatet, men även återanvändning och ett ökat återbruk av byggmaterial.

Norden vill se en ökad användning av trä i arkitekturen, då byggbranschen står för en ökande del av världens koldioxidutsläpp. Att ersätta konventionella byggnadsmaterial med trä kan leda mot en mer cirkulär ekonomi, där materialet används i flera led och avfall designas ut i systemet. Att ta tillvara träets fulla potential i hela värdekedjan är dock fortfarande en utmaning. Problem uppstår också om man enbart fokuserar på ett material utan någon helhetssyn, så vi behöver en offentlig upphandling som ser till livscykelperspektiv och långsiktig förvaltning. Samtidigt måste hus, oavsett material, byggas med så låg energiförbrukning som möjligt och upphandling fokusera än mer på energibesparing. 80 procent av den totala utsläppsbesparingen inom byggsektorn kommer från just energi.



Oodi Helsinki Central Library has been built using local materials and with local climate conditions in mind.

perspective, so we need a public procurement process which ensures a life-cycle perspective and long-term administration. At the same time houses, regardless of material, need to be built with as low an energy consumption as possible, and the procurement must focus even more on energy savings. 80 percent of the total emission savings within the construction sector comes from energy.

Society will benefit from a public procurement process that clearly prioritises the right value for the money and considers various dimensions of quality and sustainability. There are many good examples today of how procurement criteria are developed, especially within the environmental area, and circular economy and public procurement are at the top of the international agenda.

The report “Circular procurement in the Nordic Countries" presents four strategies to broaden the circular perspective of public procurement: from procuring products with circular properties to creating or benefiting circular systems using the procurement process. One way can be to use locally produced biogas in public transport, another is to create an industrial symbiosis where residual heat from one industry is used to heat the premises of another.

A transition to a circular economy also requires new business models. Companies that implement circular business models use biobased, renewable and recyclable materials or, when possible, sells services and functions rather than goods.

To achieve a long-term sustainable economy, resources need to be used more efficiently. In my view, it is problematic that the procurement process is sometimes viewed as a “necessary evil” rather than a strategic tool used to attain a greater goal.

A procurement that is technically correct can still lead to a lousy result for users and citizens, even if no-one did anything wrong. We should instead use public procurement as the important tool that it is in the development of the Nordic countries towards a circular economy and to achieve the global sustainable development goals.

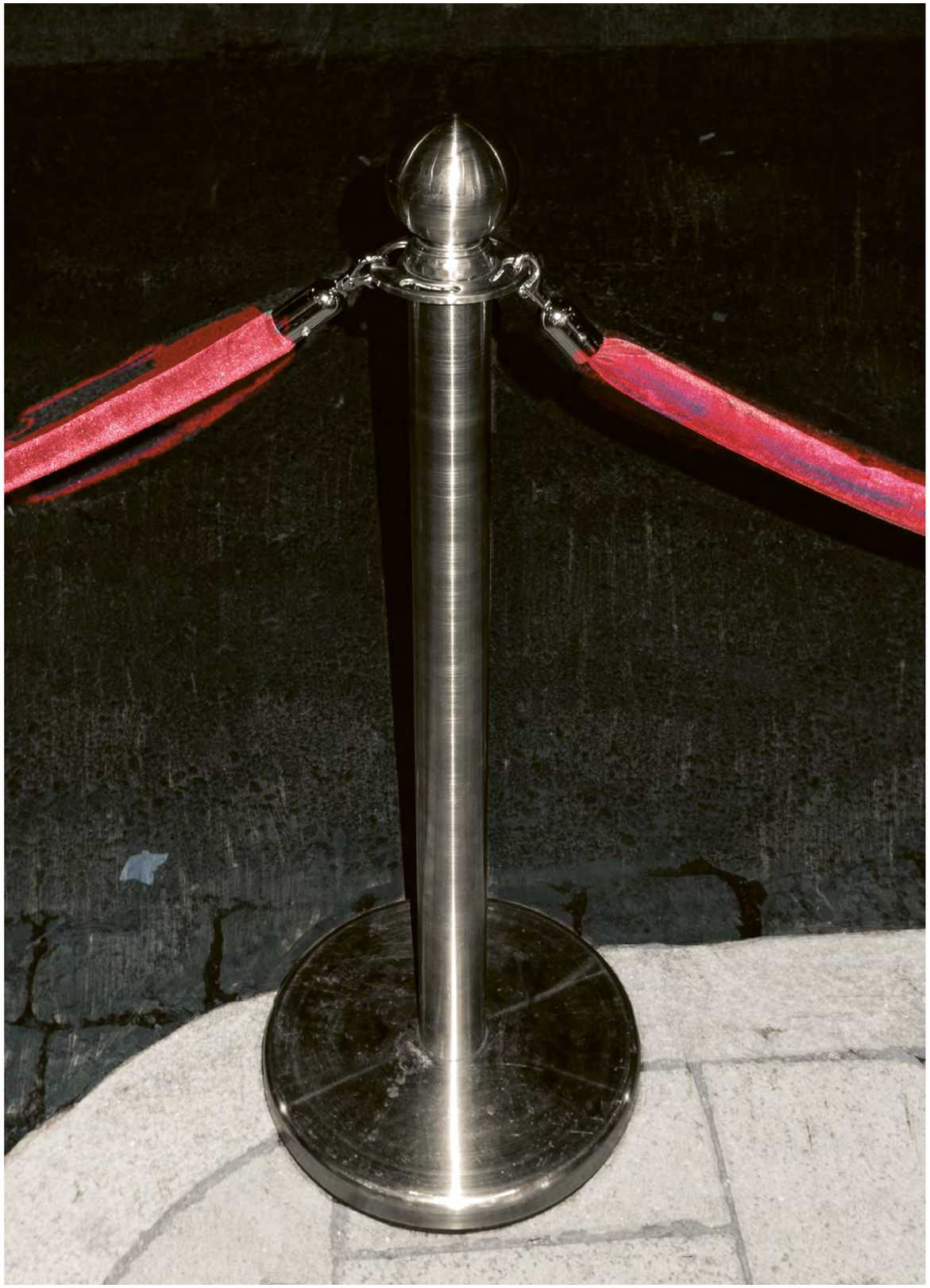
Samhället vinner på en offentlig upphandling som tydligt prioriterar rätt värde för pengarna och ser till olika dimensioner av kvalitet och hållbarhet. Det finns idag många goda exempel på hur upphandlingskriterier utvecklas, särskilt inom miljöområdet, och cirkulär ekonomi och offentlig upphandling står högt på den internationella dagordningen.

I rapporten “Circular procurement in the Nordic Countries" presenteras fyra strategier för att bredda det cirkulära perspektivet i offentlig upphandling; från att upphandla produkter med cirkulära egenskaper till att med hjälp av upphandlingen skapa eller gynna cirkulära system. Ett sätt kan vara att använda lokalt producerad biogas i kollektivtrafiken, ett annat att skapa industriell symbios där överskottsvärme från en industri används för att värma upp en annan.

I en övergång mot en cirkulär ekonomi behövs också nya affärsmodeller. Företag som tillämpar cirkulära affärsmodeller använder exempelvis biobaserade, förnybara och återvinningsbara material eller, när det är möjligt, säljer tjänster och funktioner i stället för produkter.

För en långsiktigt hållbar ekonomi måste resurser användas effektivare. Som jag ser det är det ett problem att upphandlingsprocessen ibland ses som ett ”nödvändigt ont” istället för som ett strategiskt verktyg med vilket det går att nå större mål.

En upphandling som rent formellt är korrekt kan ge ett uselt resultat för användare och medborgare, utan att någon gjort något fel. Gör istället offentlig upphandling till det viktiga verktyg det är i arbetet för att utveckla Norden mot en cirkulär ekonomi och för att nå de globala miljömålen.



10

NUDGING

Influence consumers to adopt sustainable attitudes and behaviours.

Left image:
Andréason & Leibel

10 PHENOMENON

A GENTLE REMINDER

We are in the middle of an urgent climate crisis; this is the verdict of 11,000 environmental experts from 153 countries. In order to impact and reach the sustainability goals, we need to change our behaviours. Focusing on climate joy is a way to increase people's willingness to act, consume and make a change. Instead of shaming, we must celebrate the actions that we would like to see more of. Humans are not motivated by shame, but by the feeling of being a part of something greater.

STRAIGHT FROM THE TAP

COPYRIGHT: INSPIRED BY ICELAND

To encourage Iceland's tourists to drink tap water, the world's first premium tap water brand, Kranavatn, has been launched.

EASY RIDER

COPYRIGHT: MIKKEL ØSTERGAARD

Clever design in bicycle-friendly Copenhagen.

UNGDOMSBAROMETERN

COPYRIGHT: KARINA CARVALHO, UNPLASH

2019, 52 per cent of young people in Sweden considers themselves to have quite or very large opportunities to influence society. That is the highest level in 20 years.

10 A GENTLE REMINDER

Despite our knowledge of the present climate and environment crisis, we are reluctant to change our habits. There is still a gap between acceptance and action; we are travelling, consuming and living as we did before. One factor could be the fear that is often roused during a crisis, in this case – climate anxiety. This term, which originated in Sweden, is used to describe an individual's sense of dread and helplessness in face of the future. The fact that climate issues in particular cause anxiety could be based in our brain's way of handling problems. We have evolved to respond effectively to immediate danger, but we are considerably worse at handling vague threats that continue over time, and the result can be passiveness and resignation. Research indicates that knowledge and taking action are the best cures for anxiety, so how do we transform our anxiety into action and climate hopefulness?

In 2018, the term "flight shaming" was introduced. In 2019, one in four Swedes opted not to fly because of the environment and the climate. However, in the other Nordic countries, air travel increased. But are shaming and guilting really the way to go? Studies indicate that they will not lead to long-term behavioural changes, but the opposite. Instead, communication of positive visions is recommended, which can lead to increased motivation and action. The eco-theologist Panu Pihkala believes that, when handled correctly, climate anxiety can be a source of strength, constructive action and political activity. Often, it is a matter of not feeling alone, and when we interact socially, this leads to action. "Individually, we can do something, and together we can do a lot", writes author Emilia Arvidsson, who also coined the phrase "climate joy".

Nudging can be described as small hints to change our behaviour without us even noticing. It is a matter of designing choices where it is easy to make the "right" decision. When the authorities in Copenhagen wanted to eliminate littering in the city, they marked the streets with green footprints that led to the nearest bin. The littering decreased noticeably. With the help of Norwegian GreeNudge, the hotel chain Nordic Choice has reduced food waste by 20 per cent, by changing the size of their plates. This shows how small climate actions can make a big change. This is a matter of finding a balance – the line between feeling manipulated and getting a push in the right direction is very fine. Even though we have a lot of information as consumers, we do not always make the right choice. Therefore, the responsibility for sustainable consumption should not be placed solely on the consumer, but also on politicians and industry.

Climate nudging should be about guidance – showing how easy it can be to make the right decision and sustainable choices. Human activity created most of the crisis, and human activity is what can bring us out of it.

JAKOB BJARNØ RASMUSSEN

Jakob Bjarnø Rasmussen works as a Business Psychologist and Management Consultant at Human House in Denmark. The way he works he describes as "being hard at the problem, soft at the person".

PERSPECTIVE

There is no natural mechanism to warn about the fact that present short-term, selfish gains might lead to unsustainable and perhaps even fatal consequences.

Ocean levels are rising, air pollution is skyrocketing, and forests are shrinking. And we are not doing enough. CO2 in the atmosphere is at an alarming level, the climate refugees are coming, and the polar bears are dying. And we are not doing enough.

This is often the picture painted when we are talking about the climate, environment, and sustainability. But why do we find it so difficult to 'do enough'? Well, it turns out there is an explanation. And amazingly the solution lies within the explanation.

We humans are surprisingly less rational in our thinking than previously thought. This is true when it comes to sustainability too. The design of our brain is old and has not developed significantly in thousands of years.

Our ancestors cared about those closest to themselves, imminent dangers, and present and useful resources. In many ways, we are still doing the same today as our ancestors did for millions of years. That is just how our brains are hardwired. However, sustainability requires that we focus on the long-term consequences of short-term actions and that we recognise the global range of our actions. Although we might like to think differently, natural selection has never focused on long-term advantages. It favours short-term gains. Nevertheless, I do have some good news. We humans can work against our evolutionary mechanisms. In fact, we are most likely the only species able to do this to ever exist.

Vandstanden i havene stiger, luftforureningen er på himmelflugt, og skovene bliver mindre og mindre. Og vi gør ikke nok. CO2 i atmosfæren er på et alarmerende niveau, klimaflygtningene er på vej, og isbjørnene lider. Og vi gør ikke nok.

Det er ofte det billede, vi maler, når vi taler om klima, miljø og bæredygtighed. Men hvorfor synes vi, det er så svært at "gøre nok"? Jo, det viser sig, at der faktisk er en forklaring. Og utroligt nok så ligger svaret i forklaringen.

Vi mennesker er overraskende mindre rationelle i vores tankegang end tidligere antaget. Det gælder også, når det kommer til bæredygtighed. Vores hjerne er gammel og har ikke udviklet sig væsentligt i tusindvis af år.

Vores forfædre bekymrede sig om dem, der var tættest på dem selv, om overhængende farer og om tilgængelige og nyttige ressourcer. På mange måder gør vi stadig det samme i dag, som vores forfædre har gjort i millioner af år. Det er sådan, vores hjerner er indrettet. Men bæredygtighed kræver, at vi fokuserer på de langsigtede konsekvenser af kortsigtede handlinger, og at vi anerkender, at vores handlinger har global rækkevidde. Selvom vi måske gerne vil tro noget andet, så har den naturlige selektion aldrig fokuseret på langsigtede fordele. Den favoriserer til gengæld de kortsigtede gevinster. Ikke desto mindre har jeg nogle gode nyheder. Vi mennesker kan modarbejde vores evolutionære mekanismer. Faktisk er vi sandsynligvis den eneste art, der kan gøre det.

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Even though our brain is old, us humans with our cognitive functions can can chart a new course towards a sustainable living.

Natural selection acts like a robot only able to climb upwards, even though this might leave it trapped on a cliff. There is no natural mechanism for going down the hillside. There is no natural mechanism for crossing the valley to keep progressing on a different evolutionary hillside. There is no natural mechanism to warn about the fact that present short-term, selfish gains might lead to unsustainable and perhaps even fatal consequences. After all, 99 per cent of all species that have ever existed are now extinct. But not us. At least not yet.

Even though our brain is old, humans with our cognitive functions can look across the valley and can chart a new course that leads away from fatal consequences and towards a sustainable living.

Naturlig selektion fungerer som en robot, der kun kan klatre opad, selvom det betyder, at den ender med at blive fanget på en klippe. Der er ingen naturlig mekanisme, der kan få den til at gå ned ad bakken. Der er ingen naturlig mekanisme, der kan få den til at krydse dalen for at gå op ad en anden evolutionær bakke. Der er ingen naturlig mekanisme, der kan advare om, at de nuværende kortvarige egoistiske gevinster kan føre til ubæredygtige og måske endda fatale konsekvenser. Når alt kommer til alt, så er 99 procent af alle arter trods alt uddøde. Men ikke os. I det mindste ikke endnu.

Selvom vores hjerne er gammel, kan vi mennesker med vores kognitive funktioner se henover dalen og kortlægge en ny rute, der fører os væk fra de fatale konsekvenser og frem mod en bæredygtig levevis.

"The more sustainable option is now the default and our old brain does not have to spend time and energy making a conscious decision about what is right or more sustainable."

As a species, we can recognise and express our own limits, and by understanding the human psychology and applying this knowledge, we are in fact able to outwit and circumvent these limits.

Take nudging, for instance. Nudging is one of many great examples of designing sustainable solutions that appeal to our old brain. By making the plates in the office canteen smaller, people are more likely to finish everything on their plate, and less food is wasted.

This well-known example of nudging identifies the “limit” of our old brain telling us to seek and consume a lot of food in order to get a lot of nutrition – and simply bypasses it by changing out some plates. The more sustainable option is now the default and our old brain does not have to spend time and energy making a conscious decision about what is right or more sustainable.

In many ways, it is all about identifying our own limits and coming up with solutions that go with the flow of the human psyche instead of against it.

This is really the irony of it all. Our old brain and everything that comes with it – good and bad – has led us to where we are now, in many ways trapped on a cliff. And it is this same old brain that is going to get us out of this mess. That is, if we are smart about it.

Som art kan vi genkende og give udtryk for vores egne begrænsninger, og ved at forstå den menneskelige psyke og anvende den viden kan vi faktisk overliste og omgå disse begrænsninger.

Tag for eksempel nudging. Nudging er et af mange gode eksempler på design af bæredygtige løsninger, der appellerer til vores gamle hjerne. Ved at gøre tallerkenerne i kantinen mindre er der større sandsynlighed for, at folk spiser op, og mindre mad går derfor til spilde.

Dette velkendte eksempel på nudging identificerer vores gamle hjernes "begrænsning", der fortæller os, at vi skal finde og indtage en masse føde for at få en masse næring – og bypasser simpelthen den følelse ved at udskifte nogle tallerkener. Den mere bæredygtige mulighed er nu blevet til standarden, og vores gamle hjerne behøver ikke bruge tid og energi på at træffe en bevidst beslutning om, hvad der er det rigtige eller mest bæredygtige at gøre.

På mange måder handler det om at identificere vores egne begrænsninger og komme frem til løsninger, der følger med den menneskelige psyke og ikke går imod den.

Det er ironien i det hele. Vores gamle hjerne og alt, hvad der følger med – godt og dårligt – har ført os til det sted, vi er nu. På mange måder fanget på en klippe. Og det er den samme gamle hjerne, der skal få os væk herfra. Altså, hvis vi vælger klogt.

AHMED AL-QASSAM

Ahmed Al-Qassam, Head of Advocacy at the Swedish Outdoor Association. Ahmed is the founder of the award-winning podcast Miljöpodden and Aktuell Hållbarhet named him one of 33 sustainability talents under 33 years old in Sweden in 2018.

PERSPECTIVE

Even though the majority of us have high consciousness and concerns regarding the environment and the climate, these attitudes rarely reflects in our behaviour.

In 2017, Richard Thaler received the Nobel Memorial Prize in Economic Science. His findings profoundly changed the way we look at our behaviour. Thaler pointed out three psychological traits that systematically affected a human individual's decisions; Limited rationality, social preferences and lack of self-control.

Although this gave us a sense of humans as not rational, it has also given new insight on how we can reach a better sustainable society. Through nudging – a term Thaler himself coined – the human behaviour can be affected by making it easy to make certain choices. And in the long run reach the Sustainable Development Goals, such as number 12: Responsible Consumption and Production.

Swedish environmental sociologists Rolf Lidskog and Göran Sundqvist (2011) claims that an individual's values, attitudes and behaviour is founded on personal decisions, which in turn are affected by the societal culture. This means that environmentally friendly behaviour is anchored in the emotional relationship between the environment and the cultural context.

The problem, according to Dutch scientists Van den Noortgaete and De Tavernier (2014), is that humans tends to predict their moral behaviour in an incorrect way due to the inability to reach the emotional components of the brain. They point out the so-

2017 mottog Richard Thaler Nobelpriset i ekonomi. Hans forskning har i grunden ändrat vår syn på mänskligt beteende. Thaler visade att tre psykologiska drag har en systematisk inverkan på individuella beslut: begränsad rationalitet, sociala preferenser och bristande självkontroll.

Även om hans upptäckt visade att människor inte är rationella, gav den oss samtidigt insikt i hur vi kan uppnå ett mer hållbart samhälle. Genom att använda nudging – ett begrepp som Thaler själv myntat – kan mänskligt beteende påverkas genom att göra det lättare att fatta vissa beslut. Beslut som i längden gör att vi kan uppnå de Globala målen för hållbar utveckling, till exempel Mål 12 – Hållbar konsumtion och produktion.

De svenska miljösociologerna Rolf Lidskog och Göran Sundqvist (2011) anser att en persons värderingar, attityd och beteende grundas i personliga beslut som i sin tur påverkas av samhällskulturen. Detta betyder att ett miljövänligt beteende är förankrat i det känslomässiga förhållandet mellan miljö och kulturellt sammanhang.

Enligt de holländska forskarna Van den Noortgaete och De Tavernier (2014) ligger problemet i att människor tenderar att ha fel när de förutspår sitt moraliska beteende på grund av en oförmåga att nå de känslomässiga komponenterna av hjärnan. De understryker klyftan mellan värderingar och handling; även

called “value-action gap”; Even though the majority of us have high consciousness and concerns regarding the environment and the climate, these attitudes rarely reflects in our behaviour.

So how can we enable environmental values to lead to environmentally friendly behaviour? This question was asked in my research when I studied Environmental Science. My conclusion was that people in Nordic eco-villages showed a higher degree of environmentally friendly behaviour than in urban towns.

om de flesta av oss är medvetna och bryr sig om miljön och klimatet så speglas våra attityder sällan i vårt beteende.

Hur kan vi då stödja miljövänliga värderingar för att skapa miljövänliga beteenden? Det var frågan jag ställde mig när jag studerade miljövetenskap. Slutsatsen jag kom fram till var att människor i nordiska ekobyar uppvisade ett miljövänligt beteende i större utsträckning än de som bodde i storstäder. Ekobyar har en kultur som grundar sig i en ekologisk världsåskådning snarare

"The best way to treat our climate anxiety is to surround ourselves by people driven to make a change."

Eco-villages have a culture grounded in an eco-centric worldview, rather than the anthropocentric (human-centered) which is dominant in most parts of the world. People in eco-villages were eager to highlight the low sense of climate anxiety, an observation I also made in individuals engaged in the climate and environmental movement. The best way to treat our climate anxiety is to surround ourselves by people driven to make a change.

The great author and philosopher Aldo Leopold presented a theory of environmental action in 1949. Since it is commonly known that people tend to act on behalf of others they have emotional bonds with, Leopold claimed that if people have emotional bonds with their physical environment they will then act on behalf of that environment. This theory draws upon an extended moral and ethical boundary.

Since the transformation of urban towns into eco-villages and the extension of our core values would take a great amount of time and resources, nudging offers us a quick-fix of the human behaviour. Unlike sludging – the method used to push consumers to consume more or to make decisions that feel good at the moment but which ultimately make the planet worse off – nudging can be seen as an influence rather than manipulation of the behaviour. As a climate- and environmental strategist, I have led a project where seven municipalities in Skåne aimed to become fossil free. When working with the transformation of the car fleet we actively used the method of nudging, one municipal chose for example to buy electric bikes for their employees. This highlights the intention to help the individual to do the right thing, rather than compromise or prevent the free will.

And in times where we are over washed by instructions and demands, a simple nudge can do a great amount for our sustainable future.

än den antropocentriska (människo-centrerade) syn som är dominant i de flesta delarna av världen. Människor som bor i ekobyar var måna om att poängtera sin obefintliga klimatångest, något som jag även observerade hos individer som engagerar sig i klimat- och miljörörelsen. Det bästa sättet att behandla vår klimatångest är att omge oss med människor som vill bidra till förändring.

Den store författaren och filosofen Aldo Leopold presenterade sin teori om miljövänligt handlande år 1949. Det är allmänt känt att människor tenderar att agera på ett sätt som gynnar de personer som de har ett känslomässigt band till, och Leopold hävdade därför att om människor hade ett känslomässigt band till sin fysiska omgivning skulle de även agera på ett sätt som gynnade den miljön. Hans teori utgår från en utökad moralisk och etisk gränsdragning.

Eftersom omvandlingen från storstad till ekoby och utökningen av våra grundläggande värderingar skulle kräva mycket tid och resurser är nudging något av en ”quick fix” för det mänskliga beteendet. Till skillnad från "sludging" – det vill säga den metod som används för att få konsumenter att konsumera mer och ta beslut som känns bra i stunden men som i slutändan har en negativ inverkan på planeten – kan nudging ses som ett sätt att påverka snarare än att manipulera beteenden. I mitt arbete som klimat- och miljöstrateg har jag lett ett projekt med målet att göra sju skånska kommuner helt fossilfria. I vårt arbete med att omvandla bilflottan har vi aktivt använt oss av nudging-metoden. En kommun valde till exempel att köpa elcyklar till sina medarbetare. Detta understryker avsikten att hjälpa individer att göra rätt val, snarare än att kompromissa med eller hindra dem att utöva sin fria vilja.

Och i dessa tider, när vi överväldigas av instruktioner och krav, kan en liten knuff göra stor skillnad för vår hållbara framtid.

Through nudging, the human behaviour can be affected by making it easy to make certain choices.

11

TRANSPARENCY

Inspire decision-makers and producers to provide transparent ethical and environmental information on products and services.

Left image:
Andréason & Leibel

11 PHENOMENON

WHAT'S COOKING?

Today's food production is one of the largest contributing factors of the climate change and the decreased biodiversity. What we eat and how it is produced has changed and continues to have an impact on our planet. So what do we eat to change the spiral from negative to positive? And how do new needs and values impact on the climate, the ecosystems, financial structures and our health?

GEOTHERMAL GREENHOUSE

COPYRIGHT: VICTOR MASCHEK, SHUTTERSTOCK

Tomato farm, Iceland.

RAPESEED

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Today's consumers make demands not only for their food to be sustainable, but also for transparency and traceability in the food chain.

11 WHAT'S COOKING?

Since 2000, the production of organic foods has increased worldwide. In 2017, Denmark became the first country in the world to pass the ten per cent line in terms of the proportion of organic foods out of the total food sales. In Sweden, sales decreased by 0.3 percentage points in 2019. One slightly contradictory explanation could be the consumers' dedication to the climate and the environment. When the climate becomes a large factor in the food we consume, it becomes difficult to choose right or wrong?

Food in relation to carbon footprint is a widely discussed subject. Some studies indicate that organic farming is not smarter for the environment, as it requires larger areas of land and contributes to greater nitrogen emissions. At the same time, new studies argue that organic farming is better for the climate, especially in the long term. New methods and analyses indicate shortcomings in today's LCA methodology (measuring methods to determine the environmental consequences of agriculture and food). Organically farmed foods contribute to greater biodiversity, improved animal welfare, living soil and fewer toxins in the environment. For the individual, the choice of organic foods could entail a reduced risk of pesticides or antibiotics in the food.

Plant-based diets reduce people's carbon footprints, and the demand is growing. As it does, the demand for alternative proteins also increases. The lack of transparency in plant-based products can be misleading; an avocado from the other side of the world or a packet of tofu is not automatically more climate smart simply by not being meat. Most likely, they have been produced by a farm using fossil energy in the form of diesel and nitrogen fertiliser to make pasture and feed for the cow. The emissions occur in the farming as well as during transport, storage and waste management.

When it comes to food production, the climate issue relates primarily to reducing emissions by decreased use of fossil natural gas, oil and coal. 80–90 per cent of the emissions occur during farming, so transport generally represents a smaller part of the climate impact. Shorter and greener transports are still important, as the emissions still have a significant environmental and climate impact. The production systems should also be evaluated based on other important sustainability goals, such as high levels of biodiversity and animal welfare.

Today's consumers make demands not only for their food to be sustainable, but also for transparency and traceability in the food chain. Perhaps this is one reason for the decreasing meat consumption?

It is important to look at the full picture when it comes to how the things we eat affect our planet. Clear certifications regarding the production, origin and contents of a product creates trust, and greater transparency within the food production increases the consumers' possibilities of making sustainable food choices based on knowledge and understanding.

KAROLINE NOLSØ AAEN & TYCHO HOLCOMB

Karoline Nolsø Aaen and **Tycho Holcomb** from Denmark are both permaculture educators, farmers and authors. Karoline has a master's degree in biology and runs the company Permakulturhaven and Tycho runs the company Myrrhis.

PERSPECTIVE

The cultural norm of segregating 'production land' and 'nature' must be adjusted to make space for landscapes which are both productive and acting as ecosystems, sequestering carbon in soils and living biomass.

There is an increasing number of mouths to feed. Our land needs to be productive while also providing important natural ecosystem services, such as clean water and air, stable climate, pest and disease regulation, pollination and more. The cultural norm of segregating 'production land' and 'nature' must be adjusted to make space for landscapes which are both productive and acting as ecosystems, sequestering carbon in soils and living biomass. In order to create crucial transparency, direct links between consumers and farmers can be formed by growing food locally.

In practice this means that we have to copy how natural ecosystems function, using utilitarian species as the example. To do so is simple. Historical and natural landscapes come in three main types: grassland/meadow, savanna/mosaic, and woodland. Due to our humid climate and soil types, trees naturally want to grow; that means we need to integrate trees into our productive landscapes. Trees produce fruit or nuts, fodder for animals or biomass. Integration of different elements is key in leaving a positive carbon footprint, and all ecosystems have animals. Integrating animals into a system with trees will mimic the savanna ecosystem, which is one of earth's most productive systems.

Having trees in a system substantially increases carbon sequestration, nutrient cycling and creates habitats for insects, birds and other animals. Productivity can be increased by integrating trees, simply because photosynthesis, nutrients and water are utilised more efficiently. Trees can also be integrated into low growing crops such as vegetables or cereals, spaced according to the access and light needs of the low crop. With a changing climate, trees offer something that annual crops cannot – resilience. A year of bad weather may destroy tree crops, but they still have their woody infrastructure and can build onto it every year. Resilient crops mean economically resilient farmers.

Der er et stigende antal munde at mætte. Vores jord skal være produktiv og samtidig levere vigtige naturøkosystemtjenester, såsom rent vand og luft, stabilt klima, regulering af skadedyr og sygdomme, bestøvning og meget mere. Den kulturelle norm med at adskille "produktionsjord" og "natur" skal tilpasses, så der skabes plads til landskaber, der både er produktive og fungerer som økosystemer, der binder kulstof i jord og levende biomasse. For at få en afgørende gennemsigtighed kan der skabes direkte forbindelser mellem forbrugere og landmænd ved at dyrke fødevarerne lokalt.

I praksis betyder det, at vi skal kopiere den måde, som de naturlige økosystemer fungerer på ved hjælp af nyttearter. Det kan gøres ganske enkelt. I historiske og naturlige landskaber findes der tre hovedtyper: græs- og engarealer, savanner/mosaiklandskaber og skovområder. På grund af vores fugtige klima og jordbundstyper er træer det, der naturligt vil vokse frem, hvilket betyder, at træer integreres i vores produktive landskaber. Træer producerer frugt eller nødder, foder til dyr eller biomasse. Integration af forskellige elementer er nøglen til at efterlade et positivt CO2-fodaftryk, og alle økosystemer har dyr. Når dyr integreres i et system med træer, efterlignes savannens økosystem, som er en af de mest produktive systemer i verden.

Når man har træer i et system, øges kulstofbindingen betydeligt, og næringsstofferne gennemgår cyklusser og skaber hjemsteder for insekter, fugle og andre dyr. Produktiviteten kan øges ved at integrere træer, simpelthen fordi fotosyntese, næringsstoffer og vand udnyttes mere effektivt. Træer kan også integreres i afgrøder med lav vækst, såsom grøntsager eller korn, hvor de anbringes med en afstand, der tager hensyn til den lave afgrødes behov for adgang og lys. I et skiftende klima har træer noget, som de årlige afgrøder ikke har – modstandsdygtighed. Et år med dårligt vejr kan ødelægge træafgrøderne, men de har stadig deres træagtige infrastruktur og kan bygge videre på den hvert år. Robuste afgrøder er lig med økonomisk robuste landmænd.

As every gardener knows, nature wants to grow grass and trees. This can also be seen in our ecosystems in the Nordic countries. Annual plants are rare in nature, whereas perennial grasses, herbs, shrubs, and trees are everywhere. Growing perennial plants that do not need to be propagated every year, and which do not require highly disturbed soil to grow in, is key. In other words, start eating what wants to grow locally! Local and organic production supports local farming communities and economies, while at the same time upholding the health of farmers as well as our shared air, water and soil resources. Transparency is a must for consumers to understand the production, processing and distribution of different foods and their

Som alle haveejere ved, vil naturen gerne dyrke græs og træer. Det kan også ses i vores økosystemer i de nordiske lande. Etårige planter er sjældne i naturen, mens flerårige græsser, urter, buske og træer findes overalt. Det er afgørende at dyrke flerårige planter, der ikke skal genplantes hvert år, og som ikke behøver kultiveret jord for at vokse. Det betyder, at du skal begynde at spise det, der gerne vil vokse lokalt! Lokal og økologisk produktion støtter lokale landbrugssamfund og økonomier, samtidig med at landmændenes sundhed og vores fælles luft-, vand- og jordressourcer opretholdes. Gennemsigtighed er en forudsætning for, at forbrugerne kan forstå produktionen, forarbejdningen og distributionen af forskellige fødevarer og deres indvirkning på miljøet og økosystemet. Spis flere

FRUIT ORCHARD & VEGETABLES

COPYRIGHT: KAROLINE NOLSØ AAEN

Agroforestry practices like alleycropping increases the amount of food production per area. At the same time it increases local biodiversity.

impact on the environment and ecosystem. Eat more tree crops like nuts and fruits, and a larger variety of both annual and perennial vegetables. When it comes to animal products, we need to eat only the amount our land beneficially supports, rather than importing feed to mass produce animal protein for human consumption. Grow food for humans, rather than animals. Whether a consumer chooses a plant-based diet or not is an individual choice. But the amount of available animal products must never exceed what the land can support. Animals should primarily be consuming perennial plants such as trees and grasses instead of cereals. We can still have cereals, annual vegetables, and other crops in reduced areas, but these must be grown in integrated systems which support soil building, biodiversity, and other ecosystem services.

By looking at the true carrying capacity of our land, and by eating what can be provided in regenerative, integrated production systems, farming can have a positive impact on both the environment and human health.

træafgrøder som nødder og frugter og en større variation af både etårige og flerårige grøntsager. Når det drejer sig om animalske produkter, er vi nødt til kun at spise den mængde, som vores jord kan understøtte, i stedet for at importere foder til masseproduktion af animalsk protein til menneskeføde. Dyrk fødevarer til mennesker, ikke til dyr. Det er op til den enkelte forbruger at vælge, om man ønsker en plantebaseret kost eller ej. Mængden af tilgængelige animalske produkter må dog aldrig være større end den mængde, som jorden understøtter. Dyrene bør primært spise flerårige planter såsom træer og græs i stedet for korn. Vi kan stadig have korn, etårige grøntsager og andre afgrøder på reducerede områder, men dyrket i integrerede systemer, der understøtter jordopbygning og skaber biodiversitet og andre økosystemtjenester.

Ved at se på vores jorders reelle bæreevne og ved at spise det, der kan leveres i regenerative, integrerede produktionssystemer, kan landbruget have en positiv indvirkning på både miljøet og menneskers sundhed.

CIDER TREES & DAIRY COWS

COPYRIGHT: KAROLINE NOLSØ AAEN

Integrating trees benefits the local ecology, economy and resilience of the farmer and the welfare of the animals.

Pasi Vainikka is the CEO and co-founder of the Finnish food-tech company Solar Foods. Solar Foods aims to redefine the basics of food production and to create a new era of food diversity.

PASI VAINIKKA

PERSPECTIVE

Solar Foods has a role to play in the disconnection of food production from agricultural limitations, such as land availability and water use, as well as the negative land-use effects of expanding agricultural needs.

Right now, at this very moment, tens of billions of dollars in investor funds are seeking a reasonable use in creating a whole new industrial sector in the global economy: the modern food technology industry.

We are living in a time of food technology – and the agricultural sector as a whole – that corresponds to the information technology boom of the late 80s. As we speak, crucial cards are being dealt to those who will lead an emerging new industry, and with it, a new era of humankind.

What does this all mean? It means that we will continue to eat meat but the concept of killing animals can be eliminated. It means that eggs will be eaten but no poultry is required to produce them. It means that ice cream can be enjoyed as before but without the utilisation of cows to make it. The technology already exists to do all this.

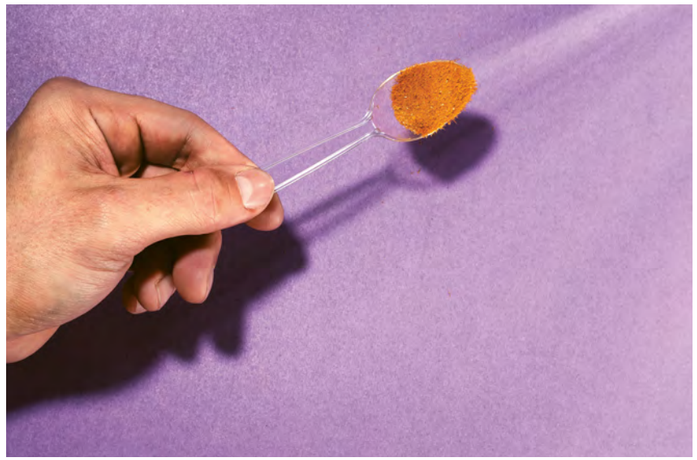
Today, according to the Food and Agriculture Organization of the United Nations (FAO), nearly half of the worldwide harvest is needed to feed the livestock population which consists of about 1.4 billion bovines, 1 billion pigs, 20 billion poultry and 1.9 billion ovine animals. Think about it. This is an environmental and intellectual problem beyond imagination. That is why we are working hard at Solar Foods to solve it. Solar Foods has a role to play in the disconnection of food production from agricultural limitations, such as land availability and water use, as well as the negative land-use effects of expanding agricultural needs. We have created a revolutionary way to produce natural protein by using renewable electricity and air. We bring to the market an entirely new kind of food that is both natural and free from the burdens of agriculture and aquaculture.

Juuri nyt kymmenien miljardien dollarien sijoitusrahastot etsivät järkeviä kohteita luodakseen täysin uuden teollisuussektorin globaalissa taloudessa – modernin elintarviketeollisuuden.

Elintarviketeknologiassa ja koko maataloussektorilla tämä aika vastaa 1980-luvun loppupuolen tietotekniikan buumia. Tällä hetkellä parhaat kortit jaetaan niille, jotka johtavat uutta nousevaa teollisuutta ja samalla ihmiskunnan uutta aikakautta. Mitä tämä kaikki tarkoittaa? Se tarkoittaa sitä, että lihaa syödään edelleen, mutta eläinten tappaminen voidaan hylätä käsitteenä. Se tarkoittaa sitä, että munia syödään jatkossakin, mutta niiden tuottamiseen ei tarvita siipikarjaa. Se tarkoittaa sitä, että jäätelöä nautitaan kuten ennenkin, mutta ilman lehmien käyttöä sen tuottamiseksi. Tarvittavaa teknologiaa on jo olemassa tämän kaiken toteuttamiseksi.

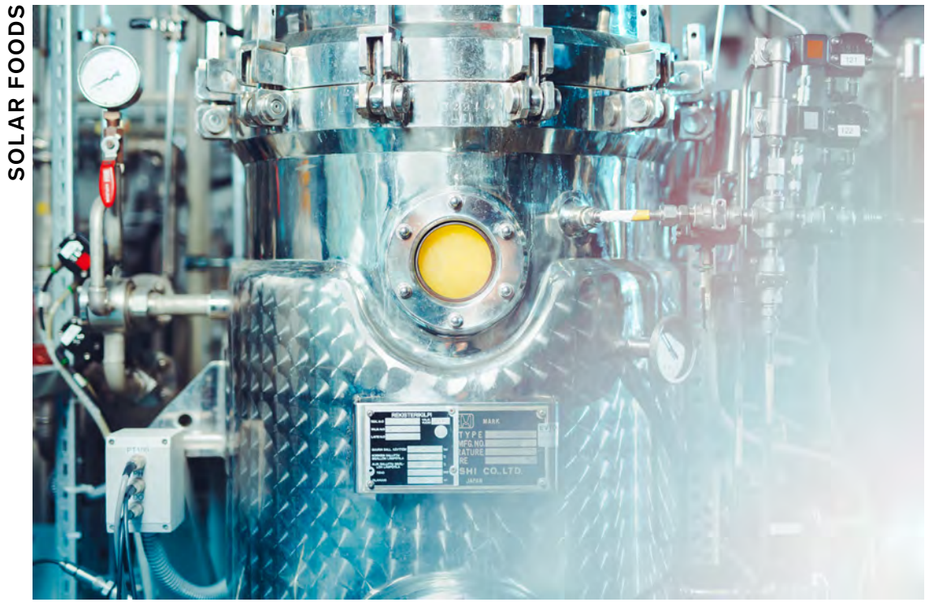
FAO:n (Food and Agriculture Organization of the United Nations) mukaan nykyään lähes puolet maailman sadosta käytetään karjan ruokintaan, karjan, johon kuuluu noin 1,4 miljardia nautaa, 1 miljardia sikaa, 20 miljardia siipikarjalintua ja 1,9 miljardia lammasta. Ajatelkaa sitä. Tämä on uskomaton ympäristö- ja älyllinen ongelma. Siksi työskentelemme uutterasti Solar Foodsilla ratkaistaksemme sen. Solar Foodsilla on oma roolinsa ruoantuotannon irrottamisessa maatalouden rajoituksista, kuten käytettävissä olevan maan ja veden käytön sekä maatalouden kasvavien tarpeiden negatiivisten maankäyttövaikutusten aiheuttamista ongelmista. Olemme luoneet mullistavan tavan tuottaa luonnollista proteiinia käyttämällä uusiutuvaa sähköä ja ilmaa. Tuomme markkinoille täysin uudenlaista ruokaa, joka on sekä luonnollista että riippumatonta maatalouden ja vesiviljelyn taakasta.

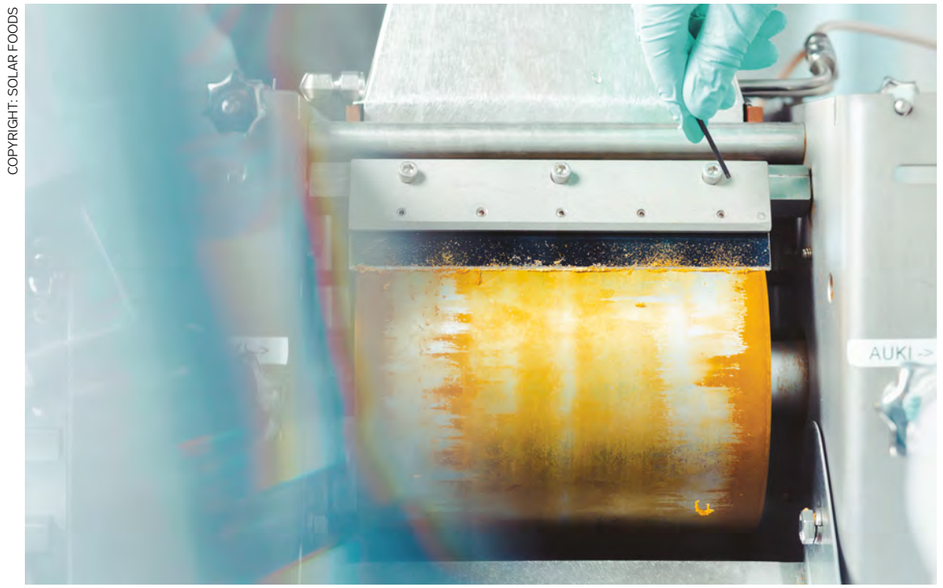
Mutta vaikuttaako covid-19 kaikkeen tähän? Onko musta joutsen laukaisemassa modernin elintarviketeknologian läpimurron?



Solein is a single-cell protein born from a bioprocess of electricity and air.

"Food has more values than simply providing nutrition and being environmentally sound. It is a framework for the basic human need for interaction."





The fermentation process of Solein is similar to the production of yeast, resulting in a pure and sustainable protein.

But does COVID-19 have any impact on all of this? Is it the black swan triggering the breakthrough of modern food technology? Yes, it will make the transition to a more transparent, socially and environmentally sound food system faster. This will happen because of two primary needs that all human beings have. The first is the need for social interaction.

Throughout human history, prisons have turned individuals passive and depressed and finally almost socially inactive. Once we all get released from our voluntary – and at times involuntary – quarantine, we will appreciate social interaction far more than we have for a long time. And perhaps more than ever, we will also appreciate food as a part of social interaction. Food has more values than simply providing nutrition and being environmentally sound. It is a framework for the basic human need for interaction.

Secondly, people will value the transparency and narrative around food arriving on their plate a lot more than they used to. Some would say that means locally sourced food, but it may only be a side note in the big picture – in addition to being physically impossible to realise. Only a small fraction of the global population can be fed by local produce. After COVID-19, people will not settle with saying that the problems caused by their choices are a drop in the ocean when it comes to the big picture and doesn't matter, but rather they will want to be part of the solution.

This shift in attitude has a tectonic impact on how people will act in the future regarding the safety, health impact, and security of an environmentally sound food supply.

Kyllä, se nopeuttaa siirtymistä läpinäkyvämpään sekä sosiaalisesti ja ympäristöllisesti kestävämpään ruokajärjestelmään.

Tämä johtuu kahdesta ensisijaisesta tarpeesta, jotka kaikilla ihmisillä on: Yksi on sosiaalisen vuorovaikutuksen tarve. Ihmiskunnan historiassa vankilat ovat tehneet ihmisistä passiivisia, masentuneita ja lopulta sosiaalisesti lähes apaattisia. Kun kerran pääsemme kaikki vapaaehtoisesta ja jossain tapauksissa pakollisesta karanteenista, arvostamme sosiaalista vuorovaikutusta paljon enemmän kuin pitkiin aikoihin. Ja ehkä enemmän kuin koskaan, arvostamme myös ruokaa osana sosiaalista vuorovaikutusta. Ruoalla on muitakin kuin ravinnollisia ja ympäristöystävällisiä arvoja. Se toimii kehyksenä ihmisten perustavanlaatuiselle vuorovaikutuksen tarpeelle.

Lisäksi ihmiset arvostavat lautaselleen tulevan ruoan läpinäkyvyyttä ja tarinaa paljon enemmän kuin ennen. Jotkut saattavat ajatella sen tarkoittavan ennen kaikkea yhä suurempaa paikallisuutta, mutta se voi olla vain yksi osa suurempaa kokonaisuutta. Lisäksi täysi paikallisuus on tietyissä paikoissa fyysisesti mahdotonta. Vain pieni osa maailman väestöstä voidaan ruokkia paikallisesti. Covid-19:n jälkeen ihmiset eivät tyydy vain toteamaan, että heidän valinnoistaan johtuva ongelma on vain yksi seitsemästä miljardista, vaan he haluavat mieluummin olla osa ratkaisua.

Tällä asenteellisella muutoksella on tektoninen vaikutus siihen, miten ihmiset toimivat tulevaisuudessa suhteessa turvallisuuteen, terveysvaikutuksiin ja ympäristön kannalta terveellisen ruoan saatavuuteen.

12

FUTURE GENERATIONS

Invest in future generations by promoting sustainable development as a subject in school.

Left image:
Andréason & Leibel

12 PHENOMENON

ACT NOW!

PROTEST MARCH

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Protest march through Stockholm 24 May, 2019.

The future is impossible to predict, but possible to dream of. It depends on our history and the world around us, the choices we actively make and the whims of chance. But the active choices are what we can influence in the here and now. Taking action is to make an impact, to create change. Together we are responsible for handing over a future worth dreaming of. A place and a planet better than that of the past. Old and young – we are all equal in the face of time, and together we can stand up for future generations.

12 ACT NOW!

LAUSANNE JANUARY 17, 2020

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What Greta Thunberg started as a one woman climate protest has turned into a global movement. It inspires as well as provokes.

GRETA THUNBERG

MY MESSAGE IS THAT WE'LL BE WATCHING YOU.

THIS IS ALL WRONG. I SHOULDN'T BE UP HERE.
I SHOULD BE BACK IN SCHOOL ON THE OTHER SIDE OF THE OCEAN. YET YOU ALL COME TO US YOUNG PEOPLE FOR HOPE. HOW DARE YOU!

YOU HAVE STOLEN MY DREAMS AND MY CHILDHOOD WITH YOUR EMPTY WORDS. AND YET I'M ONE OF THE LUCKY ONES. PEOPLE ARE SUFFERING. PEOPLE ARE DYING. ENTIRE ECOSYSTEMS ARE COLLAPSING. WE ARE IN THE BEGINNING OF A MASS EXTINCTION, AND ALL YOU CAN TALK ABOUT IS MONEY AND FAIRY TALES OF ETERNAL ECONOMIC GROWTH. HOW DARE YOU!

FOR MORE THAN 30 YEARS, THE SCIENCE HAS BEEN CRYSTAL CLEAR. HOW DARE YOU CONTINUE TO LOOK AWAY AND COME HERE SAYING THAT YOU'RE DOING ENOUGH, WHEN THE POLITICS AND SOLUTIONS NEEDED ARE STILL NOWHERE IN SIGHT.

YOU SAY YOU HEAR US AND THAT YOU UNDERSTAND THE URGENCY. BUT NO MATTER HOW SAD AND ANGRY I AM, I DO NOT WANT TO BELIEVE THAT. BECAUSE IF YOU REALLY UNDERSTOOD THE SITUATION AND STILL KEPT ON FAILING TO ACT, THEN YOU WOULD BE EVIL. AND THAT I REFUSE TO BELIEVE.

THE POPULAR IDEA OF CUTTING OUR EMISSIONS IN HALF IN 10 YEARS ONLY GIVES US A 50% CHANCE OF STAYING BELOW 1.5 DEGREES [CELSIUS], AND THE RISK OF SETTING OFF IRREVERSIBLE CHAIN REACTIONS BEYOND HUMAN CONTROL.

FIFTY PERCENT MAY BE ACCEPTABLE TO YOU. BUT THOSE NUMBERS DO NOT INCLUDE TIPPING POINTS, MOST FEEDBACK LOOPS, ADDITIONAL WARMING HIDDEN BY TOXIC AIR POLLUTION OR THE ASPECTS OF EQUITY AND CLIMATE JUSTICE. THEY ALSO RELY ON MY GENERATION SUCKING HUNDREDS OF BILLIONS OF TONS OF YOUR CO2 OUT OF THE AIR WITH TECHNOLOGIES THAT BARELY EXIST. SO A 50 PERCENT RISK IS SIMPLY NOT ACCEPTABLE TO US — WE WHO HAVE TO LIVE WITH THE CONSEQUENCES.

TO HAVE A 67 PERCENT CHANCE OF STAYING BELOW A 1.5 DEGREES GLOBAL TEMPERATURE RISE – THE BEST ODDS GIVEN BY THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE – THE WORLD HAD 420 GIGATONS OF CO2 LEFT TO EMIT BACK ON JAN. 1ST, 2018.
TODAY THAT FIGURE IS ALREADY DOWN TO LESS THAN 350 GIGATONS.

HOW DARE YOU PRETEND THAT THIS CAN BE SOLVED WITH JUST 'BUSINESS AS USUAL' AND SOME TECHNICAL SOLUTIONS? WITH TODAY'S EMISSIONS LEVELS, THAT REMAINING CO2 BUDGET WILL BE ENTIRELY GONE WITHIN LESS THAN 8 1/2 YEARS.

THERE WILL NOT BE ANY SOLUTIONS OR PLANS PRESENTED IN LINE WITH THESE FIGURES HERE TODAY, BECAUSE THESE NUMBERS ARE TOO UNCOMFORTABLE. AND YOU ARE STILL NOT MATURE ENOUGH TO TELL IT LIKE IT IS.

YOU ARE FAILING US. BUT THE YOUNG PEOPLE ARE STARTING TO UNDERSTAND YOUR BETRAYAL. THE EYES OF ALL FUTURE GENERATIONS ARE UPON YOU. AND IF YOU CHOOSE TO FAIL US, I SAY: WE WILL NEVER FORGIVE YOU.

WE WILL NOT LET YOU GET AWAY WITH THIS. RIGHT HERE, RIGHT NOW IS WHERE WE DRAW THE LINE.
THE WORLD IS WAKING UP. AND CHANGE IS COMING, WHETHER YOU LIKE IT OR NOT.

THANK YOU.

Greta Thunberg, U.N. Climate Action Summit, Sept 23, 2019, Credit: Bokförlaget Polaris

THERESE HUGSTMYR WOIE

Therese Hugstmyr Woie is a committed Norweigan environmentalist and Head of Nature and Youth, with the aim to make it impossible for both governments and local politicians to get away with half-hearted environmental measures.

PERSPECTIVE

As long as we have lived, our world leaders have presented plans to reduce emissions, but accepted the opposite.

Our generation will never save the planet by protesting in the streets alone. The politicians have way too much practise in delaying necessary action and ignoring scientific advice.

This does not mean I have lost hope that we will succeed in the fight for climate action, but rather that we must avoid the pitfall of underestimating the opposition. We must also dare to demand a bigger effort from parents and other adults that cheer and support our protest.

The impact of the huge climate protests executed by young people in the past few years must not be taken for granted. In the news columns, it is almost as common to find adults requesting a bigger climate rebellion amongst young people, as it is to find those who criticise young climate activists for being naive and ignorant of the complexity of the climate issue. You cannot but admire the young climate movement for still having some motivation left. The first World Climate Conference was held 1979, years before today's young climate activists were born. At the second conference in 1990, British Prime Minister Margaret Thatcher said “It may be cheaper or more cost-effective to take action now than to wait and find we have to pay much more later."

We have had to listen to a whole lot of words but seen little action since then. As long as we have lived, our world leaders have presented plans to reduce emissions, but accepted the opposite. As climate action has been constantly delayed, the necessary measures have grown bigger, more urgent, more expensive, more invasive in people's lives, more harmful to nature and more unpopular. And we would have an even more difficult

Vår generasjon vil aldri klare å redde planeten ved bare å protestere i gatene. Politikerne har altfor mye øvelse i å utsette nødvendige tiltak og se bort fra vitenskapelige råd.

Det betyr ikke at jeg har mistet håpet om at vi kommer til å lykkes i kampen for klimatiltak, men at vi må unngå å undervurdere motstanden. Vi må også våge å kreve større innsats fra foreldre og andre voksne som støtter protesten vår.

Innvirkningen av de store klimaprotestene fra ungdom de siste årene må ikke tas for gitt. I nyhetene er det nesten like vanlig å se voksne som ber ungdommer gjøre større klimaopprør, som det er å se de som kritiserer unge klimaaktivister for å være naive og uvitende om hvor komplekse klimaproblemene er.

Du kan ikke annet enn å beundre at det fortsatt er en viss motivasjon igjen i de unges klimabevegelse. Verdens første klimakonferanse i FN-hovedkvarteret ble holdt i 1979, mange år før dagens unge klimabevegelse ble født. På den neste konferansen i 1990, sa daværende statsminister i Storbritannia Margaret Thatcher: "Det kan være billigere eller mer kostnadseffektivt å handle nå enn å vente og risikere at vi må betale en mye høyere pris senere".

Vi har hørt mange ord, men sett lite handling siden den gang. Så lenge vi har levd har verdenslederne lagt frem planer for å redusere klimagassutslippene, men de har år etter år godtatt det motsatte. Siden klimatiltak hele tiden forsinkes, har de nødvendige tiltakene blitt større, viktigere, dyrere og mer inngripende i menneskers liv, mer skadelige for naturen og mer upopulære. Og vi hadde hatt en enda vanskeligere oppgave foran oss hvis det ikke hadde vært for alle de unge klimaaktivistene opp gjennom tiårene. Gjennom de

SCHOOL STRIKE 2018

On strike for the climate.

task in front of us if it had not been for all the young climate activists through the decades. Through the many victories - and even more losses - we have worked insistently to strengthen the movement and to reach out to more people.

2019 Nature and Youth organised the biggest climate protests ever in Norway with more young people than we ever had dared to dream of. The crowd shouting for Norwegian oil drilling to stop was completely covering the square in front of the parliament, and we were convinced that the politicians would finally be unable to ignore the need for urgent climate action. But they were not.

Building a numerous movement and organising big climate protests is crucial, a wakeup call for people to join our lifetime's most important fight. Sadly, it is not enough to make the politicians wake up. The politicians will still answer our protests with some nice words about climate action in some equally nice speeches, and then go back to protecting other interests.

Our fight for climate action cannot stop after posting a picture of our cardboard sign. Although it is a great feeling of community when young people are marching together, singing and shouting slogans, the need for climate action is now so urgent that all hands are needed on deck in the tireless work of influencing all the political decisions that have any climate impact.

We really do not need more parents taking pictures of themselves with homemade signs, saying that they support the climate strikes. We need local action groups to be formed where governments are planning expansions of airports or signing new permits for oil drilling. We need consumers who demand local greens, fish and grass-fed meat on their local shop shelves. We need unions who demand retraining of workers for the green industries of the future. We need the adults to vote for politicians who understand that future generations have the right to a liveable environment.

mange seirene – og enda flere tapene – har vi jobbet iherdig for å styrke bevegelsen og nå ut til flere.

2019 organiserte Natur og ungdom de største klimaprotestene noen gang i Norge med flere unge enn vi hadde tort å drømme om. Folkemengden som ropte at norsk oljeboring skulle stoppe, fylte plassen foran Stortinget, og vi var overbevist om at nå ville ikke politikerne lenger kunne ignorere behovet for akutte klimatiltak. Men det kunne de.

"Although it is a great feeling of community when young people are marching together, singing and shouting slogans, the need for climate action is now so urgent that all hands are needed on deck in the tireless work of influencing all the political decisions that have any climate impact."

Å bygge opp mange ulike bevegelser og organisere store klimaprotester er avgjørende – det er en vekker for at mennesker skal bli med i den viktigste kampen i vår levetid. Men det er dessverre ikke nok til at politikerne våkner. Politikerne vil fortsatt svare på protestene våre med noen fine ord om klimatiltak i noen like fine taler, for deretter å fortsette å beskytte andre interesser.

Vår kamp for klimatiltak kan ikke stoppe med å ha publisert et bilde av pappskiltene våre. Selv om det er en god følelse av fellesskap når ungdom marsjerer sammen, synger og roper slagord, er behovet for klimatiltak nå så presserende at alle må hjelpe til i det utrettelige arbeidet med å påvirke alle politiske beslutninger som har innvirkning på klimaet.

Vi trenger ikke flere foreldre som tar bilder av seg selv med hjemmelagede skilt som sier at de støtter klimastreikene. Vi trenger at det blir opprettet lokale handlingsgrupper der myndighetene planlegger utvidelse av flyplasser eller gir nye tillatelser for oljeboring. Vi trenger forbrukere som krever lokale grønnsaker, fisk og kjøtt av gressforede dyr i den lokale butikken. Vi trenger fagforeninger som krever at arbeiderne får opplæring i fremtidens grønne industri. Vi trenger voksne som stemmer på politikere som forstår at fremtidige generasjoner har rett til et levedyktig miljø.

Jonas Gren is a Swedish poet, author and environmentalist living in Stockholm. Jonas is included in the editorial for the book publisher 10TAL and Klimatmagasinet Effekt and is often called one of Sweden's clearest representatives for eco-poetry.

PERSPECTIVE

Ask not what you live for

Ask what you live of

Forgetfulness

The nitrogen cycle The carbon cycle

The muscle memory The neurons The vibrations

The chloroplast's conversion of light

The cherry of air on top of the sundae of earth

The incense of a forest fire

The medallion of skin

Ask not what your sorrow is

Water it into new shapes

Fråga inte vad du lever för

Fråga vad du lever av

Glömskan

Kvävecykeln Kolcykeln

Muskelminnet Neuronerna Vibrationerna

Kloroplastens spjälkning av ljus

Luftens grädde över jordtårtan

Rökelsen av skogsbrand

Medaljongen av hud

Fråga inte vad sorgen är

Vattna den till nya former

PARTNERS

ArkDes

ArkDes

ArkDes uppdrag är att öka kunskapen och driva debatt hur arkitektur och design påverkar våra liv som medborgare. Sverige befinner sig mitt i en byggboom som kommer att påverka våra städer lång tid framöver. ArkDes diskuterar och debatterar denna förändring genom seminarier, utställningar, kampanjer och forskning kring svensk och internationell arkitektur och design.

Arkdes.se

ArkDes

ArkDes's mission is to increase knowledge and promote debate on how architecture and design affect our lives as citizens. Sweden is in the midst of a construction boom which will affect our cities for a long time to come. ArkDes discusses and debates this change through seminars, exhibitions, campaigns and research on Swedish and international architecture and design.

Arkdes.se

Form Design Center

Form/Design Center

Form/Design Center i Malmö är den främsta plattformen för arkitektur, design och konsthantverk i södra Sverige. Som en öppen och inkluderande mötesplats riktar sig verksamheten till en bred allmänhet i alla åldrar och utgör samtidigt ett centralt nav för branschaktörer. Genom utställningar, programverksamhet, utvecklingsprojekt och tvärsektoriella samarbeten förmedlar och stärker verksamheten sina ämnesområden regionalt, nationellt och internationellt.

Formdesigncenter.com

Form/Design Center

Form/Design Center in Malmö is southern Sweden's main platform for architecture, design and crafts. As an open and inclusive meeting place, the operation targets the broad public of all ages while also providing a central hub for industry stakeholders. Through exhibitions, programme activities, development projects and intra-sector collaborations, the platform communicates and supports its main subject areas regionally, nationally and internationally.

Formdesigncenter.com

DAC DANISH ARCHITECTURE CENTER

Dansk Arkitektur Center, DAC

DAC er Danmarks nationale arkitekturcenter, der med et globalt perspektiv arbejder med at fremme udviklingen af dansk arkitektur, byggeri og byudvikling i en økonomisk, social og miljømæssig bæredygtig retning.

Dac.dk

Danish Architecture Center, DAC

DAC is Denmark's National Architecture Center, which, with a global perspective, works to promote the development of Danish architecture, construction and urban development in an economic, social and environmentally sustainable direction.

Dac.dk

Design og Arkitektur Norge, DogA

DOGA er en pådriver for bærekraftig verdiskaping gjennom design og arkitektur. Vi fasiliterer samarbeid mellom utøvere og virksomheter, og arbeider for å styrke design og arkitekturs rolle i utformingen av morgendagens Norge.

Doga.no

Design and Architecture Norway, DogA

DOGA is a driving force behind sustainable value creation through design and architecture. We facilitate collaboration between creative talents and businesses and work to strengthen the role of design and architecture in shaping the Norway of tomorrow.

Doga.no

D O G A Design and Architecture Norway

Miðstöð hönnunar og arkitektúrs

Miðstöð hönnunar og arkitektúrs er hreyfiafl og miðja í eflingu og sjálfbærri þróun hönnunar og arkitektúrs á Íslandi. Hlutverk hennar er að efla hönnun sem tæki til breytinga og auka skilning þjóðarinnar á mikilvægi hönnunar fyrir samfélagið og íslenskt efnahagslíf.

honnunarmidstod.is

Iceland Design and Architecture

Iceland Design and Architecture aims for progress in design and architecture in Iceland, focusing on sustainable development. Its role is to facilitate and promote design of all kinds as a vital aspect of the Icelandic society, economy and culture.

honnunarmidstod.is

Miðstöð hönnunar og arkitektúrs Iceland Design and Architecture

Design Forum Finland

Design Forum Finlandin tavoitteena on edistää muotoilun käyttöä suomalaisissa yrityksissä, erityisesti johtamisen työkaluna ja strategisella tasolla. Palvelujemme avulla kasvatetaan yritysten kansainvälistä kilpailukykyä ja löydetään uusia malleja kehittää liiketoimintaa tulevaisuuden asiakastarpeisiin. Tätä kautta luodaan pitkän aikavälin arvoa asiakkaille, omistajille ja koko yhteiskunnalle.

Designforum.fi

Design Forum Finland

Design Forum Finland promotes the use of design in Finnish companies, especially as a tool for leadership and on a strategic level. Our services enhance companies' international competitiveness and find new models for developing business for future customer needs. This creates value for customers, owners and society at large in the long term.

Designforum.fi

DESIGN FORUM FINLAND

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