



SUSTAINORDIC

*A Nordic take on  
Sustainable Consumption  
& Production*

**ArkDes** Form  
Design  
Center

I SAMARBETE MED



Design  
og arkitektur  
Norge



Iceland Design Centre

DESIGN FORUM  
FINLAND

MED STÖD AV



Nordic Council  
of Ministers

The Nordic Report

The Nordic Report  
02



# Ísland Danmark Suomi Sverige Norge

**02**  
**The Nordic Report**



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## Välkommen till The Nordic Report 02.

Publikationen fokuserar på nordiska exempel för hållbar produktion och konsumtion sprungna ur initiativ från politik, akademi och näringsliv. Den nordiska kulturen bottnar i öppenhet och tillit, något som ger oss goda förutsättningar både i vårt eget förändringsarbete och i att inspirera andra. Samtidigt är vi medvetna om att vår egen konsumtion och tillverkning gör avtryck långt utanför våra egna gränser.

Vi måste vara ärliga inför utmaningarna. Det är inte alltid lätt, vår identitet har under flera generationer varit knuten till tillväxt, till "mer och mer". Framtiden kan kännas dyster när Världsbanken lyfter fram hur klimatkriser med torka och brist på mat riskerar att driva miljontals människor in i fattigdom, när den biologiska mångfalden är under stark press eller när växthusgasutsläppen ökade i Norden 2018 efter flera års nedgång.

Trovärdighet och hopp, nya förebilder och goda berättelser blir allt viktigare. Det behövs kunskap och innovation, ledarskap och politiskt tydliga ramar för att nå resultat på kort och lång sikt. Och det är nu det gäller!

Den omvärldsanalys vi, de nordiska parterna, gjort visar att hållbarhetsfrågor tar en allt större plats i prioriteringar och beslut. Vi kan bara lyfta fram en bråkdel av allt positivt som sker inom detta komplexa och mångfacetterade område. Ny kunskap ger ständigt nya insikter – ibland entydiga, ibland motstridiga.

## Welcome to The Nordic Report 02.

The publication focuses on Nordic examples of sustainable production and consumption stemming from political, academic and commercial initiatives. The Nordic culture is founded in openness and trust, something that gives us good conditions for implementing and inspiring change. At the same time, we are aware that our consumption and manufacturing have repercussions far outside our own borders.

We must be honest about these challenges. It is not always easy – for generations, our identity has been linked to never-ending growth. The future may seem dire when the World Bank is warning us that climate crises with droughts and food shortages could drive millions of people into poverty, when our biodiversity is under threat and when greenhouse emissions are rising in the Nordic region in 2018 after years of steady decline.

Credibility and hope, new role models and positive examples are becoming increasingly important. We need knowledge and innovation, leadership and clear policies to achieve results, both in the short and long term. And we need them now!

The external environment monitoring that we have carried out in the Nordic countries shows that sustainability is an increasingly important factor in prioritizations and decisions. We can only highlight a fraction of all the positive developments in this complex and multifaceted area. New knowledge constantly leads to new insights – sometimes clear-cut, sometimes contradictory.



# Intro

## Image Credit

Kristian Andréason

## 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. Projektet tar utgångspunkt i ett gemensamt manifest med tolv underliggande delmål. I manifestet har mål 12 översatts till mer konkreta handlingsplaner i linje med nordiska värderingar.

## Vem

SUSTAINORDIC är ett nätverk mellan sex nordiska design- och arkitekturstudier. 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 Iceland Design Centre (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 exempel inom hållbar produktion och konsumtion internationellt, samt att stimulera till utveckling av nationella riktlinjer inom området.

## Hur

Nätverkets parter samlar exempel på hållbar produktion och utveckling från de nordiska länderna. Exempelen sammanställs och struktureras i enlighet med delmålen i manifestet och presenteras i årsrapporten The Nordic Report. Rapporten sprids till de nordiska ländernas respektive nätverk för att nå läsare över hela världen.

## 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 Global Goal 12 of Agenda 2030. The initiative is based on a point in a joint Manifesto with twelve underlying subgoals. The Manifesto has interpreted Goal 12 into more concrete points of action which resonate with Nordic values.

## 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), the partners are DOGA - Design and Architecture Norway (NO), DAC - Danish Architecture Center (DK), Design Forum Finland (FI) and Iceland Design Centre (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 examples of best practice in sustainable production and consumption internationally, and to stimulate the development of national guidelines in the field.

## How

The network partners collectively gather examples of sustainable production and consumption from the Nordic countries. The examples are then compiled and structured in accordance with the Manifesto subgoals and presented in a yearly Nordic Report. The report is spread through each Nordic country's international network to reach a global audience.



# Content

06	<b>Förord</b> <i>Foreword</i>	
08	<b>Introduktion</b> <i>Introduction</i>	
11	<b>Manifest</b> <i>Manifesto</i>	
18	<b>Nordiska värderingar</b> <i>Nordic Values</i>	<b>01</b>
32	<b>Kunskapsdelning och diskussion</b> <i>Knowledge Sharing and Discussion</i>	<b>02</b>
46	<b>Samarbete</b> <i>Partnerships</i>	<b>03</b>
60	<b>Hållbara metoder och modeller</b> <i>Sustainable Methods and Models</i>	<b>04</b>
74	<b>Cirkulär ekonomi</b> <i>Circular Economy</i>	<b>05</b>
88	<b>Minskat avfall</b> <i>Reduced Waste</i>	<b>06</b>
102	<b>Delningsekonomi</b> <i>Sharing Economy</i>	<b>07</b>
116	<b>Robotkärlek</b> <i>Robot Love</i>	<b>08</b>
130	<b>Hållbar upphandling</b> <i>Responsible Procurement</i>	<b>09</b>
144	<b>Nudging</b> <i>Nudging</i>	<b>10</b>
158	<b>Transparens</b> <i>Transparency</i>	<b>11</b>
174	<b>Framtida generationer</b> <i>Future Generations</i>	<b>12</b>
187	<b>Index</b> <i>Index</i>	
191	<b>Partners</b> <i>Partners</i>	
194	<b>Kolofon</b> <i>Colophon</i>	



# Manifest

## 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 HÅLLBARA METODER & MODELLER

**Dela och exporter 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.

## 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.

## 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.

## DELNINGSEKONOMI

**Främja delningsekonomin för ökad nytta av produkter och tjänster.**

Vi uppmanar till delning av produkter och tjänster för att begränsa konsumtion och bidra till innovativa alternativ att införskaffa, tillhandahålla, dela och utbyta varor och tjänster.

## 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 och medför nya etiska dilemman.

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# 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

**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.

# Manifesto

## NORDIC VALUES

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

By highlighting and disseminating Nordic values, we attract attention and raise awareness both regionally and internationally.

## 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.

## 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.

## SUSTAINABLE METHODS & 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.

# 01

# 02

# 03

# 04



## 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.

## 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 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.

## 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.

## 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.

## 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.

## 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.

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# Nordiska värderingar *Nordic Values*

**Stärka nordiska värderingar som demokrati, transparens, delaktighet, mångfald och jämställdhet.**

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





# 01

**”En hållbar utveckling är en utveckling som tillfredsställer dagens behov utan att äventyra kommande generationers möjligheter att tillfredsställa sina behov.”  
Brundtlandrapportens definition av det övergripande målet för hållbar utveckling, 1987.**

*“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” The Brundtland Commission’s definition of the overall goal of sustainable development, 1987.*

## En gemensam klimatdeklaration

Den biologiska mångfalden, en förutsättning för allt liv, minskar i snabb takt.

Den biologiska mångfalden, en förutsättning för allt liv, minskar i snabb takt. Djur- och växtliv hotas av bland annat föroreningar och klimatförändringar. Att den globala uppvärmningen pågår och huvudsakligen orsakas av oss människor är de flesta aktörer inom området överens om, men debatten pågår om hur stora riskerna är.

Norden har under lång tid samverkat kring miljöfrågor. Redan 1987 lanserades "Vår gemensamma framtid" eller "Brundtlandrapporten" av Världskommissionen för miljö och utveckling. Kommissionen leddes av Norges dåvarande statsminister Gro Harlem Brundtland och hennes förhållningssätt till miljöarbetet är lika relevant nu som då. I januari 2019 skrev de fem nordiska miljöministerna under en gemensam klimatdeklaration för ett koldioxidneutralt Norden med syfte att öka takten och ambitionerna i hållbarhetsarbetet. I augusti undertecknade statsministrarna och en grupp företagsledare målsättningen att Norden ska bli världens mest hållbara region, vilket kräver ett nära samarbete mellan offentlig och privat sektor. Det är angeläget inte minst i perspektivet

av att koldioxidutsläppen, efter flera års nedgång, nu ökar igen och att miljöproblemen hopas. Isarna smälter allt snabbare – sommaren 2018 var Nordpolen isfri! I uppföljningen av den gemensamma nordiska miljödeklarationen berörs frågor som att uppmuntra användningen av trä i vid bemärkelse och att forska kring teknik och affärsmodeller för att fånga in koldioxid. Näringsliv, investerare, offentlig sektor, organisationer och konsumenter uppmuntras att bli mer klimatsmarta.

I regeringsförklaringen för Danmarks statsminister Mette Frederiksen lyfts klimatpolitiken fram som den enskilt viktigaste frågan. "Vi ska gå främst i kampen mot klimatkrisen" säger hon. I den svenska januariöverenskommelsen skriver Stefan Löfven att Sverige ska gå före på klimat- och miljöområdet. Båda länderna betonar att utsläpp av växthusgaser ska minska, att bensin- och dieslbilar ska sluta säljas, att satsningar på hållbara flygtransporter ska ske och att plastanvändningen ska minska. Den svenska regeringen beslutade 2018 om en handlingsplan för att nå målen i Agenda 2030. Handlings-

planen innehåller politiska åtgärder inom sex tvärssektoriella områden; jämlikhet och jämställdhet, ett hållbart samhälle, en samhällsnyttig, cirkulär och biobaserad ekonomi, ett starkt näringsliv med hållbart företagande, en hållbar och hälsosam livsmedelskedja samt kunskap och innovation. I budgetpropositionen för 2020 har den svenska regeringen ett antal förslag för att göra Sverige till ett fossilfritt föregångsland. Vidare förslås att takten för att nå klimatmålen ökar, med satsningar för en klimatomställning av industri- respektive transportsektorn.

Biodiversity, a cornerstone of life, is rapidly declining. Animals and plants are under threat from pollution and climate change. The fact that global warming is happening, and that it is mainly man-made, is something most actors within the subject area agree on, but the scope of the risk entailed is still under debate.

The Nordic countries have a long-standing collaboration on environmental issues. The report Our Common Future, or the Brundtland Report, was published by the World Commission on Environment and Development already in 1987. The Com-



The Nordic prime ministers signed a declaration for sustainable business solutions together with a group of Nordic businesses, August 2019, Reykjavik. From left to right: Antti Rinne, Prime Minister of Finland, Katrin Jakobsdóttir, Prime Minister of Iceland, Erna Solberg, Prime Minister of Norway, Mette Frederiksen, Prime Minister of Denmark, Stefan Löfven, Prime Minister of Sweden. Image Credit: Regeringskansliet

mission was led by then Norwegian Prime Minister Gro Harlem Brundtland, and her approach to environmental efforts is as relevant now as it was then. In January 2019, the five Nordic ministers responsible for environmental issues signed a joint climate declaration for a carbon-neutral Nordic region, with the aim of raising the pace and ambition of the sustainability efforts. In August, the Prime Ministers along with a group of business leaders signed the declaration with the aim of making the Nordic region the most sustainable in the world, which requires close collaboration between the public and private sectors. This is an urgent matter, not least considering that after years of decline, the CO2 emissions have started to increase again and the environmental problems are accumulating. The polar caps are melting at an increasing rate – in the Summer of 2018, there was no ice on the North Pole! The follow-up of the joint Nordic environmental declaration also concerns issues such as encouraging the widespread use of wood, and research on technology and business models to capture CO2. Businesses, investors, the public sector, organisations and consumers are encouraged to go green.

The government declaration of Danish Prime Minister Mette Frederiksen highlights climate policy as the single most important issue. "We will lead the fight against the climate crisis," she says. In the Swedish January Agreement, Stefan Löfven writes that Sweden will be at the forefront of climate and environment issues. Both countries underline the reduction of greenhouse gases, the elimination of petrol and diesel cars, investments in sustainable air transport and reduced use of plastics. In 2018, the Swedish Government adopted an action plan to attain the goals set out in Agenda 2030. This action plan contains policy measures within six cross-sectoral areas: equality; a sustainable society; a socially beneficial, circular and biobased economy; a strong business sector with sustainable enterprise; a sustainable and healthy food chain; and knowledge and innovation. In the 2020 Budget Bill, the Swedish Government has laid out a number of proposals to make Sweden a fossil-free role model. It also proposes an increased pace to achieve the climate objectives by transitioning the industry and transport sectors.





## Tillgänglighet, öppenhet, jämlikhet

Frihet att säga vad man vill, trygghet att lita på att det fungerar, tillit som också ger konkurrensfördelar...

Frihet att säga vad man vill, trygghet att lita på att det fungerar, tillit som också ger konkurrensfördelar...

De nordiska länderna toppar internationella rankinglistor när det gäller antikorrupktion, tillit och yttrandefrihet liksom för länder där invånarna mår bra och är lyckliga. Norden rankas även högt när det gäller innovation. Det ger goda förutsättningar att gå i bräschen för en smart och hållbar utveckling. Att den nordiska kulturen skapar öppenhet för att dela data och information bidrar också till snabbare kreativa lösningar. En av hörnstenarna är utbildning. Helsinki International Schools (HEI) vill exportera nordiskt välmående med hjälp av förskolor, där finsk pedagogik parad med nordisk design har öppenhet som grund. Modellen har utvecklats i ett samarbete mellan University of Helsinki och utbildnings- och designexperter.

Naturen och friluftslivet är viktiga utgångspunkter i såväl ett hälso- som hållbarhetsperspektiv och allemansrätten har en viktig roll att fylla. På nordisk nivå har det beslutats om en gemensam nordisk turismplan, där hållbarhet lyfts fram som ett särskilt prioriterat område.

Under Islands ordförandeskap i Nordiska Ministerrådet 2019 var fokus

unga, havet och hållbar turism. Hållbarhetsmålen kommer att vara ledstjärnan, enligt Islands statsminister Katrín Jakobsdóttir. Island är också ett av världens mest jämställda länder, och 2022 ska osakliga löneskillnader mellan män och kvinnor vara borta. Kampen för lika lön har pågått länge, redan 1975 gick de isländska kvinnorna ut i storstrejk för bättre villkor. Fem år senare blev Vigdís Finnbogaðóttir världens första demokratiskt valda kvinnliga statsöverhuvud.

The freedom to say what you want and trusting that it works, a trust that also entails competitive advantages... The Nordic countries are at the top of international rankings when it comes to anti-corruption, trust, freedom of speech as well as contentment and happiness among their citizens. The Nordics also rank highly for innovation. This provides good conditions for being at the forefront of smart and sustainable development. The Nordic culture of openness in sharing data and information also contributes to quicker creative solutions. One of the cornerstones is education. Helsinki International Schools (HEI) will start exporting Nordic well-being through preschools that pair Finnish pedagogy with Nordic design on a foundation of transparency. The model has

been developed in a collaboration between the University of Helsinki and experts on education and design.

Nature and outdoor life are important in terms of both health and sustainability, and the right of public access has an important role to play. The Nordic countries have agreed on a joint tourism plan that highlights sustainability as a particular priority.

With Iceland as the chair in 2019, the Nordic Council of Ministers focused on young people, the sea and sustainable tourism. The sustainability goals will be a guiding light, according to Icelandic Prime Minister Katrín Jakobsdóttir. Iceland is also one of the most gender-equal countries in the world, with the express goal of eliminating unfair wage difference between women and men by 2022. The fight for equal pay started already in 1975 when the Icelandic women went on general strike for better conditions. Five years later, Vigdís Finnbogaðóttir became the world's first democratically elected female head of state.

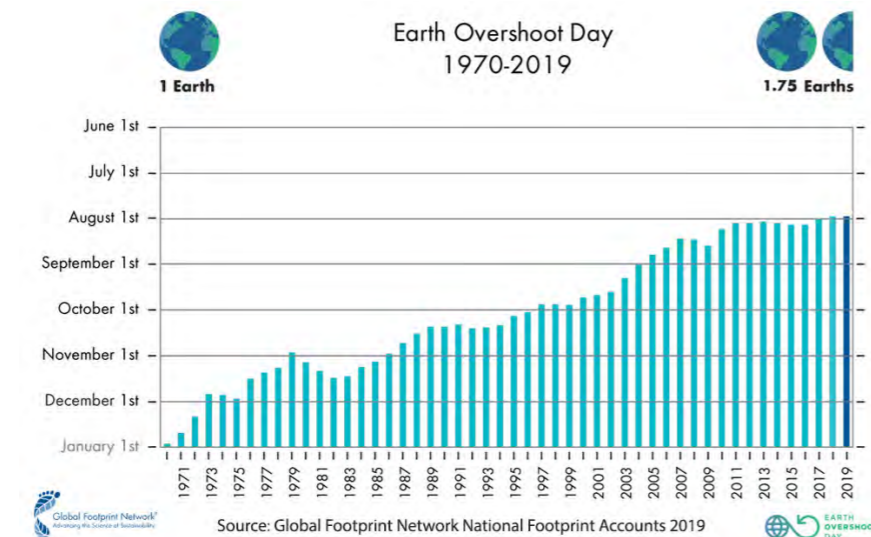


## EU-perspektivet

Inget enskilt land kan påverka de globala målen särskilt mycket på egen hand.

Inget enskilt land kan påverka de globala målen särskilt mycket på egen hand. EU har en viktig roll att fylla, inte minst i perspektiv av att USA lämnat Parisavtalet, Kinas satsning på nya kolkraftverk och skogsskövling i Brasilien. FN:s avtal bygger på frivillighet men EU kan driva igenom klimatlagar som medlemsländerna måste följa, annars blir det böter. Den nya EU-kommisionären Ursula von der Leyens löfte om en europeisk klimatlag för nollutsläpp till 2050 är en viktig utgångspunkt.

Under andra halvåret av 2019 var Finland ordförandeland i EU. Ordförandeskapets devis var "Ett hållbart Europa, en hållbar framtid". En av de viktigaste uppgifterna är att arbeta för att hela EU ska kunna enas om klimatneutralitet till år 2050. Finland har slagit fast att för dem gäller 2035, medan Sverige har som mål att utsläppen av växthusgaser ska nå netto-noll senast år 2045. I Sverige behöver då minskningstakten vara mellan fem och åtta procent per år i genomsnitt över perioden, att jämföras med att utsläppen vuxit under 2018. "Jag har fått nog av all pessimism runt allt det här. Vi har både möjligheten, tekniken och viljan att göra någonting. Jag ser det också som en ekonomisk möjlighet", säger den finska näringsministern Katri Kulmuni. Plast är ett växande globalt problem, inte minst för våra hav. Enligt Europeiska kommissionen är 85 procent av allt skräp längs våra stränder plast. Efter ett förslag från Norge är plast medtaget i Baselkonventionen, det internationella avtal som reglerar världens hantering av farligt avfall. En ny europisk plast-



The Global Footprint Network calculates Earth Overshoot Day using Ecological Footprint accounting, which adds up society's demand for natural resources. In 2019 it fell on 29 July. This means that humanity is currently using nature 1.75 times faster than the Earth's ecosystems can regenerate. Image Credit: Global Footprint Network [www.footprintnetwork.org](http://www.footprintnetwork.org)

strategi gör att engångsplast som bestick, sugrör och liknande förbjuds 2021.

No single country can do much to achieve the Sustainable Development Goals on its own. The EU has an important role to play, not least considering the USA's exit from the Paris Agreement, China's investment in new coal plants, and the deforestation of Brazil. UN agreements are voluntary, but the EU can implement climate regulations for the members to comply with on pain of fines. The promise made by the new EU Commissioner Ursula von der Leyen for a European climate regulation of zero emissions by 2050 is an important point of departure. In the second half of 2019, Finland presided over the EU. The motto for the presidency was "Sustainable Europe, Sustainable Future". One of the most important tasks is to work towards making the EU carbon-neutral by 2050. Finland has set their target at 2035,

while Sweden aims to reach net zero greenhouse emissions by 2045. This means that Sweden needs to have a reduction rate of between five and eight per cent annually, as compared to 2018 when emissions increased. "I have had enough of the pessimism on this subject. We have the opportunities, technology and willingness to do something. I also view it as an economic opportunity," says Finnish Minister of Economic Affairs Katri Kulmuni.

Plastic is a growing global problem, not least for our seas. According to the European Commission, 85 per cent of all waste along our shores is plastic. Following a proposal from Norway, plastic is now included in the Basel Convention, the international agreement regulating the world's management of hazardous waste. A new European plastics strategy entails a ban on single-use plastic items such as cutlery, straws and the like by 2021.

## Klimat och ekonomi

Hoten mot klimatet och miljön kan bli en baisse för ekonomin.

Hoten mot klimatet och miljön kan bli en baisse för ekonomin. Att snabba på processen och erbjuda fossilfri produktion kan däremot ge företag som är beredda att gå i bränschen konkurrensfördelar. Samtidigt kräver omfattande teknikomställningar stora investeringar, och lågkonjunkturer kan bromsa viljan till miljöåtgärder. Återigen blir prioriteringar och politiskt mod avgörande. Ekonomiska satsningar för att rädda klimatet får inte heller bidra till ökade sociala klyftor. I Kanada har regeringen infört en koldioxidskatt som ekonomiskt miljöstyrmiddel. Skatteintäkterna går tillbaka till invånarna – en slags koldioxidåterbäring.

Det krävs en tydlig politik och transparens kring finansiella frågor relativt hållbarhet. Världsbanken har stegvis lagt om kursen i sina satsningar med fokus på att motverka klimatförändringar i fattiga länder. "100 miljoner människor kommer att falla tillbaka i fattigdom på grund av klimatförändringarna fram till 2030", säger Akihiko Nishio, vicechef i Världsbanken. Norden kan agera förebild, bidra med ny kunskap och inspirera till nytänkande grundat på Parisavtalets mål. Nya Zeeland ersätter BNP med ett mått som inte bara handlar om ekonomisk tillväxt. Det nya måttet har fyra indikatorer på välmående: socialt, mänskligt, naturligt och finansiellt kapital. I kommande budgetar är kravet att landet inte bara ska planera långsiktigt utan flera generationer framöver. "Politiken behöver ses som genom en lins av vänlighet, empati och välbefinnande...

då spelar tidsperspektivet mindre roll", säger premiärminister Jacinda Ardern. Anna Breman, Swedbank, har granskat hur världens centralbanker hanterar klimatrelaterade strategiska finansiella frågor. Hon menar att Svenska Riksbanken är senfärdiga i relation till exempelvis den Europeiska centralbanken.

The threats to the climate and the environment can cause economic decline. Speeding up the process and offering fossil-free production could on the other hand lead to competitive advantages for companies willing to take the lead. At the same time, extensive technological changes require massive investments, and recessions could slow environmental initiatives. Once

*The Nordics can be a role model, contribute new knowledge and inspire innovative thinking based on the goals of the Paris Agreement.*

again, priorities and political backbone are essential. Economic initiatives to prevent climate change must not widen social gaps either. The Canadian Government has introduced a CO2 tax as an environmental economic instrument. The tax revenue goes back to the citizens, like a CO2 rebate.

Clear and transparent policies are required when it comes to fiscal matters in relation to sustainability. The World Bank has gradually changed the direction of its initiatives, focusing on countering climate changes in low-income countries. "100 million people will revert to poverty due to climate changes by 2030," says

Akihiko Nishio, Vice President at the World Bank. The Nordics can be a role model, contribute new knowledge and inspire innovative thinking based on the goals of the Paris Agreement. New Zealand is replacing GDP with a measurement that not only indicates economic growth. The new metric has four indicators of well-being: social, human, natural and financial capital. Future budgets are required to not only plan for the long term, but for several generations to come. According to Prime Minister Jacinda Ardern, the politics must be regarded through a lens of kindness, empathy and well-being, where time becomes less of a factor. Anna Breman at Swedbank has reviewed how the central banks of the world are handling strategic





**Paula  
Lehtomäki**

**Secretary General of the Nordic Council of Ministers**  
*Pohjoismaiden ministerineuvoston pääsihteeri*

**Illustration**  
Kristian Andréason

*Paula Lehtomäki is the Secretary General of the Nordic Council of Ministers. Paula is also the first woman to hold the position, as well as the youngest ever Secretary General.*

**Hei Paula! Pohjoismaista yhteistyötä pidetään koko ajan tärkeämpänä. Miksi näin?**

Viime aikoina lähialueidemme, Euroopan unionin ja globaalien kansainvälisten suhteiden turbulenssi ja epävakaus on lisääntynyt. Tällainen ryhmä valtioita on tärkeä, koska voimme tehdä yhteistyötä vakaassa ja läheisessä, luottamukseen perustuvassa suhteessa. Samalla meillä on uusia ja hyvin kiireellisiä kansainvälisiä haasteita, kuten ilmastonmuutos, biodiversiteetin väheneminen sekä muita ongelmia ratkaistavana. Tämäkin tähdentää Pohjoismaiden välisen tehokkaan yhteistyön tarvetta. Pohjoismaissa on vahvaa halua toimia yhdessä muutoksen toteuttamiseksi omilla maissamme, mutta haluamme myös johtaa omalla esimerkillämme ja luoda ratkaisuja ympäristöhaasteisiin.

*Hello Paula! The Nordic collaboration is considered increasingly important. Why do you think that is?*

Lately we have seen growing turbulence and instability in our neighbouring area and within the European Union, as well as within global international relations. The importance of having such a group of countries is that we can cooperate in a stable and close relationship based on trust. At the same time, we have new and very urgent international challenges, like climate change and biodiversity loss to name a few, and other issues that need to be solved. This also underlines the need for an efficient cooperation amongst the Nordic countries. There is a strong willingness now in the Nordic countries to act together in order to make the change possible, both here in our countries but also to lead by example and create solutions to the environmental challenges.

# Pääministerimme ottivat käyttöön ministerineuvoston uuden vision, jonka tavoitteena on tehdä Pohjolasta maailman kestävin ja integroitunein alue vuoteen 2030 mennessä.

## Mikä omasta mielestäsi on tunnusomaista pohjoismaisille arvoille?

Se, että yhteiskuntamme on toimiva ja turvallinen. Pohjoismaisia arvoja ovat myös luottamus, avoimuus, läpinäkyvyys, demokratia ja tasa-arvo. Esimerkiksi Islannin pohjoismaisessa pääministerikokouksessa oli useampia naispuolisia pääministerejä tai hallituksen päämiehiä. Tämä osoittaa, että sukupuolten tasa-arvo yhteiskunnissamme edistyy.

## Uskotko näiden arvojen muuttumiseen tulevaisuudessa?

Pohjoismaiset yhteiskuntamme rakentuvat arvoille, jotka eivät muutu kovin nopeasti. Ne ovat mielestäni melko vakaita, mutta on selvää, ettei näitä arvoja saa pitää itsestäänselvyyksinä. Ympäriämme näkyvä kehitys muistuttaa siitä, että perusarvoja on vaalittava ja kehitettävä edelleen, ja se vaatii jatkuvaa työtä.

## Kuinka näet kestävän kulutuksen ja tuotannon Pohjoismaissa ja niiden agendassa vuonna 2030?

Pääministerimme ottivat käyttöön ministerineuvoston uuden vision, jonka tavoitteena on tehdä Pohjolasta maailman kestävin ja integroitunein alue vuoteen 2030 mennessä. Ilmastopoliitikassa on paljon tehtävää yleisen kestävyden tukemiseksi. Erityisesti YK:n tavoite numero 12 on haastava Pohjoismaille, ja siinä kuilu on suurin. Pohjoismainen ministerineuvosto on nyt käynnistänyt innovaatio-ohjelman Nordic Sustainable Business Transformation, joka pyrkii vauhdit-

## *What characterises Nordic values to you?*

That we have well-functioning societies where we can move around safely. Additionally, the Nordic trust, openness, transparency, democracy and equality are some of our core values. For instance, at the meeting of the Nordic prime ministers in Iceland, we could see several female prime ministers or heads of government. This shows that the gender equality is progressing in our societies.

## *Do you believe these values will change over time?*

Our Nordic societies are built upon the Nordic values, and they do not transform that quickly. I actually think they are quite stable, but it has become very clear to me that these values are not to be taken for granted. The development that we see around us reminds us that the key values are something you need to take care of and develop further. And that requires constant effort.

## *How do you view sustainable consumption and production in relation to the Nordic countries and Agenda 2030?*

Our prime ministers recently adopted a new vision for the Council of Ministers with the goal of making the Nordic Region the most sustainable and integrated region in the world by 2030. There is a lot of work to be done in climate policy backing overall sustainability. Particularly UN's goal number 12 is challenging for the Nordic countries, and here we also see the biggest gap. The Nordic Council of Ministers has now launched The Nordic Innovation Programme 'Nordic Sustainable Business Trans-

tamaan pohjoismaisten yritysten vastuullisuuspanostuksia. Lyhyesti: kestävä kehitys on voimakkaasti työmme keskipisteenä.

## **Olet Pohjoismaiden ministerineuvoston ensimmäinen naispuolinen pääsihteeri. Kerro työstäsi.**

Suurin haasteeni tällä hetkellä on konkretisoida visio ja käynnistää sen toimeenpano, jotta voisimme saavuttaa sen kunnianhimoiset tavoitteet. Organisaatiomme yleisenä vastuuna on valmistella ja panna toimeen poliittisia päätöksiä. Johdan valmisteluja, annan ohjausta työntekijöille, ja valmistelemme ministerineuvostokokoukset. Lisäksi osallistun kaikkiin ministerikokouksiin ja varmistan, että saamamme poliittiset päätökset ja ohjeistot pannaan täytäntöön. Sen lisäksi minulla on paljon hallinnollista työtä. Edustan myös Pohjoismaista ministerineuvostoa konferensseissa ja seminaareissa. Minulle tanskan kieli on usein haaste, mutta teen töitä sen eteen!

formation', where we support companies in green transformation. To summarise, sustainability is very much the focus of our work.

## *You are the first female Secretary General of the Nordic Council of Ministers. Please tell us about your work.*

My biggest challenge at the moment is to concretise our work and implement our vision in order to achieve the ambitious objectives set out in it. The overall responsibility of our organisation is to prepare and implement political decisions. I lead the preparations, give guidance to the employees and we also prepare for the ministerial meetings. Furthermore, I attend all ministerial meetings and make sure that the political decisions and guidelines we receive are being implemented. On top of that, there is a lot of administrative work. I also represent the Nordic Council of Ministers at conferences and seminars. And to me, the Danish language is often a challenge in my work. But I am working on it!

## *Ministers has now launched The Nordic Innovation Programme 'Nordic Sustainable Business Transformation', where we support companies in green transformation.*

## **Jos voisit matkustaa 100 vuoden päähän tulevaisuuteen, mitä näkisit?**

On vaikea nähdä niin pitkälle tulevaan, mutta sata vuotta taaksepäin katsottaessa voi nähdä huikEAN muutoksen. Uskon, että tulevaisuudessa emme matkusta niin paljon kuin tänä päivänä virtuaalitodellisuuden ansiosta. Se tarjoaa erilaisia ja uusia tapoja luoda ja kokea todellisuutta sen olematta todellisuutta. Voit esimerkiksi käydä Etelä-Amerikan viidakossa matkustamatta paikan päälle. Uskon, että virtuaalitodellisuutta käytetään hyvin yleisesti jo lähitulevaisuudessa.

## *If you could travel 100 years into the future, what do you think you would see?*

It is very difficult to look 100 years ahead, because if we look backwards, there has been such a huge change. I believe that in the future we will not be travelling as much as today because we will have a virtual reality – different and new ways to create and experience the reality around us without it being real. So, you could visit the South American jungle without actually needing to travel there. I really believe that virtual reality is something that will be very commonly used in the near future.



# Kunskapsdelning och diskussion

## *Knowledge Sharing and Discussion*

Bidra till debatt, diskussion och kunskapsutbyten inom ämnesområdet.  
*Contribute to debate, discussion and the sharing of knowledge within the subject areas.*



# 02

**Klimat-, miljö- och resursfrågorna måste tas på största allvar. Det är lätt att försvara sig; vi förnekar, är bekväma och vill inte ändra våra vanor. Nu är det hög tid att lyssna noga på forskarna, vara nyfiken på innovativ teknik och sprida kunskap. Och inte minst – att bli berörda.**

*Climate, environment and resource issues must be taken seriously. It is easy to get defensive; we're in denial, comfortable and unwilling to change our habits. But it's time to listen to the researchers, be curious about innovative technology and share knowledge. And not least – time to care.*



Medierna har allt större fokus på hållbarhetsfrågorna och organisationer som Greenpeace och Klimatfronten debatterar och demonstrerar.



Fridays for Future – Greta Thunberg. Image Credit: Per Grunditz / Shutterstock

Medierna har allt större fokus på hållbarhetsfrågorna och organisationer som Greenpeace och Klimatfronten debatterar och demonstrerar. Som individer kan vi göra mycket, men politiker och beslutsfattare måste visa på handlingskraft och mod – ledarskap. Även rättssamhället är en aktiv del av kampen. Ett exempel är svenska samernas riksungdomsförbund, Sáminuorra, som deltar i initiativet "People's Climate Case" och som stämt EU-parlamentet och EU-rådet för att ha tillåtit för höga utsläpp. Med sina krönikor om klimatkrisen är Dagens Nyheters kulturchef Björn Wiman en annan stark röst i debatten. I sina texter pekar han på vikten av kollektiv handlingskraft och den akuta förändring som måste ske redan idag.

The Guardian skriver inte längre om klimatförändringar utan istället om klimatkris eller klimatnödläge. De lyfter fram hur viktigt det är att vara ärliga, samt vikten av att skapa nya berättelser, ge oss nya vägar och berätta om de steg vi måste och kan ta.

Greta Thunbergs hållbarhetsengagemang har fått stort genomslag. Såväl protesterna i "Fridays for future" som deltagande i internationella toppmöten eller att segla till New York sätter avtryck. Hennes budskap om vår planets utsatthet och frustrationen över att för lite görs stöttas av dagens forskare, och hennes tal har samlats i boken "No one is too small to make a difference".

The media have an increased focus on sustainability issues, and organisations like Greenpeace and Klimatfronten are organising debates and demonstrations. We can do a lot as individuals, but politicians and decision-makers have to take action and show courage – leadership. The judiciary also plays an active role in the struggle. One example is the National Association of Swedish Sami's youth section, Sáminuorra, which is participating in the initiative "People's Climate Case", a movement that has sued the EU for permitting such high emissions. With his columns on the climate crisis, literary editor Björn Wiman of Dagens Nyheter is another

strong voice in the debate. In his texts, he emphasises the importance of collective action and the urgent change that must happen today.

The Guardian no longer uses "climate change", but instead refers to the "climate crisis" or "climate emergency". They highlight the importance of being honest, as well as the importance of creating new narratives, giving us new paths and informing us of the steps we can and must take.

Greta Thunberg's environmental commitment has had a great impact. From her "Fridays for future" and her participation in international top meetings to her voyage by sailboat to New York, she is making an impression. Her message on our planet's vulnerability and the frustration that not enough is being done is supported by researchers, and her speeches have been collected in the book "No one is too small to make a difference".

Med over 35 000 medlemmer er "Framtiden i våre hender" Norges største miljø- og solidaritetsorganisasjon.

Med over 35 000 medlemmer er "Framtiden i våre hender" Norges største miljø- og solidaritetsorganisasjon. Den ble grunnlagt allerede i 1974 på et folkemøte som hadde samlet rundt 3 000 mennesker. Einar Gerhardsen, Norges statsminister gjennom 16 år, meldte seg tidlig inn i organisasjonen. Organisasjonens overordnede mål er global rettferdighet, økologisk balanse og en løsning på verdens fattigdomsproblemer. Blant fokusområdene er etiske penger, etiske investeringer, etiske klær, giftfri hverdag og grønt oljefond.

Arbeidet i forskjellige organisasjoner har bidratt til at det norske Oljefondet – verdens største aksjefond som forvalter inntektene fra olje- og gassressursene i Nordsjøen og er verdt svimlende 9000 milliarder kroner – åpner for å investere drøyt 120 milliarder norske kroner i aksjer i fornybar energi. Oljefondet trekker også tilbake aksjeinvesteringer i flere kull- og gasselskaper og slutter å investere i oljeselskaper som arbeider med prosjektering og utvinning.

Harvest Magazine setter natur, mennesker og miljø i sammenheng. Når Harvest skriver om klimakrise, handler det sjelden om CO2 og teknologi, men ofte om samfunnet og de liv vi drømmer om. Harvest driver gravejournalistikk og oversetter internasjonale prisvinnende artikler, særlig innen det som på engelsk kalles nature writing.

With more than 35,000 members, "Framtiden i våre hender" (the future in our hands) is one of Norway's largest environmental solidarity organisations. It was started in 1974 at a public meeting with around 3,000 participants. Einar Gerhardsen, who served as Norway's Prime Minister for 16 years in all, was an early member. The organisation's overall goal is global justice, ecological balance and an end to global poverty. Among its focus areas are ethical investment, ethical finances, ethical clothing, a non-toxic everyday life and a green oil fund.

*Among its focus areas are ethical investment, ethical finances, ethical clothing, a non-toxic everyday life and a green oil fund.*

The work of various organisations has contributed to making the Norwegian Oil Fund – one of the world's largest unit trusts which manages the Norwegian State's revenues from North Sea gas and oil, to a staggering value of NOK 9,000 billion – look into the possibility of investing over NOK 120 billion in renewable energy. The fund is also withdrawing investments from several coal, oil and gas companies, and will no longer invest in oil companies involved in planning and extraction.

Harvest Magazine puts nature, people and the environment in context. When Harvest

writes about the climate crisis, it rarely relates to CO2 and technology, but often about society and the lives we dream of. Harvest conducts investigative journalism and translates international award-winning articles, especially in nature writing.



## Kvikmyndir, bókmenntir og aðrar listgreinar geta verið öflug vopn í umhverfisbaráttu.

Kvikmyndir, bókmenntir og aðrar listgreinar geta verið öflug vopn í umhverfisbaráttu. Einstök náttúra Íslands skipar sérstakan sess í menningarlífi lands og þjóðar en þjóðin er klofin og tvístígandi í afstöðu sinni gagnvart náttúrunni og þeim iðnaði sem hefur þrífist í landinu. Bók Andra Snæs Magnasonar, *Draumalandið – sjálfshjálparbók handa hræddri þjóð*, vakti frjóar umræður um sjálfbærni er hún kom út árið 2006. Samnefnd heimildarmynd fjallar um áhrifin sem umfangsmikil álbræðsla og tengdur iðnaður hefur haft á lífið á eyjunni. Í kvikmyndinni *Kona fer í stríð* grípur Halla, kórstjórinn á hjólinu, leikin af Halldóru Geirharðsdóttur, í bókstaflegri merkingu til vopna gegn umhverfisspjöllum og stóriðju. Benedikt Erlingsson er leikstjóri og handritshöfundur kvikmyndarinnar, sem hefur unnið til fjölda alþjóðlegra verðlauna, m.a. hinna virtu Lux-verðlauna á Evrópuþinginu árið 2018.

Listir og menning hjálpa okkur að endurskoða líf okkar og tilvist. Á loftslagsráðstefnu Sameinuðu þjóðanna

í París árið 2015 kom dansk-íslenski listamaðurinn Ólafur Elíasson fyrir „ísklukku“ á torgi, verkið nefndist *Ice Watch* og var samsett úr jökulstykkjum sem bráðnuðu hægt og bítandi. Árið 2019 hefur staðið yfir yfirlitssýning á verkum Ólafs í Tate Modern-safninu í London. Á sýningunni getur að líta ljósmyndir af íslenskum jökulám frá árinu 1999 sem stillt er upp við hlið nýrra mynda sem varpa ljósi á þær sláandi breytingar sem hafa orðið á 20 árum.

Film, literature, music and art can be powerful weapons. Iceland's distinctive nature plays a central role in its culture. It reflects not least the ambivalent attitude to the industries being established thanks to the country's vast resources of renewable and cheap energy. The best-selling book "Dreamland: A Self-Help Manual for a Frightened Nation" from 2006 sparked debate on sustainability issues. The documentary of the same name investigates how people and nature have been affected by the island's aluminium smelting plants. In the film "Kona fer í stríð – Woman at war", the cycling choir leader Halla fights

environmental destruction and big industry in her own way. The film has won several international awards, and was also awarded the European Parliament LUX Prize in 2018. The LUX Prize is awarded to films reflecting the European public debate.

Art and culture can inspire us to evaluate our beliefs. At the UN summit in Paris 2015, the Danish-Icelandic artist Olafur Eliasson set out a block of glacier ice that slowly melted in a piece called "Ice Watch". In 2019, his works have been exhibited at the Tate Modern. With an indoor rainbow and a manufactured water-fall, he asks if nature is constructed by man – does it even exist any more? Photos of Icelandic glaciers from 1999 next to present-day photos show the change in the landscape.



*Ice Watch*, Olafur Eliasson & Minik Rosing © 2018 Olafur Eliasson. Photographer: Charlie Fordham-Bailey



## Voittoa tavoittelematon HundrED-järjestö etsii koulumaailman kiinnostavia uutisia kaikkialta maailmasta.

Voittoa tavoittelematon HundrED-järjestö etsii koulumaailman kiinnostavia uutisia kaikkialta maailmasta. Järjestö valitsee vuosittain ympäri maailmaa sata innovaatiota, jotka dokumentoidaan ja joita levitetään ilmaiseksi, jotta niitä voidaan käyttää missä tahansa.

Kestävän kehityksen haasteet vaativat uudenlaista ajattelua, varsinkin organisaatioissa. Poikkiteollisesta näkökulmastaan tunnetun Aalto-yliopiston yhteydessä vaikuttava Nodus Sustainable Design Research Group on erikoistunut kestävää tulevaisuutta tukeviin muotoiluratkaisuihin, liiketoimintamalleihin ja innovaatioihin. Nodus on myös edelläkävijä muotoilun ja kestävyiden yhdistävien käytännönläheisten teorioiden kehittämisessä. Ryhmä järjestää säännöllisesti avoimia tilaisuuksia Designmuseossa Helsingissä.

Laskelmien mukaan 87 prosenttia vaatteisiin käytettävistä tekstiileistä joutuu kaatopaikalle tai poltetaan. Globaali vaate- ja kenkätuotanto aiheuttaa myös 8 prosenttia maailman kasvihuonepäästöistä.

Tekstiiliteollisuus on öljyteollisuuden jälkeen maailman saastuttavin teollisuudenala. Laskelmien mukaan 87 prosenttia vaatteisiin käytettävistä tekstiileistä joutuu kaatopaikalle tai poltetaan. Globaali vaate- ja kenkätuotanto aiheuttaa

myös 8 prosenttia maailman kasvihuonepäästöistä. Suomessa tekstiilijätettä syntyy vuosittain 70 miljoonaa kiloa. Tämän vuoksi Eettisen kaupan puolesta ry rohkaisi ihmisiä jakamaan omia tarinoitaan lempivaatteistaan hashtagin #lempivaatteeni avulla. Kampanjalla haluttiin haastaa ihmisiä käyttämään vaatteitaan pidempään uusien ostamisen sijasta sekä nostaa esille sitä, miten suuri vaikutus vaateollisuudella on.

Finnish pedagogy and schools are world renowned. The non-profit organisation HundrED investigates inspiring news in the area of education. Every year, they name 100 innovations from all over the world, which are documented and disseminated for free in order to be used anywhere.

The challenges of sustainability require innovative thinking, not least in organising. Aalto University is known for its cross-disciplinary approach and is home to the Nodus Sustainable Design Research Group. The group specialises in design solutions, business models and innovations

that support sustainability. Nodus is also a pioneer in the development of practically relevant theories for designing sustainability transitions. Nodus regularly organises public events at Design Museum Helsinki.

After oil, textile production is the most polluting industry in the world. Some 87 per cent of all clothing textiles are estimated to be thrown away or incinerated, and the global production of clothes and shoes is responsible for eight per cent of global greenhouse emissions. Finland has an annual 70 million kilos of textile waste. An ethical trade association therefore used the hashtag #lempivaatteeni for people to share stories of their favourite items of clothing. The campaign wanted to raise awareness on the impact of the clothing industry and encourage everyone to keep their clothes a little longer, instead of buying new items.

## SPACE10 – IKEAs eksterne research- og designlaboratorie i København – arbejder med at analysere ændringer, identificere presserende udfordringer og designe innovative løsninger til fremtiden.

SPACE10 – IKEAs eksterne research- og designlaboratorium i København – arbejder med at analysere ændringer, identificere presserende udfordringer og designe innovative løsninger til fremtiden. SPACE10 ønsker at udforske alt, lige fra den accelererende urbanisering og knapheden af naturressourcer til ensomhed i storbyerne, fødevarerikkerhed og et boligmarked, som bliver stadigt mere ekskluderende. Research- og designløsninger deles åbent. I "Urban Village Project" ser Space 10 på, hvordan fremtidens boliger og bydele kan udformes for at gøre det nemmere at bo bæredygtigt. Bæredygtighed tænkes ind i hverdagen med løsninger såsom lokal madproduktion, vedvarende energi og sociale delemljører på tværs af generationer.

Intelligent design rummer et stort potentiale i forhold til at løse samfundsbehov. Danske "The Index Project" vil fokusere på design, som forbedrer livskvaliteten for alle. Deres Index Award, som er verdens største designpris, uddeles til personer og virksomheder over hele verden for banebrydende design. Blandt finalisterne i 2019 var blandt andet MasSpec, pennen, der er i stand til at opdage cancerceller i vævet inden for ti sekunder, Thumy, midlertidige tatoveringer, der skal opmuntre og hjælpe børn med type 1-diabetes med at tage deres indsprøjtninger, og Skin Display, en digitaliseret "anden



The Urban Village Project.  
Image Credit: Made by EFFEKT Architects for SPACE10

hud" til ældre. Med en gennemsigtig handske som sensor indsamles vigtige sundhedsdata, samtidig med at sensoren giver påmindelser.

SPACE10 – IKEAs external research and design laboratory in Copenhagen analyses changes, identifies pressing challenges and designs innovative solutions for the future. SPACE10 wants to explore subjects from the accelerating urbanisation and scarcity of natural resources to loneliness in major cities, food safety and an increasingly exclusive housing market. Research and design solutions are shared openly. In the "Urban Village Project", Space 10 investigates how the houses and districts of the future can be designed to make a sustainable lifestyle easier. Sustainability is built into everyday life through solutions like local food production, renewable energy and shared spaces across generations.

Smart design has great potential to meet societal needs. The Index Project in Denmark wants to focus on design to improve quality of life for everyone. Their Index Award, the world's greatest design prize, awards ground-breaking design from around the world. The 2019 finalists included MasSpec, the pen used for early detection of cancerous cells in tissue; Thumy, temporary tattoos to encourage children with type I diabetes to take their injections; and Skin Display, a digitalised "second skin" for elderly people. Using a transparent glove as a sensor, important health data is collected, while the sensor also gives reminders.

*Sævar Helgi Bragason is an Astronomy Educator with a passion for communicating science, astronomy and environmental issues to children and adults. In Iceland he goes under the nickname “Star Sævar” because of his great skills and passion for space.*



**Sævar Helgi Bragason**

**Astronomer and scientist**  
*Stjörnufræðikennari og vísindamiðlari*

**Illustration**  
Kristian Andréason

**Halló, Sævar! Ég held að þú getir alveg titlað þig sem sérfræðing í stjörnufræði. Hvernig hófst þetta allt saman?**

Sem lítill strákur var ég vanur að stara upp í myrkan himininn, alveg dáleiddur af öllum þessum skínandi stjörnum á gönguleið minni í skólann snemma á morgnana. Ég var átta ára gamall þegar ég horfði í gegnum sjónauka í fyrsta skipti og sá Satúrnus og tunglið og þá varð ekki aftur snúið. Þetta var það allra fallegasta sem ég hafði nokkurn tímann séð og ég varð að deila þessu með öllum heiminum. Þar sem ég er alveg heillaður af náttúrunni og vísindum lá beint við að fara í umhverfisfræði, eðlisfræði og efnafræði.

**Hvernig deilirðu þeirri gríðarlegu þekkingu sem þú býrð yfir?**

Á ýmsan hátt - ég vinn til dæmis mikið í gegnum fjölmiðla hérna á Íslandi. Það veitir mér góðan vettvang til að ná til fólks í fréttum og í ólíkum út-

*Hello Sævar! I think you could actually call yourself an astronomy expert. How did it all start?*

I used to stare up into the dark sky completely mesmerised by all the shining stars when I walked to school early mornings as a little boy. I was eight years old when I looked through a telescope for the first time and saw Saturn and the moon, and there was no turning back. It was the most beautiful thing I had ever seen, and I needed to share this with the whole world. Since I am very fascinated by nature and science it was a natural process to go into environmental studies, physics and chemistry.

*How do you share the immense knowledge you possess?*

Through various means - I work a lot in the media here in Iceland for example. It gives me a great platform to reach out in the news and on different radio shows. I also write books, visit schools to give



varpspáttum. Ég skrifa líka bækur, heimsæki skóla til að halda fyrirlestra og tala um stjörnufræði og umhverfisvísindi. Stundum fer ég einfaldlega út með sjónaukann til að sýna fólki næturhimininn. Ég reyni að miðla vísindum á allan hugsanlegan máta og oft á tíðum gef ég vinnu mína.

### Ertu með einhver ráð til að ná til ólíkra markhópa?

Mér finnst allra mikilvægast að vera fullur áhuga og einlægni um það sem ég er að segja. Áhugi minn verður að vera smitandi. Börn eru yfirleitt afar hrifnæm og auðvelt að ná til þeirra og ég veit að ef ég segi þeim að það sé slæmt að menga umhverfið með plasti - þá munu þau taka mark á mér. Þetta er miklu erfiðara með fullorðið fólk. Ein góð leið er að finna eitthvað sameiginlegt með fólkinu sem ég er að tala við. Ég reyni að ná til ólíkra áheyrenda með því að tala um hluti sem skipta þá máli.

### Hvaða niðurstöður langar þig að sjá?

Ég vildi að fólk væri í meiri tengslum við náttúruna. Af því að þegar þér er annþing um eitthvað eyðirðu því ekki. Því meira sem þú veist um hversu

talks and speak about astronomy and environmental sciences. Sometimes I simply go out with a telescope to show people the night sky. I try to communicate science through every means possible, and in many cases I donate my work.

### Do you have any tricks for how to reach different target groups?

The most important thing to me is to be enthusiastic and genuine about what I'm talking about. My enthusiasm has to be contagious. Kids are generally very impressionable and easy to reach, and I know that if I tell them that it is bad to pollute the environment with plastic – they actually listen. With grownups it is a lot harder. One good way is to find some shared values with the people I talk to. I try to reach different audiences by talking about something that is relevant to them.

### What result do you wish to see?

I want people to be more in contact with nature. Because if you love something, you do not destroy it. The more you know about how amazingly our planet works, the more connected you will feel, and you start to take better care of it.

We also live in a highly developed society of science and technology but where people in general are very sceptical towards science. To quote Carl Sagan, “it is also a society where hardly anyone knows anything about science and technology”. My goal is to change that in the biggest way I possibly can and make people aware of how incredibly lucky we are to be living here on Earth. Space is huge and it is absolutely impossible to imagine or picture the size of it. So, I just try to use the beauty of space, Earth and the planets and communicate it.

### What is happiness to you?

Spending time with the people I love and for instance biking to work. Happiness to me is also to waste less. We waste so much food these days, that whenever I am able to avoid it I feel really happy. But where I am the happiest is if I go outside in nature, lie down on the ground and look up at the stars.

### Did you ever visit space?

No, but I would love to. I would love to orbit the

# Ég hef fulla trú á því að við getum leyst loftslagsvandann. Þegar hann hefur verið leystur verður samfélagið sem við skiljum eftir okkur enn betra, jafnara og við munum hafa hreinni orku og hreinna umhverfi.

sem mér tekst að forðast það. En mér líður best þegar ég er úti í náttúrunni, leggst á bakið og horfi upp í stjörnuar.

### Hefurðu einhvern tímann komið út í geim?

Nei, en það vildi ég gjarnan gera. Það væri stórkostlegt að fara á braut um jörðina, bara til að geta horft á hana. Eða fara til tunglsins til að ganga í kringum gígana og horfa á allar furður þess og geta um leið litið upp og séð jörðina. Og það væri líka gaman að geta farið til Mars - það er svo margt líkt með plánetunni hérna á Íslandi. En mér þætti gott að koma aftur til jarðar að því loknu. (hlátur)

### Hvað sérðu jákvætt við að deila þekkingu og ræða vísindi og sjálfbæra neyslu og framleiðslu?

Það kann að hljóma undarlega, en ég er virkilega bjartsýnn. Alltaf þegar ég heimsæki skóla og tala við krakka virðast þeir vita nákvæmlega hvað við þurfum að gera. Það er einstakur glampi í augum þeirra. Almennt held ég að það sé að verða mikil breyting á hugsunarhætti fólks. Sem betur fer er fólk farið að hugsa um sjálfbærni á miklu viðtækari hátt. Ég hef fulla trú á því að við getum leyst loftslagsvandann. Þegar hann hefur verið leystur verður samfélagið sem við skiljum eftir okkur enn betra, jafnara og við munum hafa hreinni orku og hreinna umhverfi. Jákvæðu hliðarnar eru miklu betri en þær neikvæðu. Ég reyni að nota stjörnufræði sem leið til að sýna fólki hversu lítil við erum í raun og veru, hvornig við verðum að vinna saman og hugsa vel um þetta geimskip okkar.

Earth just to look at it. Or go to the moon to walk around in the craters and look at all its wonders and at the same time look up and see the Earth. And I would also love to go to Mars – we have so many similarities here on Iceland. But I would like to come back to the Earth afterwards. (laughter)

### What positive things do you see in the knowledge sharing and the discussion about science and sustainable consumption and production?

It might sound weird, but I am really optimistic. Whenever I visit schools and talk to kids, they seem to know exactly what needs to be done. You see a unique spark in their eyes. Overall, I think there is a big change of mindset right now. People are starting to think about sustainability in a much more dramatic way, fortunately. I really do think we will be able to solve the climate crisis. When it is solved, the society we leave behind will be even more positive, more equal and we will have cleaner energy, a cleaner environment. The positive aspects are much better than the negative ones. I try to use astronomy as a way of showing people how small we really are, the need for us to cooperate and take good care of this spaceship of ours.

## The more you know about how amazingly our planet works, the more connected you will feel, and you start to take better care of it.

stórkostlegt gangverk plánetunnar okkar er, því tengdari því finnst þér þú vera og þá ferðu að hugsa betur um hana.

Þar að auki búum við einnig í afar þróuðu vísinda- og tæknisamfélagi, en fólk er almennt einnig afar vantrúað á vísindin. Svo ég vitni nú í Carl Sagan, hann sagði að „þetta væri líka samfélag þar sem varla nokkur maður vissi nokkurn skapaðan hlut um vísindi og tækni“. Markmið mitt er að gera eins miklar breytingar á því og ég get og gera fólk meðvitað um hversu ótrúlega heppin við erum að búa hérna á jörðinni. Geimurinn er gríðarstór og það er nánast ógerlegt að ímynda eða sjá fyrir sér stærð hans. Svo að ég reyni bara að nota fegurð geimsins, jarðarinnar og plánetanna og miðla henni til fólks.

### Hvað færir þér hamingju?

Að verja tíma með fólkinu sem mér þykir vænt um og til dæmis að hjóla í vinnuna. Hamingjan felst líka í minni sóun. Við fleygjum svo miklu af mat núorðið að ég verð virkilega ánægður í hvert skipti



# Samarbete *Partnerships*

Främja samverkan mellan olika aktörer för att bidra till innovativa, hållbara och tvärvetenskapliga lösningar.

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



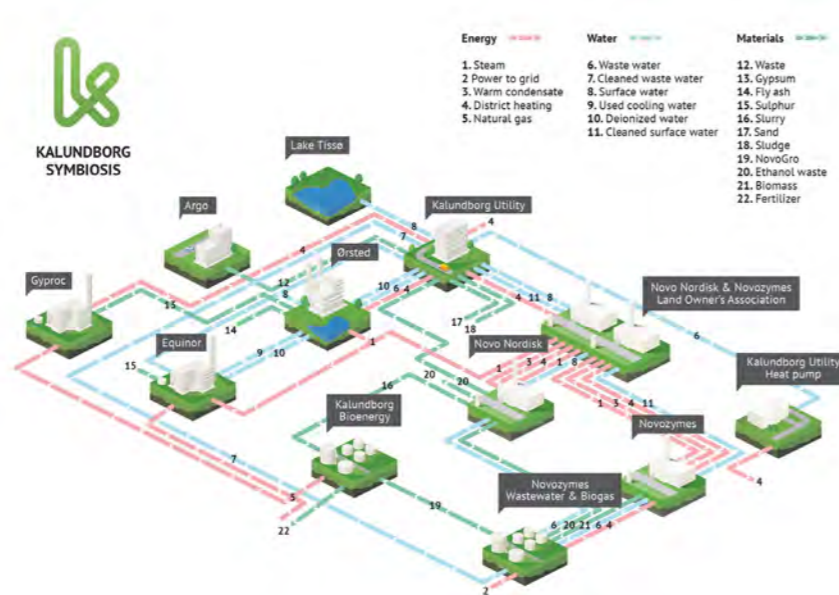


# 03

**Samverkan mellan samhällsinsatser, marknadskrafter och förändrade beteenden är avgörande för att konkret skala upp hållbara lösningar och göra dem till norm. Individer måste våga testa nya saker, företag måste våga investera i nya lösningar och politiker måste våga fatta beslut kring styrmedel.**

*Collaboration between social initiatives, market forces and changed behaviour is essential to scale up sustainable solutions and make them the norm. Individuals must have the courage to test new things out, companies must dare to invest in new solutions and politicians need to make forceful decisions on policy instruments.*

Kalundborg Symbiose er verdens første industrisymbiose, hvor den ene virksomheds affald bliver til en ressource i en anden.



Kalundborg Symbiosis.  
Image Credit : Kalundborg Symbiosis and Symbiosis Center Denmark

Kalundborg Symbiose er verdens første industrisymbiose, hvor den ene virksomheds affald bliver til en ressource i en anden. Når industriparkens deltagere deler deres overskydende materialer, energi eller vand i et eget økosystem, skaber det miljømæssige og økonomiske fordele.

København har et mål om at blive verdens første CO<sub>2</sub>-neutrale hovedstad i 2025. Samtidig vokser byens befolkning med ca. 1.000 indbyggere pr. måned. Det kræver nye samarbejder og teknikker at møde udfordringerne. Copenhagen Solutions Lab ved kommunens Teknik- og Miljøforvaltning fungerer som forbindelsesled mellem kommune, forskere og næringsliv. I udviklingen af "smart city" matches behov med intelligent teknik og dataindsamling. På tre bylaboratorier udføres omfattende eksperimenter, og i samarbejde med Google er der installeret luftmålere i en Street View-bil. Byens luftkvalitet undersøges, samtidig med at der indsamles data til den kommende trafikplanlægning.

Strategisk Byledelse er et kompetenceudviklingsforløb fra Dansk Arkitektur Center, som giver danske kommuner inspiration og værktøjer. Begrebet strategisk byledelse skal forstås som det, der foregår i mødet mellem politikere, borgmestre og topembedsmænd, som relaterer sig til en bys udvikling eller til et stort byudviklingsprojekt. Samtidig skaber det et netværk danske kommuner imellem, og fungerer som en vigtig platform for dialog og vidensdeling. Det giver adgang til cases, analyseredskaber og strategiske greb til løsning af de udfordringer og muligheder, som danske kommuner står over for.

Kalundborg Symbiosis is the world's first industrial symbiosis, where one company's waste is another's resource. As the members of the symbiosis share surplus material, energy or water in their own ecosystem, they create environmental and economic gains.

Copenhagen aims to be the world's first CO<sub>2</sub>-neutral capital by 2025. At the same time, the city's population is increasing by

around 1,000 people per month. New collaborations and technologies are required to face the challenges. The municipal Copenhagen Solutions Lab acts as a link between the municipality, researchers and industry. In the creation of a "smart city", needs are matched with intelligent technology and data collection. Full-scale experiments are being carried out at three city laboratories, and through a collaboration with Google, a street-view car has been fitted with an air quality meter. The city's air quality is being investigated while data is collected for future traffic planning

Strategisk Byledelse inspires and provides tools for Danish municipalities. The concept of strategic urban management is understood as the meeting between politicians, mayors and top officials for the purpose of city development or a major urban development project. It also creates a network between Danish municipalities and acts as an important platform for dialogue and knowledge sharing. It provides access to cases, analysis tools and strategic approaches to address the challenges and opportunities faced by Danish municipalities.

Euroopan innovaatiotulostaulun mukaan Helsingin seutu oli EU:n maantieteellisesti innovatiivisin alue vuonna 2019.

Euroopan innovaatiotulostaulun mukaan Helsingin seutu oli EU:n maantieteellisesti innovatiivisin alue vuonna 2019. Käynnissä on viisivuotinen Smart & Clean -hanke, jossa pääkaupunkiseudun ja Lahden tavoitteena on tulla maailman parhaaksi älykkäiden ja puhtaiden ratkaisujen testialustaksi vuoteen 2021 mennessä. Ilmastomuutosta pyritään hillitsemään uusilla liikenteeseen, energiaan, asumiseen ja jätehuoltoon liittyvillä menetelmillä. Samalla syntyy myös uutta liiketoimintaa. Smart & Clean -säätio on Suomen hallituksen sekä pääkaupunkiseudun tutkimuslaitosten ja yritysten yhteishanke.

Kestävyytavotteiden saavuttamiseksi on luotava uudenlaisia yhteistyömuotoja. Aalto-yliopistossa toimivan Aalto Sustainability Hubin tavoitteena on käydä keskustelua kestävyteen ja kiertotalouteen liittyvien tieteenalojen välillä. Päämääränä on tieteenalojen välinen ymmärrys tulevaisuuden vaatimuksista.

Ajatushautomo Demos Helsingin perustama Peloton Club toimii uusien kestävään kehitykseen erikoistuneiden yritysten hautomona. Uusille ratkaisuille on valtava kysyntä, ja liiketoimintamahdollisuuksia voidaan luoda pitkälle tulevaisuuteen. Peloton Club tarjoaakin uusille yrityksille verkoston ja työkaluja ideoiden suunnitteluun ja testaamiseen.

"Yrittäjämäinen ekosysteemi" syntyy, kun ongelmanratkaisijat, jo toimivat yritykset ja startupit tuodaan yhteen. Etusijalla ovat älykkääseen energiaan, älykoteihin ja älykkääseen liikkumiseen liittyvät ratkaisut.

According to the European Innovation Scoreboard, the Helsinki region is the most innovative geographical area within the EU in 2019. One of the current projects is the five-year long Smart & Clean, which aims to make Greater Helsinki and Lahti the world's foremost testbed for smart and clean solutions in 2021. Using new methods for transport, energy, households and waste, the climate change can be mitigated while producing new business opportunities. The Smart & Clean Foundation is a joint tool for the Government and the research institutes and companies of the Helsinki region.

New collaborations have to be formed to achieve the Sustainable Development Goals. The Aalto Sustainability Hub at

*A type of "entrepreneurial ecosystem" is created as start-ups are connected with problem-solvers and working businesses.*

Aalto University facilitates a dialogue between various research areas based on sustainability and circular economy. The goal is a cross-disciplinary understanding of

future requirements. The board consists of professors from all the university faculties.

Peloton Club acts as an incubator for new companies within sustainability. The demand for new solutions is enormous and creates business opportunities for a long time to come. Peloton Club is providing tools and networks for new companies to build and test their ideas. A type of "entrepreneurial ecosystem" is created as start-ups are connected with problem-solvers and working businesses. Solutions in smart energy, smart homes and smart mobility are prioritised. Behind the club is Finnish think tank Demos Helsinki.





## Sverige / Sweden

I Sverige sker ett omfattande tvärpolitiskt arbete; riktade forskningsinsatser, nationella delegationer och statliga rapporter.

I Sverige sker ett omfattande tvärpolitiskt arbete; riktade forskningsinsatser, nationella delegationer och statliga rapporter. Statistik kring hållbarhetsindex skapas av bland annat Statistiska Centralbyrån och Sveriges Kommuner och Landsting. Inte minst sker satsningar på kommunal och regional nivå; Lunds kommun har bildat ett klimatpolitiskt råd och Trelleborgs kommun jobbar med en årlig hållbarhetsrapport som knyts till budgetarbetet. För att underlätta samverkan mellan regeringen och civilsamhället har ett nationellt organ – NOD – bildats för dialog mellan parterna.

När Mistra Future Fashion startade 2011 var det världens enda tvärdisciplinära forskningsprogram runt hållbart mode. Forskningen fokuserar på samspelet mellan design, leverantör, konsument och återvinning, och visionen är en framtida cirkulär modeindustri. Mistra Future Fashion koordineras av RISE, Research Institutes of Sweden.

BillerudKorsnäs och Uppsala universitet forskar tillsammans om pappersbatterier

som kan lagra energi. Det öppnar vägen för smarta förpackningar med många funktioner, till exempel för att visa när mjölken är för gammal. Batteriet återvinns tillsammans med kartongen.

Svenska miljöinstitutet samarbetar med bland annat Dalatrafik och företaget Freelway för att tänka nytt kring samåkning och kollektivtrafik i glesbygd. Resor kan bokas via en app, såväl privata körningar som Dalatrafiks lediga platser i Serviceresor.

In Sweden, there are extensive cross-political initiatives: targeted research initiatives, national delegations and government reports. Sustainability index statistics are created by Statistics Sweden and the Swedish Association of Local Authorities and Regions (SALAR), among others. There are local initiatives, for example in Lund Municipality, which has formed a climate policy council, and Trelleborg Municipality is also working on an annual sustainability report linked to its budget. A national body, the NOD, has been formed to facilitate collaboration and dialogue between the Government and civil society.

When Mistra Future Fashion started in 2011, it was the world's only cross-disciplinary research programme on sustainable fashion. Its research is focused on the interaction between design, supplier, consumer and recycling, with the vision of a future circular fashion industry. Mistra Future Fashion is coordinated by RISE – Research Institutes of Sweden.

BillerudKorsnäs and Uppsala University are conducting joint research on paper batteries that can store energy. This opens up for smart packaging with multiple functions that could for example tell you when the milk has expired. The battery is recycled along with the cardboard.

The Swedish Environmental Research Institute is collaborating with Dalatrafik and Freelway to develop new ideas on car-pooling and public transport in rural areas. Journeys can be booked through an app, both for private rides and available spaces in Dalatrafik's service vehicles.



## Nok snakk, nå er det tid for handling, oppfordrer 17 Østfold-kommuner.

Nok snakk, nå er det tid for handling, oppfordrer 17 Østfold-kommuner. For å nå sine klimamål samarbeider kommunene, fylkestinget og fylkesmannen om "Klima Østfold". Den felles kommunale handlingsplanen er et verktøy for å iverksette tiltak som reduserer både klimagassutslipp og energiforbruk. Ifølge beregninger er det mulig å redusere utslippene med omkring 20 prosent. En sammenlignbar studie er gjennomført for alle de kommunale klima- og energiplanene, og hvert år utarbeides det en regional handlingsplan. Arbeidet med Klima Østfold har ført til en lang rekke tiltak, bl.a. en felles avtale om kjøp av ladestolper for elbiler, gradvis avvikling av oljeoppvarming i kommunale bygg og utprøving av fossilfrie maskiner.

festivaler. Opplevelsesnæring, bærekraft og stedets attraktivitet er nøkkelord.

Enough talk, it's time for action, says 17 municipalities in Østfold. In order to achieve their climate objectives, the municipalities, county councils and county governor are collaborating in "Klima Østfold". The municipal joint action plan is a tool for implementing measures to reduce both greenhouse emissions and energy consumption. According to calculations, emissions can be reduced by around 20 per cent. A comparative study has been carried out for all municipal climate and energy plans, and a regional action plan is produced annually. The work with Klima Østfold has led to a range of measures, including joint purchasing agreements for electric vehicle charging poles,

Træna an incubator for new ideas and visions. The festival celebrated in July is at the top of the Guardian's list of the world's best festivals. Adventure industry, sustainability and attractiveness are the catchwords.

## Arbeidet med Klima Østfold har ført til en lang rekke tiltak, bl.a. en felles avtale om kjøp av ladestolper for elbiler, gradvis avvikling av oljeoppvarming i kommunale bygg og utprøving av fossilfrie maskiner.

Med under 500 innbyggere er øygruppen Træna Norges tredje minste kommune. Til tross for sin lille størrelse ble den i 2018 valgt som landets mest innovative kommune for sin unike tilnærming til involvering, samskaping og smarte løsninger. Kunstnere, gründere og kreative fra hele verden kan ta med seg prosjekter og bo der i en periode, noe som har ført til at Træna har blitt en inkubator for nye ideer og visjoner. Festivalen som arrangeres i juli, topper The Guardians liste over verdens beste

gradual divestment from oil heating in municipal buildings and the testing of fossil-free machines.

With barely 500 inhabitants, the island group Træna is Norway's third smallest municipality. Despite its size, it was selected in 2018 as the country's most innovative municipality for its unique approach to inclusion, collaboration and smart solutions. Artists, entrepreneurs and innovators from around the world can bring their projects and live here for a period, which has made

## Norrænir matreiðslumenn hafa sameinast um stefnuna Ný norræn matargerð.

Norrænir matreiðslumenn hafa sameinast um stefnuna Ný norræn matargerð. Stefnan er í tíu liðum sem varða hreinleika, árstíðabundið framboð, siðferði, hollustu, sjálfbærni og gæði. Í íslenskri matargerð samtímans er lögð áhersla á gæði og grænmetisframleiðsla hefur aukist mikið. Ísland er líklega eina landið í heiminum þar sem finna má „grænmetisráðuneyti“. Grænmetisráðuneytið er samstarfsverkefni sex hönnuða og er byggt á þeirri hugmyndafræði að matur eigi að vera bæði næringarríkur og sjálfbær. Í samvinnu við aðila í atvinnulífi, bændur, námsmenn og stofnanir hafa tækifæri til vöruþróunar í íslenskum matvælaíðnaði verið kortlögð. Hráefni og framleiðslukerfi hafa verið skoðuð, til að skapa verðmæta vöru og virkja kraftinn sem verður til við samvinnu, þvert á mismunandi atvinnugreinar. Áður var til dæmis hundruðum tonna af gulrófum fleygt árlega vegna þess að þær náðu ekki viðmiðunarþyngd. Í dag eru þær nýttar með ýmsum hætti, til dæmis við áfengisgerð og gerð bragðefna fyrir gosdrykki.

Til eru sveppategundir sem geta brotið niður eitruð efni. Sumar þessara tegunda draga í sig þungmálma, aðrar taka upp mismunandi efni. Með því að rækta sérvaldar tegundir á menguðum landsvæðum er hægt að gera spilltan jarðveg nýtilegan til ræktunar á ný. Liffraeingurinn og hönnuðurinn Sigrún Thorlacius hefur sýnt fram á hvernig sveppir geta komið af stað niðurbroti eitrefna sem annars myndu safnast upp í umhverfinu í verkefni sínu Heilun jarðar /Healing Earth sem unnið er í samvinnu við Náttúrufræðistofnun Íslands.



Samples of Icelandic vegetable juices. Image Credit: The Ministry of Icelandic Vegetables

Nordic chefs have rallied around the New Nordic Food Manifesto. It sums up ten objectives for purity, seasonality, ethics, health, sustainability and quality. The food is to promote Nordic products, and new uses are to be developed for traditional ingredients. Modern Icelandic food has an emphasis on quality, and the production of vegetables has increased. Today, Iceland is probably the only country in the world with a "Ministry of Vegetables". The ministry was formed by six designers with the idea that food can and should be both local and sustainable. In collaboration with businesses, farmers, students and institutions, they survey the possible product developments within the Icelandic food industry. Ingredients and production systems are investigated with the aim of creating valuable products, while harnessing the

power of collaboration across professions. Hundreds of tonnes of rutabagas were previously wasted every year because they were too small. But today, they are used to make alcohol and flavourings instead.

Certain species of fungi have the ability to break down toxins. Some will absorb heavy metals, others chemicals. Growing carefully selected species in contaminated areas can make the soil usable again. In collaboration with the Icelandic Institution of Natural History, biologist and designer Sigrún Thorlacius is looking at how fungi can start the breakdown of toxins that would otherwise accumulate in the environment.





**Hans-Martin  
Friis Møller** CEO, Kalundborg Forsyning  
CEO, Kalundborg Utility

**Illustration**  
Kristian Andréason

*Hans-Martin Friis Møller is the CEO of Kalundborg Utility A/S. The Kalundborg Utility is a multi-utility facility and an important part of the Kalundborg Industrial Symbiosis, which is the world's first industrial symbiosis.*

**Hej Hans-Martin! Du er administrerende direktør for Kalundborg Forsyning og en af partnerne i Kalundborg Symbiose, den første industrisymbiose i verden. Hvorfor er den unik?**

Symbiosen blev oprettet i 1972 i Kalundborg. Det er et lokalt partnerskab og samarbejde mellem ni offentlige og private virksomheder. Vi leverer, deler og genbruger materialer, energi eller vand i et økosystem, der er skabt af virksomhederne. Vi har en cirkulær tilgang til produktion, for eksempel transport og udnyttelse af vand og energi mellem de forskellige virksomheder i cirkulære strømme eller sløjfer. Hovedprincippet er, at reststrøm fra en virksomhed i symbiosen bliver en ressource i en anden, til gavn for både miljøet og økonomien. Denne måde at samarbejde på skaber en fælles værdi og gensidige fordele for alle involverede virksomheder.

*Hello Hans-Martin! You are the CEO of Kalundborg Utility and one of the partners in The Kalundborg Symbiosis, the first industrial symbiosis in the world. What makes it unique?*

The Symbiosis was founded in 1972 in Kalundborg. It is a local partnership and collaboration between nine public and private companies. We provide, share and reuse material, energy or water in an eco-system created by the companies. We have a circular approach to production, for example transporting water between the different companies in circular flows or loops. The main principle is that residue from one company in The Symbiosis becomes a resource in another, benefiting both the environment and the economy. Furthermore, this way of collaborating creates a shared value and mutual benefits for all companies involved.

# Hovedprincippet er, at reststrøm fra en virksomhed i symbiosen bliver en ressource i en anden, til gavn for både miljøet og økonomien.

## Hvordan ser du bæredygtig produktion generelt i relation til mål 12?

Når vi indvinder grundvand, sørger vi for, at det sker på en bæredygtig måde. Vi oppumper ikke mere vand, end nedbøren kan regenerere. Vi tager hensyn til balancen i økosystemerne og forsøger at undgå at forstyrre den naturlige balance. Vi undersøger i øjeblikket muligheden for at opbygge ressourcer i søer for at mindske afstrømningen og samtidig være i stand til at bruge vandet til andre formål. Vi arbejder også med bæredygtighed i form af ansvarlig udnyttelse af alle øvrige ressourcer på langt sigt. Dette udmønter sig bl.a. i, at vi genbruger det samme vand flere gange i symbiosen.

## Hvad er det mest alarmerende, der foregår i din sektor og i miljøet i øjeblikket?

Den største udfordring er uden tvivl klimaet. For det første er vi nødt til at sikre vores ressourcer. Sidste år oplevede vi, at vandstanden i vores reservoirsøer var meget lav på grund af en usædvanlig varm sommer. Vi ser også en alarmerende vækst i kemikalier og farmaceutiske stoffer, især i havmiljøet. Kalundborg Forsyning er det første anlæg i Danmark til at implementere en ny teknologi, der anvender ozon til at fjerne farmaceutiske stoffer fra vores spildevand.

## Det er gode nyheder! Hvordan samarbejder I med andre organisationer og virksomheder?

Partnerskaber er afgørende for vores organisation og eksistens som symbiose, faktisk er det nøglen til vores overlevelse. Nogle eksempler på vores partnere er Novo Nordisk, Equinor og Novozymes. Vi ved, at symbiosen skaber vigtig vækst i lokalområdet, understøtter virksomhedernes CSR

## How do you view sustainable production in general, related to goal 12?

When we withdraw or abstract water, we make sure it is being done in a sustainable way. We do not take more water away than the rain could regenerate. We look into balancing eco-systems where we make sure not to disturb the natural balance. We are currently exploring the possibility of building up resources in lakes in order to delay water streams and at the same time be able to use the water for other purposes. Secondly, we work a lot with sustainability in terms of long-term responsible use of resources. Furthermore, we reuse water several times in the symbiosis.

## What is the most alarming thing happening in your sector and the environment at the moment?

The greatest challenge is without a doubt the climate. Firstly, we have to secure our resources. Last year we found that the water level in our reservoir lakes was very low because of an exceptionally hot summer. We also see an alarming increase of chemicals and pharmaceuticals in the environment. The Kalundborg Utility is the first plant in Denmark to implement a new technology using ozone to remove pharmaceuticals from our waste water.

## Great news! How do you partner with other organisations and businesses?

Partnership is key to our organisation and existence as a symbiosis. It is actually crucial to our survival. Novo Nordisk, Equinor and Novozymes are only three examples of our partners. We know that The Symbiosis creates important growth in the local area and supports the companies' CSR and climate mitigation. Kalundborg is located in a bay surrounded by water; we call it the bay of partnership due to all the different types of collaboration in The Symbiosis.

og reducerer deres klimapåvirkning. Kalundborg er beliggende ved en bugt og omgivet af vand, vi kalder den partnerskabsbugten på grund af alle de forskellige typer samarbejde, der findes i Symbiose-projektet.

## Er der risici eller ulemper ved at basere en organisation på partnerskaber?

Nej - bortset fra, at alle ønsker at kopiere os! De ser den store værdi, det har skabt, både på bundlinjen og som ekstra værdi i forbindelse med CO<sub>2</sub>-udledning og klimapåvirkning. Partnerskaber skaber udelukkende merværdi for os. Internationalt er vi pionerer på området, og jeg tror, vi inspirerer mange andre industrielle samarbejder og virksomheder. For halvtreds år siden, da vi startede, var der ingen, der talte om cirkulær økonomi.

*We reduce CO<sub>2</sub> and show the way forward, and in our facilities, people can see for themselves that it is possible. And they bring ideas and inspiration home.*

Udfordringen er, at vi er i et politisk system, hvor forsyningsselskaber reguleres strengt. Det, vi gør, er kun muligt, fordi vores ejer, Kalundborg Kommune, vil have os til at gøre det, kan man sige. Samarbejdet med vores leverandører, besøgende og universiteter er selvfølgelig også en form for partnerskaber, og det er af stor værdi for os.

## Hvad giver dig energi i dit arbejde?

At vi gør en forskel! Selv i en lille by som Kalundborg er det muligt at skabe noget, der kan ændre verden. Vi reducerer CO<sub>2</sub>-udledningen og viser vejen frem, og i vores anlæg kan folk ved selvsyn se, at det er muligt. Og de tager idéer og inspiration med hjem. Noget andet, der også giver mig energi, er, at bevise, at vi som forsyningsvirksomhed nu er en nettoproducent af energi.

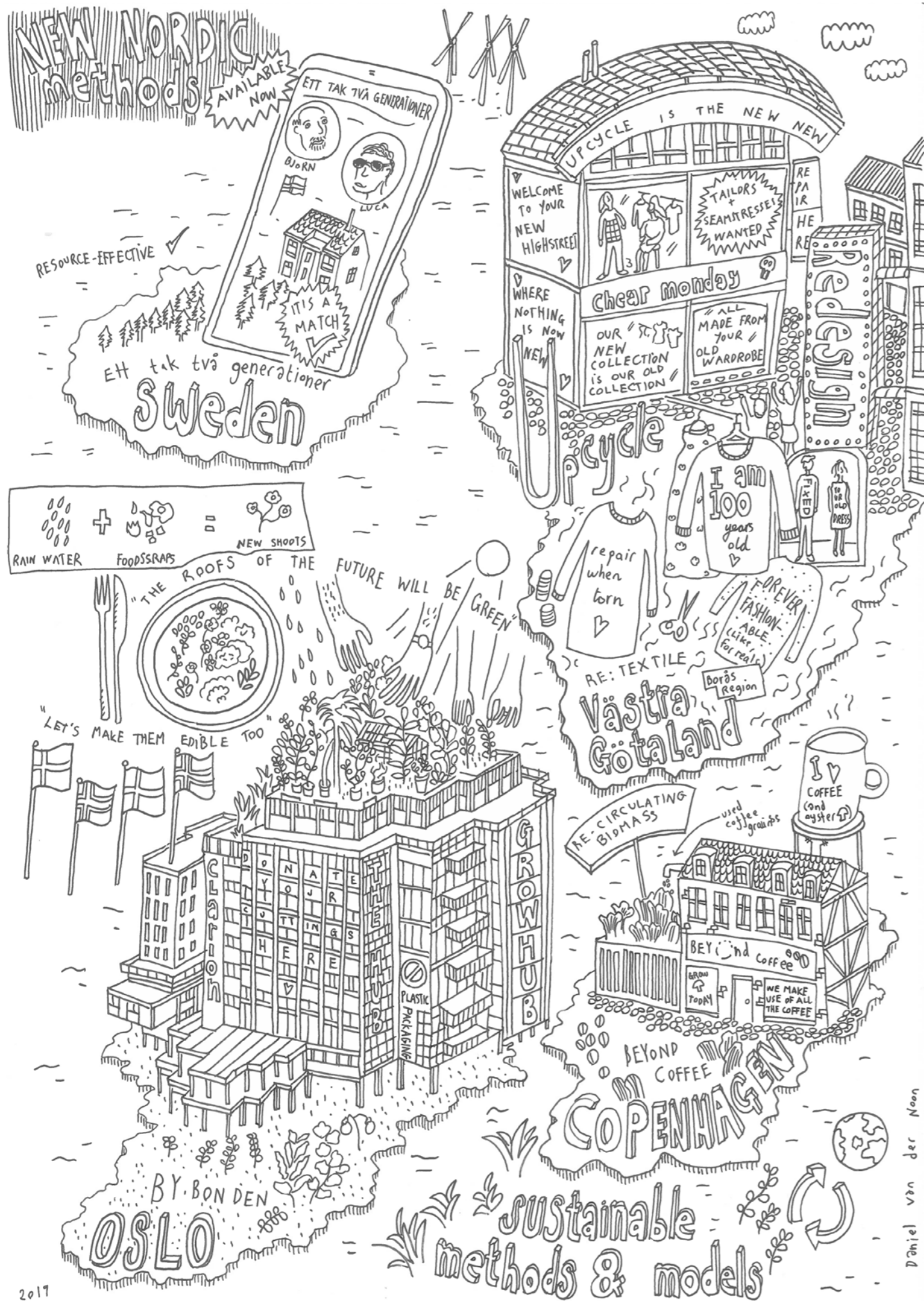
## Are there any threats or disadvantages in basing an organisation on partnerships?

No - except everybody wanting to copy us! They see the great value it has created, both at the bottom line and also as increased value in terms of CO<sub>2</sub> emissions and climate adaptation. Partnerships only create added value to us. Internationally we are a pioneer in the field, and I believe we inspire many other industrial clusters and businesses. Fifty years ago, when we started, no one was talking about the circular economy. The challenge is that we are in a political system where utilities are strictly regulated. What we are doing is only possible because our owner, the municipality, wants us to do it, I would say. Collaborations with our suppliers, visitors and universities are of course also a kind of partnership and of great value to us.

## What gives you energy in your work?

That we make a difference in what we do! Even in a little town like Kalundborg it is possible to create something that can change the world. We reduce CO<sub>2</sub> and show the way forward, and in our facilities, people can see for themselves that it is possible. And they bring ideas and inspiration home. Also proving that we, as a utility, are now a net producer of energy.





# Hållbara metoder och modeller

## *Sustainable Methods and Models*

Dela och exporter nordiska metoder och processer för hållbar produktion och konsumtion internationellt.  
*Share and export the Nordic methods and processes for sustainable production and consumption internationally.*

04

**Omkring 80 procent av en produkts miljöpåverkan styrs redan i planeringsarbetet. Att använda designprocessen som metod – tänka till i tidiga skeden, arbeta normbrytande och involvera brukare – är ett effektivt sätt att verka i hållbar riktning.**

*Around 80 per cent of a product's environmental impact is determined already in the planning phase. Using the design process as a method – to think twice in the early stages, work against norms and involve the users – is an effective way to take sustainable action.*



## E-handel får transport til å eksplodere, og millioner av pakker sendes daglig til mottakere over hele verden.

E-handel får transport til å eksplodere, og millioner av pakker sendes daglig til mottakere over hele verden. Globalt utgjør transport en sjuendedel av klimagassutslippene. En stor del av transporten i Norge foregår på veiene, og for å bidra til grønne løsninger må mer av transporten flyttes over til sjøveien. Den maritime hub-en NCE Maritime CleanTech driver blant annet prosjektet Short Sea Pioneer, en 2-fartøysløsning som endrer måten vi frakter varer langs kysten. På utvalgte punkter langs kysten vil det skje en omlasting fra et moderfartøy til datterfartøy. Kombinasjonen gjør det mulig å minske både kostnader og utslipp, og man kan fortsette å bruke eksisterende kaianlegg.

Konstruksjonsvirket limtre er sterkt og relativt lett, så det kan brukes på eksisterende bygninger der tunneler og avløpsrør gjør at hustyngden ikke kan øke.

E-commerce is causing increase in transports, and millions of packages are being sent around the world every day. Globally, transports account for one seventh of greenhouse gas emissions. A large proportion of all transports in Norway go by road, and to contribute to green solutions, more of these transports need to go by sea. NCE Maritime CleanTech is conducting the project Short Sea Pioneer, a two-vessel system that creates a coastline solution. It consists of a large mother ship with a docking station and a smaller feed vessel

more lean construction and a smaller carbon footprint. A greater use of wood will also substantially reduce CO2 emissions. Laminated timber is a strong and relatively light material that can be used on top of existing buildings, where subways and sewer pipes make it unsafe to add weight to the construction.

## Man forventer at 75 prosent bor i byer i år 2050, nesten en fordobling mot i dag.

Man forventer at 75 prosent bor i byer i år 2050, nesten en fordobling mot i dag. Nye materialer og produksjonsprosesser er nødvendige for boliger og infrastruktur. Betongproduksjon er en viktig kilde til utslipp av CO2, og DARE2C-prosjektet - Durable Aluminium Reinforced Environmentally – friendly Concrete Construction – ser på nye betongblandinger som er compatible med aluminium. Aluminium er mer motstandsdyktig mot korrosjon enn stål, og når man bruker mindre betong, blir konstruksjonen jevnere og karbonavtrykket synker. Bruk av trevirke i større grad enn vi gjør i dag gir også et betydelig lavere karbonavtrykk.

that can call at existing quays. The combination makes it possible to reduce both costs and emissions.

By 2050, 75 per cent of all people are expected to live in cities, almost doubling the current figure. New materials and manufacturing processes are needed for housing and infrastructure. Concrete production is a major source of CO2 emissions, and the project Durable Aluminium Reinforced Environmentally-friendly Concrete Construction (DARE2C) is looking into new concrete mixes that are compatible with aluminium. Aluminium is more corrosion-resistant than steel, and using a smaller amount of concrete makes for a

## Suomessa kestäväen kehityksen tavoitteiden saavuttamista arvioidaan hallituksen POLKU2030-hankkeessa, joka on osa kestäväen kehityksen Agenda 2030 -tavoiteohjelmaa.

Suomessa kestäväen kehityksen tavoitteiden saavuttamista arvioidaan hallituksen POLKU2030-hankkeessa, joka on osa kestäväen kehityksen Agenda 2030 -tavoiteohjelmaa. Selvityksen mukaan Suomi on oikealla tiellä, vaikka lisää dynamiikkaa ja johdonmukaisuutta tarvittaisiinkin. Tavoitteiden saavuttaminen vaatii järjestelmätason muutoksia ja keskittymistä ilmastomuutokseen, ympäristökysymyksiin, kulutukseen ja lisääntyvään epätasa-arvoisuuteen. Tulevien hallitusohjelmien on perustuttava kestävään kehitykseen, ja tavoitteisiin pääsemiseksi on laadittava konkreettiset suunnitelmat.

Kiertotalouden yksi keskeisimmistä haasteista on uusien materiaalien luominen. Synteettinen biologia yhdistää luonnontieteet ja insinööritieteet. Kun eläviin organismeihin lisätään uutta DNA:ta, voidaan luoda uusia rokotteita, biopolttoaineita ja elintarvikkeita, vaikka samalla menetelmä nostaa esiin myös eettisiä kysymyksiä. Synbio Powerhouse työskentelee kehittääkseen uusia synteettiseen biologiaan perustuvia liiketoimintamalleja. Esimerkiksi muotoilutoimisto Aivanin suunnitteleminen Korvaa-kuulokkeiden materiaalit kehitettiin yhteistyössä tutkijoiden kanssa mm. sienistä ja hiivapohjaisesta biomuovista. Kuulokkeiden sanko on 3D-tulostettua biomuovia, joka on tehty hiivan tuottamasta maitohaposta ja kuulokkeiden "nahka" on sienirihmastoa. Kuulokkeet ovat kokeellinen ja tieteellinen yhteistyöhanke, jossa tutkittiin mikrobimateriaalien muotoilua ja toimivuutta.



The World's First Microbe Grown Headset, Aivan. Image Credit: Aivan

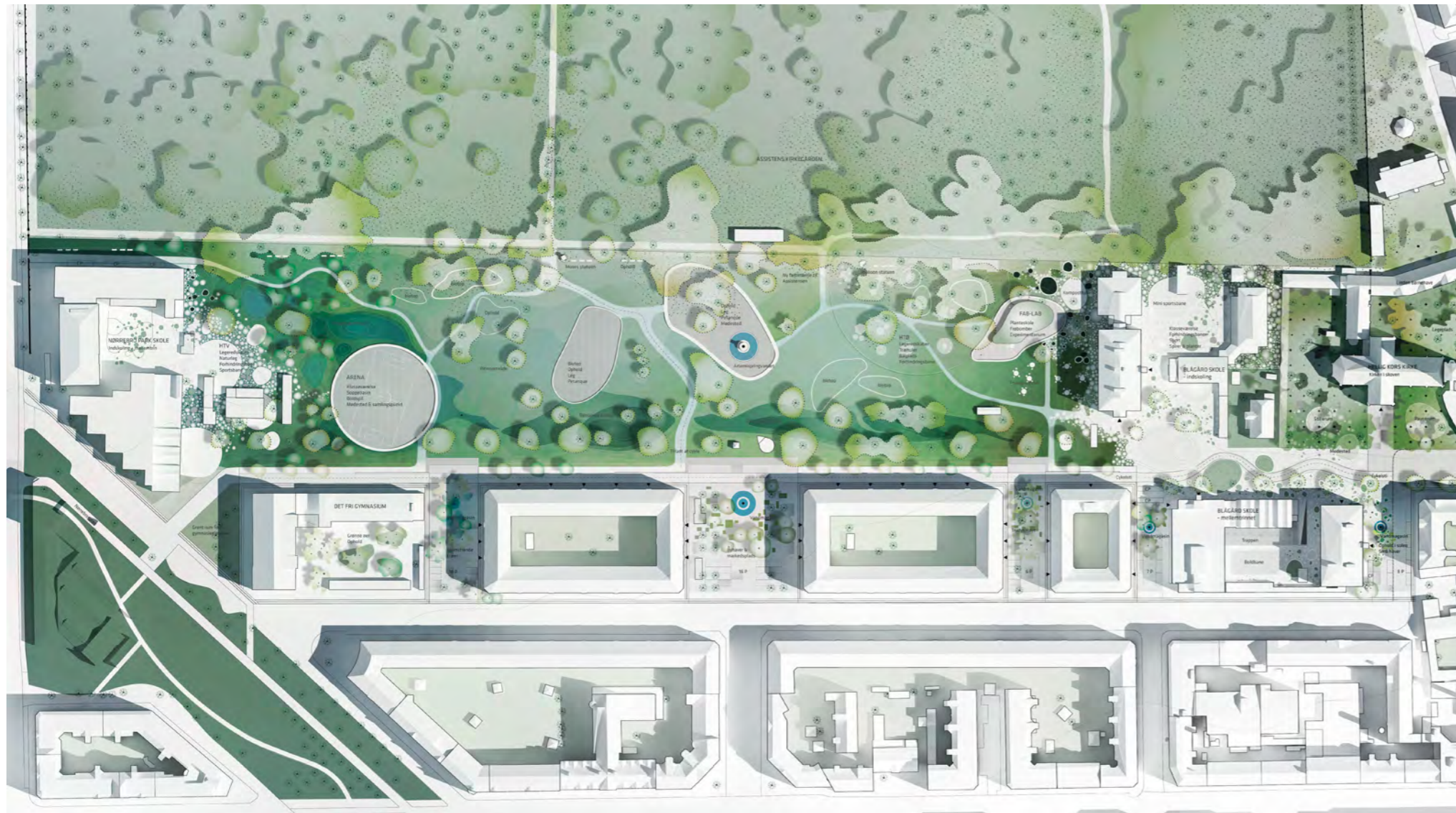
Agenda 2030 entered into force in 2016, and the Finnish efforts to achieve the Sustainable Development Goals are evaluated in the government report POLKU2030. The investigation indicates that Finland is on the right path, but that the policies need to be more dynamic and consequential. Systemic changes are required to attain the goals, and the work towards sustainable development requires a focus on climate change, environmental issues, consumption and growing inequalities. Future government programmes must be based on sustainable development and a roadmap to the attainment of the goals should be produced.

Creating new materials is part of the future challenges for the circular economy, and the research field of synthetic biology

combines natural science with engineering. Adding new DNA to living organisms creates possibilities for vaccines, biofuels and foods, while also giving rise to ethical questions. Synbio Powerhouse is striving to produce business models based on synthetic biology. Fungi, yeast-based bioplastics and other microbial materials are for example used in the Korvaa headphones created by the design studio Aivan in collaboration with researchers. The headband is in 3D-printed bioplastic based on lactic acid from yeast, and the "leather" is a fungal mycelium. The headphones constitute an experimental collaboration investigating the design and functional possibilities of microbial materials.



## Vand kommer til at blive én af vores største udfordringer i fremtiden.



The Soul of Nørrebro, ©SLA. Image Credit: ©SLA

Vand kommer til at blive én af vores største udfordringer i fremtiden. "The Soul of Nørrebro" viser, hvordan samarbejde og design kan få byer til at udnytte de naturlige omgivelser. Projektet, som kombinerer klimatilpasning og byplanlægning, involverer etablering af en række afløbsbassiner til regnvand i Hans Tavsens Park. Når overskudsvandet ledes videre til Københavns søer, undgås oversvømmelser, samtidig med at vandet renses i biotoper anlagt langs Korsgade. Projektet står klar i 2023.

Flytrafikken bidrager til klimapvarmning, og hvert år rejser 30 mio. personer fra Copenhagen Airport (CPH). CPH's mål er at være helt fri for udledning af kuldiioxid fra både flytrafik, landtransport og drift i 2050. Det kræver partnerskaber med forskere og beslutningstagere at udvikle mulige løsninger til bæredygtigt brændstof, elektriske fly og klimavenlige teknologier, og i 2018 indledte CPH et samarbejde med Danmarks Tekniske Universitet i det EU-finansierede projekt "Energy-X". Visionen er gennem katalyse at kunne omdanne sol og vindkraft til kemisk form og dermed få brændstof til bl.a. flyindustrien. Projektet forventes at foregå over flere år.

Landbrugsorganisationen Landbrug & Fødevarer ønsker en klimaneutral dansk madproduktion i 2050. "Vi vil - i tæt samarbejde med resten af Danmark og i overensstemmelse med FN's verdensmål - vise verden, at der findes en økonomisk bæredygtig vej til en klimaneutral fødevarerproduktion," skriver organisationen.

Water will be one of our greatest future challenges. "The Soul of Nørrebro" shows how collaboration and design can encourage cities to preserve their natural surroundings. The project combines climate adaptation and urban planning to give Hans Tavsens Park a number of waste water pools for rainwater. The surplus water continues to the lakes of Copenhagen, which prevents flooding, while the water is cleansed through biotopes built along Korsgade. The project will be complete by 2023.

Air travel contributes to climate change, and 30 million people travel out of Copenhagen Airport (CPH) every year. CPH's aim is to reach zero CO2 emissions by 2050, including flights as well as ground transport and operations. This requires partnerships with researchers and decision-makers to create possible solutions for sustainable fuel, electrical aircraft and climate-friendly technologies, and in 2018, CPH initiated a collaboration with the Technical University of Denmark in the EU-funded project "Energy X". The vision is to catalyse solar and wind power into a chemical compound, thereby producing fuel for the aviation industry. The project is expected to run for several years.

The agricultural organisation Landbrug & Fødevarer envisions climate-neutral Danish food production by 2050. "In close collaboration with the rest of Denmark and in accordance with the UN's Sustainable Development Goals, we want to show the world that there is an economically sustainable path to climate-neutral food production," the organisation writes.



## Fiskroð, sem er afgangsafurð, er framleiðslugrundvöllur Kerecis, sem er það íslenska fyrirtæki sem er í örustum vexti nú um stundir.

Fiskroð, sem er afgangsafurð, er framleiðslugrundvöllur Kerecis, sem er það íslenska fyrirtæki sem er í örustum vexti nú um stundir. Roð fiska úr köldum sjó er auðugt af Omega-3 fitusýrum, sem stuðla að því að sár grói hraðar og henta sérlega vel fyrir vefi mannlíkamans, þar sem engar smitleiðir eru milli fiska úr köldum sjó og manna. Kerecis Omega-3 er óunnið fiskroð sem bindur sig hratt við lifandi vefi mannlíkamans, til dæmis þegar það er grætt yfir brunasár. Þessi afurð er einstaklega gagnleg við meðhöndlun sára vegna sykursýki.

Í Urriðaholti í Garðabæ hefur frárennsliskerfið SuDS verið sett upp í öllum húsum þessa nýreista íbúðahverfis. Urriðaholt hefur byggst upp á svæði sem er umlukt viðkvæmri náttúru, hraunvöllum og votlendi og frárennsliskerfið nýtir sér náttúruleg ferli til að verja vatnsgæðin í stöðuvatninu Urriðavatni. Byggingarnar eru hannaðar til að nýta sólarljósið og draga úr orkunotkun. Urriðaholt hefur hlotið fjölda verðlauna og hverfið er umhverfsvottað samkvæmt Breeam-vottunarkerfinu. Þarna er að finna fyrsta Svansmerka húsið á Íslandi.

Kísill er eitt algengasta steinefni heims. Það er að finna í mannlíkamanum og er vinsælt fæðubótarefni. Með því að nýta sér einstakar jarðfræðilegar aðstæður á Íslandi hefur fyrirtækið GeoSilica þróað GeoStep, vinnsluáferð sem gerir kleift að vinna og hreinsa kísil án þess að nota iðefni. Þegar vatn seytlar fram

neðanjarðar og hitnar mjög mikið vegna jarðhitans frá eldfjallakerfum Íslands verður til jarðhitavatn. Með því að nota GeoStep er hægt að vinna hreinan kísil úr þessum kraftmiklu orkulindum.

Residual fish skin has formed the basis of the country's fastest growing company, Kerecis. Skin from cold-water fish is naturally rich in Omega-3, which accelerates wound healing and is also ideal for human tissue as there is no risk of infection between such cold-water fish and humans. Kerecis' Omega-3 consists of intact fish skin that is quickly covered by living tissue when transplanted onto a burn injury. This product could be useful in treating diabetes ulcers.

***Kerecis' Omega-3 consists of intact fish skin that is quickly covered by living tissue when transplanted onto a burn injury.***

The district Urriðaholt in Garðabær uses the drainage system SuDS in an entire neighbourhood. Urriðaholt is built in an environmentally-sensitive area of lava fields and wetlands, and the drainage uses natural processes to protect the water quality in the lake Urriðavatn. The buildings are designed to utilise sunlight and reduce energy consumption. Urriðaholt has received several awards, is certified by Breeam, and has the country's first Nordic Swan ecolabel house.

Silica is one of the world's most common minerals. It is found in our bodies and sold as a supplement. Benefiting from Iceland's unique geological conditions, the company GeoSilica has developed GeoStep, a method that enables the extraction and purification of silica without chemicals. Water seeps underground and is heated to extreme temperatures by Iceland's volcanoes, which forms geothermic water. With the help of GeoStep, it is possible to obtain pure silica from these powerful energy sources.

## Stålindustrin står för cirka tio procent av koldioxidutsläppen i Sverige.



The Hybrit project explores the possibility of fossil-free steel production by replacing the carbon currently used in the process with hydrogen. Image Credit: HYBRIT

Stålindustrin står för cirka tio procent av koldioxidutsläppen i Sverige. I tillverkningsprocessen skiljs järn från syre, och idag används kol. Bolagen SSAB, LKAB och Vattenfall har inlett utvecklingsprojektet "HYBRIT" för framställning av fossilfritt stål och utvecklar en teknik med direktreduktion och vätgas, där vatten blir restprodukt. En försöksanläggning ska stå klar 2020.

Kan rätt utformade regler hjälpa innovationer och snabba på genomförandet av samhällsnyttiga idéer? För att stärka samhällsutvecklingen satsar innovationsmyndigheten Vinnova på policylab, där olika aktörer gemensamt utvecklar metoder för förändrade regelverk. Tillsammans med Skatteverket har Vinnova sett hur regler och tjänster behöver anpassas till den delningsekonomi som växer fram. Metoden kan också användas till policyutveckling i offentlig förvaltning för att uppnå bättre kvalitet och effektivitet.

2018 ökade trafikutsläppen i Sverige för första gången på många år. Några av orsakerna är att våra köpmönster

ändras och en kraftigt växande e-handel. Under andra kvartalet 2019 handlade sju av tio svenskar på nätet, enligt e-barometern. E-handeln bidrar även till fler transporter genom retur, individuella leveranser och skrymmande förpackningar med mycket luft. De svenska målen är att minska utsläppen från inrikes transporter med 70 procent till år 2030 och netto noll år 2035. Triple F är svenska Trafikverkets forsknings- och innovationsprogram, där olika aktörer samarbetar för att göra landets transportsystem fossilfritt.

The steel industry represents approximately ten per cent of the CO2 emissions in Sweden. The current process used to separate iron and oxygen is coal-based. The companies SSAB, LKAB and Vattenfall have started the project "HYBRIT" for the production of fossil-free steel and are developing a technology involving direct reduction and hydrogen, where the residue is water. A test facility will be completed by 2020.

Could appropriately formulated regulations aid innovation and speed up the

implementation of beneficial ideas? To reinforce societal development, the innovation agency Vinnova is investing in policy labs, where different actors jointly develop methods for amended regulations. Along with the Swedish Tax Agency, Vinnova has observed a need to adapt regulations and services to the emerging sharing economy. The method can also be used for public management policy development.

In 2018, traffic emissions in Sweden increased for the first time in years. This was partly due to changed purchasing habits and a strong growth in e-commerce. In the second quarter of 2019, seven out of ten Swedes shopped online, according to the e-barometer. E-commerce is also contributing to more transport through returns, individual deliveries and bulky air-filled packages. The Swedish goals are to reduce emissions from domestic transport by 70 per cent by 2030 and achieve net zero by 2035. Triple F is the research and innovation programme of the Swedish Transport Administration in which different actors collaborate to make the country's transport system fossil-free.



**Karl-Oskar  
Olming**

**Chefsstrateg hållbarhet, SEB**  
*Chief Sustainability Strategist, SEB*

**Illustration**  
Kristian Andréason

*Karl-Oskar Olming is the Chief Sustainability Strategist at SEB where he, among other pursuits, works to advance the bank's sustainability agenda. He has identified a need for the economy to be streamlined through new types of business models.*

**Karl-Oskar, du är chefstrateg för hållbarhet inom banken SEB. Vad är det mest klimat-smarta du gör i din egen vardag?**

Det största jag gjort privat det senaste året har varit att investera i ett nytt energisystem och en ny värmepanna i mitt hus. Genom ett effektivare energisystem har jag minskat energiförbrukningen för uppvärmning med ca 50 procent.

**Vad provocerar dig mest just nu?**

Det är en jobbig fråga! Hur populismen så enkelt kan få stora effekter genom att vissa länder, till exempel USA, totalt svängt om i klimatpolitiken tycker jag är väldigt provocerande. När USA svänger om kan alla andra länder som vill detsamma, bromsa ner sitt arbete. Hur är det ens möjligt att skapa en helt ny acceptans för vissa värderingar enbart för att en knapp majoritet av befolkningen röstade fram en viss president?

*Karl-Oskar, you are the Chief Sustainability Strategist at the bank SEB. What is the most climate-smart thing you do in your everyday life?*

The greatest thing I've done privately in the last year was to invest in a new energy system and a new boiler for my home. By using a more efficient energy system, I've reduced my energy consumption for heating by around 50 per cent.

*What provokes you the most at the moment?*

Tough question! How populism can so easily have such a large impact through some countries, like the US, making a complete 180 in their climate policy. That provokes me a great deal. When the US backtracks, it's possible for all other countries that want to do the same to slow down their efforts. How is it even possible to build a whole new acceptance for certain values just because a narrow majority of the population voted for a certain president?



### Berätta lite om din roll med hållbarhetsarbete inom SEB.

Jag jobbar som chefsstrateg för hållbarhet inom SEB. Mitt jobb är att definiera våra mål, övergripande principer och policys och hur vi driver hållbarhetsagendan framåt som bank. Finansbranschen liksom vissa andra branscher befinner sig nu i en transformationsfas; under de senaste två åren har arbetet med finanstjänster fått en helt ny innebörd.

### Hur definierar du denna transformationsfas?

Hållbarhet börjar bli en fundamental del i kärnan av bankers sysselsättning. Där stort fokus tidigare enbart har legat på pengar handlar det nu om användningen, syftet och effekten av det kapital som finansmarknaden finansierar. Det skapar helt nya sätt för branschen att tänka och jobba på. Om jag ska sja om framtiden kommer transparens, påverkan och effekten av kapitalet att vara de stora områdena som kommer att, inte revolutionera, men driva på transformationen av finanssektorn.

### Tell us a little about your role in SEB's sustainability efforts.

As the Chief Sustainability Strategist at SEB, my job is to define our goals, overall principles and policies, as well as how we push the sustainability agenda as a bank. The finance industry, like many others, is in a transformation phase; in the last two years, the work with financing services has taken on a whole new meaning.

### How would you define this transformation phase?

Sustainability is becoming a fundamental part of the banks' core activities. Where there was previously a massive focus on money only, there is now consideration of the use, purpose and effects of the capital funded by the finance market. This creates brand new ways for our industry to think and work. If I had to predict the future, I would say that the transparency, impact and effect of the capital will be the major areas that will, not revolutionise, but push the transformation of the financial sector.

*Where there was previously a massive focus on money only, there is now consideration of the use, purpose and effects of the capital funded by the finance market.*

### Vilka utmaningar relaterade till klimatet står finansbranschen inför idag?

Externa effekter – den påverkan en ekonomisk transaktion har på allmänna tillgångar såsom luft och vatten – har inom finansbranschen och samhället i stort inte varit prissatt och har därför inte helt kunnat regleras på grund av exempelvis landgränser. Som ett resultat har klimatavtrycket blivit extremt stort. Genom regleringar, prissättning och medvetenhet behöver vi nu integrera sådan påverkan i våra affärsbeslut. Våra produkter ska vara tydliga för konsumenter och företag så att de har insyn i vad de faktiskt bidrar till och är med och finansierar. Det handlar om att i varje affär förstå det klimatavtryck en transaktion innebär och utifrån det sätta ett pris eller en risk. Det finns absolut tillfällen då vi nekar att finansiera en kund eftersom vi anser att klimatpåverkan är för stor, till exempel för nya projekt inom kolindustrin.

### Så en omställning behöver helt enkelt ske?

Ja, det kommer definitivt att krävas en omställning inom de flesta branscher. Den kommer att kosta och behöva finansieras, vilket naturligtvis

### What climate challenges are facing the finance industry today?

External effects – the impact a financial transaction will have on public assets such as air and water – have not been priced in the finance industry or in society in general, and for this reason, they have not been regulated by national borders, for example. As a result, the carbon footprint has become massive. We now need to use regulation, pricing and awareness to integrate this type of impact in our business decisions. Our products must be transparent to consumers and companies so that they understand what they are contributing to financing. This is a question of understanding, in each transaction, the carbon footprint it entails and use this to determine the price or the risk. There are definitely times when we will refuse financing for a customer because we feel that the climate impact is too great, for example for new projects within the coal industry.

### So a transition simply needs to happen?

Yes. And it will definitely require a transformation of most industries. It will be costly and will require funding, which of course provides an opportunity

## En finansiell kris skulle i framtiden kunna utlösas av att investerare snabbt överger företag som släpper ut för mycket växthusgaser och inte har någon plan för att ställa om.

skapar möjligheter för bankerna. Ekonomin behöver effektiviseras genom nya typer av affärsmodeller med fokus på cirkulär ekonomi och delning. SEB:s produkter handlar idag om att finansiera de omställningarna och det är spännande att se alla nya modeller som ökar cirkulär ekonomi och delning. På konsumentnivå tror jag att vi har en lång väg att gå eftersom skalan fortfarande inte finns. Men som bank kan vi göra mycket.

I framtiden kommer en del företag inte att hinna med förändringen vilket innebär enorma värden som står på spel. Det varierar från land till land; är man i en jordbruksekonomi handlar det om de fysiska riskerna såsom torka, översvämningar och så vidare. Men i norra Europa är snarare risken att stora industribolag tappar i värde och till och med går i konkurs för att de inte ställer om. En finansiell kris skulle i framtiden kunna utlösas av att investerare snabbt överger företag som släpper ut för mycket växthusgaser och inte har någon plan för att ställa om.

### Tror du att vi är mer benägna att hitta de här lösningarna i Norden än i resten av världen?

Det tror jag. Dels kanske vi har mer vilja till det, och ser olika teknologiska lösningar, eftersom vi har varit vana att jobba med detta under en längre tid. Vi har politiker, konsumenter och väljare som är mer medvetna om klimathoten. Här i Norden har vi även lyxen att kunna få tänka på frågorna – vi har lyxen att få ha klimatångest. SEB:s absolut mest framgångsrika fonder är hållbarhetsfonderna där inflödet är stort. Och cirka 80 procent av de institutionella placerarna, alltså pensionsförvaltare och andra, som köper våra fonder ställer krav på att det ska finnas hållbarhetskriterier i förvaltningen av deras kapital.

for the banks. The economy needs to be streamlined through the use of new business models that focus on circular and sharing economies. SEB's current products relate to the financing of those transformations, and it is exciting to see the new more sustainable models that increase circular economies and sharing. In the future, some companies will be unable to keep up with the change, which means there are enormous values at stake. If you operate in an agricultural economy, it is a matter of physical risks such as drought, flooding and so on. But in northern Europe, the risk is rather that large industrial enterprises will lose value or even become bankrupt if they fail to transition. A future financial crisis could be triggered by investors quickly abandoning companies that emit excessive amounts of greenhouse gases and which have no transition plan.

### Do you think we are more inclined in the Nordic countries to find these solutions than the rest of the world?

I do. Partly because perhaps we are more willing to do it, and can envision different technological solutions, since we have been working on it for longer. We have politicians, consumers and voters who are more aware of the climate threats. Here in the Nordics, we also have the luxury of thinking about these issues – we have the luxury of climate anxiety. SEB's most successful investment funds by far are the sustainability funds, where we see a massive influx. And approximately 80 per cent of the institutional investors, i.e. the pension fund managers and others, who buy our funds will require sustainability criteria for the management of their capital.

# Cirkulär ekonomi

## *Circular Economy*

**Främja en cirkulär ekonomi genom förbättrad produktprestanda genom hela livscykeln.**

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





# 05

**Linjär ekonomi har länge format vår värld. Produkter utvinns från naturresurser, produceras, konsumeras och blir till sist avfall. I en cirkulär ekonomi återskapas eller återanvänds material i biologiska eller tekniska cykler. Både producenter och användare har viktiga roller.**

*Our world has long been shaped by linear economics. Materials are extracted from natural resources, products are made, consumed and finally turned into waste. In a circular economy, materials are recycled or reused in biological or technical cycles. Producers and users both play vital roles.*

## Resirkulert plast fra havet står i sentrum når møbelprodusenten Nordic Comfort Products, NCP, sammen med arkitektfirmaet Snøhetta har produsert miljøstolen S-1500.

Resirkulert plast fra havet står i sentrum når møbelprodusenten Nordic Comfort Products, NCP, sammen med arkitektfirmaet Snøhetta har produsert miljøstolen S-1500. Plasten samles inn fra lokale fiskeoppdrettere når de bytter ut slitt tauverk. NCP har som mål at alle de sprøytstøpte stolene deres skal være laget av resirkulert plast i 2020.

Selskapet Bioretur bruker avfall fra oppdrettsanlegg til å produsere gjødsel og biogass. Ifølge beregninger fra Norsk institutt for bioøkonomi havner 27 000 tonn nitrogen og 9 000 tonn fosfor i havet hvert år på grunn av fiskeslam. I 2019 vant selskapet Aquaculture Award for sitt bidrag til sirkulær økonomi.

På Sørlandet har prosessindustri-bedrifter gått sammen i Eyde Cluster for å maksimere bruken av naturressurser og skape nye forretningsområder for sidestrømmer og avfall. I prosjektet "Waste to value" utvikles prosesser hvor oksidert og karbonholdig avfall fra industrien kan omdannes til salgbare jern-/mangan-/nikkel-legeringer, og batteriprojektet "BATMAN" (Lithium ion BATteries) ser på produksjon og gjenvinning av materialer til Li-ion-batterier. Tre, biomasse og spillvarme er andre områder som undersøkes.

Circular Norway-nettverket, opprettet av Elektroforeningen og returselskapet RENAS, ønsker å få fart på overgangen til sirkulær økonomi i norsk næringsliv. Målet er vekst og nye arbeidsplasser gjennom innovasjon og næringspolitisk arbeid.



S-1500. Designer: Stian Alessandro Ekkernes Rossi. Photographer: Bjørnar Øvrebo

Recycled plastics from the ocean was in focus when the furniture manufacturer Nordic Comfort Products (NCP) and the architecture firm Snøhetta developed the environmental chair S-1500. The plastic is collected from local fish farms when they replace old nets and lines. NCP's goal is for all its moulded chairs to be made from recycled plastic by 2020.

The company Bioretur uses waste from fish farms for fertilisers and biogas. The Norwegian Institute of Bioeconomy Research estimates that an annual 27,000 tonnes of nitrogen and 9,000 tonnes of phosphorus from fish sludge end up in the sea. In 2019, the company won the Aquaculture Award for its contributions to the circular economy.

In Sørlandet, process industry companies have formed the Eyde Cluster to maximise the use of natural resources and create new business areas for sidestreams and waste. The project "Waste to value" develops processes to turn oxidised and carbon-rich industrial waste into sellable iron/manganese/nickel alloys, and the project "BATMAN" is investigating the production and recycling of materials for Li-ion batteries. Wood, biomass and residual heat are other areas being explored.

The network Circular Norway founded by Elektroforeningen and the recycling company RENAS wants to accelerate the transition to a circular economy in the Norwegian business sector. The aim is growth and new jobs through innovation and industry policy.

## Sorpfall heimsins stækkar ört.

Sorpfall heimsins stækkar ört. Alþjóðabankinn áætlar að árið 2025 muni hver íbúi jarðarinnar skila af sér 1,42 kílóum af úrgangi á dag. Það er rúmlega tvöföldun frá 2009, þegar magnið var 0,64 kíló á mann á dag. ReSource International, með höfuðstöðvar í Reykjavík, sérhæfir sig í að finna nýstárlegar leiðir til að endurvinna úrgang. Fyrirtækið gerir m.a. tilraunir við að auka endingu malbiks með því að blanda úrgangsfjöllidum við malbikið. Fyrirtækið vaktar og aðlagar kerfisuppfærslur á Íslandi fyrir lífildsneyti og lífgas og Íslendingar hafa um langt skeið notað lífgas til að knýja strætisvagna, rútur og önnur ökutæki. ReSource notar dróna til að meta og reikna út magn losunar á urðunargasi og hvar slíkt gas losnar.

Á Íslandi getur veturinn verið harður þar sem snjór og klaki gera íbúunum erfitt fyrir að komast leiðar sinnar. Með því að beina jarðhitavatninu sem hitar upp húsin á Íslandi í hringrásarferli undir götur og gangstéttir verður til stórkostleg auðlind sem bræðir snjó og klaka. Jarðhitavatni er dælt frá upptökum til dælustöðva og þaðan yfir í hitaveituvatnstanka. Vatnið er fyrst sent til neytenda og svo aftur yfir í dælustöðvar, þar sem meira af heitu vatni er blandað í það og því veitt í leiðslur undir vegakerfinu, sem þannig er haldið þurr og öruggu. Hitastig vatnsins frá dælustöðvunum er um

það bil 80°C, en vatn frá borholum og jarðvarmavirkjunum er oftast heitara. Þessi hringrásarnýting vatnsins felur í sér frekari ávinning, þar sem kostnaður við snjómokstur minnkar.

The world's waste pile is growing. The World Bank estimates that every urban resident on the planet will generate an average of 1.42 kg of waste per day by 2025. That is more than double the 0.64 kg in 2009. ReSource International, headquartered in Reykjavík, specialises in finding innovative ways to reuse waste.

*By reusing the geothermal water that heats Icelandic homes and letting it flow underneath roadways and pavements to melt snow and ice, the hot water becomes a valuable resource.*

The company experiments with strengthening asphalt by adding waste polymers for example. The company monitors and adjusts Iceland's landfill gas biofuel upgrading systems and is conducting research into quantifying the total volume and location of landfill gas emissions using drones. Iceland has long used biogas for buses and other vehicles.

Winters can be harsh in Iceland. Steep hills, snow and ice can make transportation

difficult. By reusing the geothermal water that heats Icelandic homes and letting it flow underneath roadways and pavements to melt snow and ice, the hot water becomes a valuable resource. Geothermal water is pumped from wells into pumping stations and then eventually to hot-water tanks. From these, water flows to the consumers and back to the pumping stations, where it is mixed with hot water. Then the water flows to pipes underneath roadways and pavements to keep them dry and safe during winter. The temperature of the water from the pumping stations is around

80°C, but the water from wells and geothermal plants is often hotter. The reuse of hot water creates an additional efficiency, since it lowers snow-removal costs.



För att kunna hantera naturresurser effektivt och i linje med jordens reproduceringsförmåga, har Sveriges regering tillsatt en delegation som undersöker hur Sverige kan gå från en linjär till en cirkulär och biobaserad ekonomi.

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Skogsindustrin är en av Sveriges viktigaste näringar. Trädet står också i fokus när Sverige har börjat omställningen till bioekonomi. Bioinnovation är en av många forskningsinsatser vars mål är att utveckla förnybara och biobaserade produkter från skogen till bland annat förpackningar, textilier och bränsle. Allt som tillverkas av plast kan istället

tillverkas från träråvaran – men vi vet fortfarande inte om detta är lämpligast ur hållbarhetssynpunkt. Även denna förnybara naturresurs har sina begränsningar.

Nya cirkulära affärsmodeller växer fram. Blend Re:wind är en ny textilåtervinningsprocess som kemiskt separerar den mycket vanliga textiltblandningen bomullspolyester till jungfrulig kvalitet. Swedish Stockings, världens första hållbara producent av tights, handlar utifrån en cirkulär modell och samlar in trasiga tights och förvandlar dem till nya produkter.

In order to manage natural resources more effectively and in line with the Earth's reproductive capacity, the Swedish Government has appointed a delegation to investigate how Sweden can go from a linear to a circular and biobased economy. The report "From value chain to value cycle" analyses and proposes instruments to promote increased use and reuse of products. The delegation is to be a knowledge centre

that identifies obstacles and instruments, needs for education and information and proposals for cost-efficient measures.

The forestry sector is one of Sweden's most important industries. Timber is also the focus of Sweden's initial transition to a bioeconomy. Bio-innovation is one of many research initiatives with the aim of developing renewable and biobased forest products for packaging, textiles and fuel. Everything made from plastic could instead be made from wood, but we are still unsure if this is the most sustainable option. This renewable natural resource also has its limitations.

New circular business models are emerging. Blend Re:wind is a new textile recycling process that chemically separates the very common mix of cotton polyester down to virgin materials. Swedish Stockings, the world's first sustainable hosiery producer, is using a circular model, collecting torn tights and making them into new products.



"Framtiden växer på höjden" (The future is growing upwards), Svenska Skogen.  
Visualisation: Bildinstitutet. Photographer: Gustaf Emanuelsson



"Rethink Business"-projektet er et regionalt initiativ, som arbejder med cirkulær forretningsudvikling.

"Rethink Business"-projektet er et regionalt initiativ, som arbejder med cirkulær forretningsudvikling. Formålet er at opmuntre virksomheder til at undersøge, hvordan deres ressourcer anvendes, og se potentialet i det design, cirkulær økonomi er baseret på. 30 små og mellemstore virksomheder fra Region Midtjylland deltager i projektet. Sammen med en konsulent udarbejdes en cirkulær forretningsmodel/-plan. Projektet løber frem til 2021 og gennemføres i samarbejde med Erhvervsstyrelsen. Regeringen har også udviklet "Strategi for cirkulær økonomi" for at fremskynde og understøtte omstillingen til et mere bæredygtigt samfund.

Det treårige EU-projekt Green Valleys er et dansk-svensk samarbejde, der skal teste en udviklingsplatform til bioraffinering. Med græs, kløver og flerårige bælglplanter som råvare skabes et kredsløbssystem til produktion af bioenergi.

"Rethink Business" is a regional initiative working with circular business development. The aim is to encourage companies to investigate how their resources are being used and to see the potential in a circular economy design. The project involves 30 small and medium-sized enterprises in the Midtjylland Region. A circular business model/plan is developed together with a consultant. The project runs until 2021

large-scale project, UN17 Village. They will be one of the first in the world to translate the UN's 17 Sustainable Development Goals into concrete measures in construction.

The three-year-long EU project Green Valleys is a Danish-Swedish collaboration to test a development platform within bio-refining. Using grass, clover and perennial legumes as the raw materials, a cyclical production system of bioenergy and animal feed is created. Different actors and researchers collaborate to utilise the potential of the agricultural sector to make renewable energy.

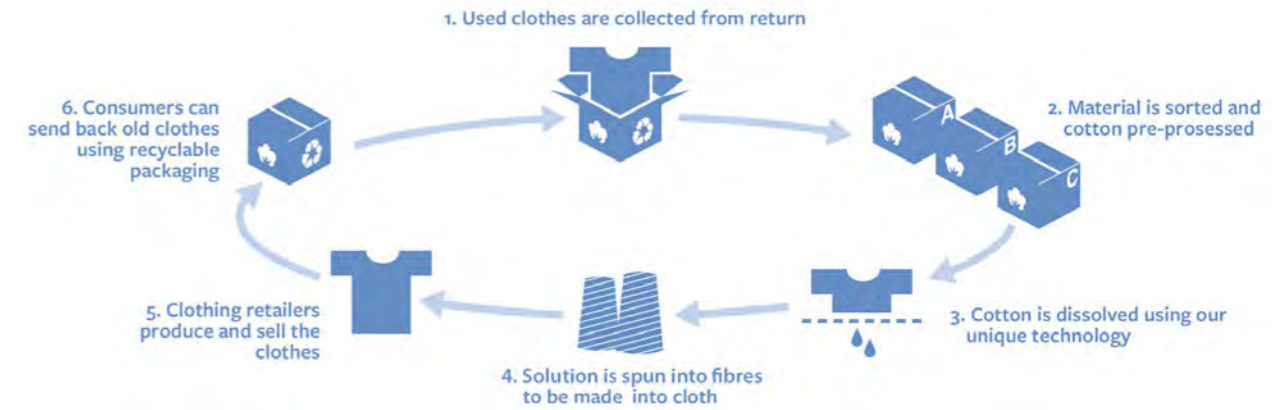
Det bliver et af de første i verden, som omsætter FN's 17 verdensmål til konkrete tiltag inden for byggeri.

Byggeaffald er en stor uudnyttet ressource. I boligområdet Upcycle Studios stammer størstedelen af vinduerne fra tidligere byggerier, og betonen er støbt med affald fra byggeriet af Københavns metro. Bag Upcycle Studios står Lendager Group, som arbejder med et nyt storskalaprojekt, nemlig UN17 Village. Det bliver et af de første i verden, som omsætter FN's 17 verdensmål til konkrete tiltag inden for byggeri. Både genvundne materialer og bæredygtigt livsstil tænkes ind i byggeprocessen.

in collaboration with the Danish Business Authority. The Government has also developed a strategy for the circular economy in order to hasten and support the transition to a more sustainable society.

Construction waste is a large untapped resource. In the residential area Upcycle Studios, the majority of the windows come from earlier buildings and the concrete has been cast using waste from the construction of the Copenhagen metro. The creator of Upcycle Studios is the Lendager Group, which is now working on a new

Innovaatorahasto Sitra valittiin vuonna 2018 maailman parhaaksi julkisen sektorin kiertotaloustoimijaksi.



Relooping Fashion. Image Credit: VTT, The Relooping Fashion Initiative

Innovaatorahasto Sitra valittiin vuonna 2018 maailman parhaaksi julkisen sektorin kiertotaloustoimijaksi. Sitra on johtanut työtä kohti hiilineutraalia kiertotaloutta tähtävien kansallisten ohjeiden laatimiseksi julkaisemalla "Kierrolla kärkeen" -raportin. Sitra on johtanut hiilineutraaliin kiertotalouteen tähtävien kansallisten ohjeiden laatimista julkaisemalla. Laskelmien mukaan kiertotalous luo pelkästään Suomessa liiketoimintaa jopa 2,5 miljardin euron arvosta vuonna 2030.

Relooping Fashion -hankkeessa vanhat kierrätetyt puuvillavaatteet muunnetaan uudeksi kuiduksi. Teknologian tutkimuskeskus VTT:n kehittämällä tekniikalla, jossa selluloosapohjaisia kankaita voidaan kierrättää lähes rajattomasti ilman haitallisia kemikaaleja.

Aarre-tutkimusprojekti on korkeakoulujen ja elinkeinoelämän välinen yhteistyöhanke, jossa tutkitaan tärkeitä virstanpylväitä kiertotalouteen siirtymisen vauhdittamiseksi. Siirtymässä tärkeässä osassa ovat kuluttajat, sillä uudet liiketoimintamallit tarjoavat aivan uudenlaisia palveluita ja tuotteita. Näiden kokonaisvaltainen

hyödyntäminen vaatii, että kuluttajat muuttavat käyttäytymistään ja rutiinejaan. Kuluttajien reaktioiden ymmärtäminen on tärkeää menestyksekkäiden liiketoimintamallien luomisessa.

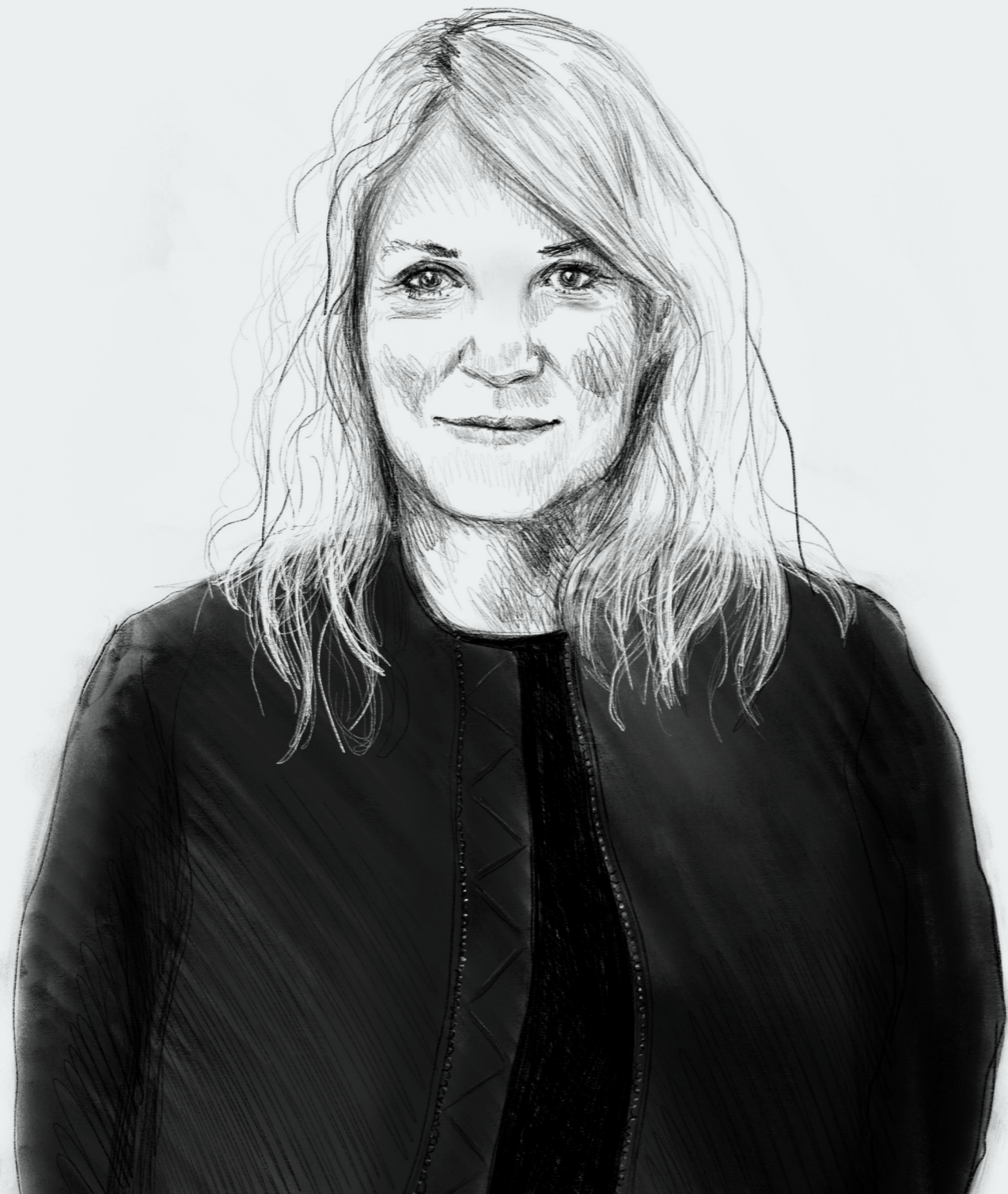
The Finnish innovation fund Sitra was chosen as one of the world's best public actors within circular economics in 2018. Sitra has led the work to develop national guidelines aimed at a CO2-neutral circular economy in "Circulate to the top". Based on this project, Sitra and the Government have created a long list of measures. The circular economy is estimated to create business opportunities at a value of up to EUR 2.5 billion by 2030 in Finland alone.

The project Relooping Fashion recycles old cotton clothes into new fibres using a technology developed by the VTT Technical Research Centre of Finland. The technology makes it possible to recycle cellulose-based fabrics essentially without limitation and without any hazardous chemicals.

The research consortium Aarre is a collaboration between the academic and business sectors to find important reference points

to successfully transition to a circular economy. Consumers play an important role in the transition, as business models with new technologies will offer previously unheard-of products and services. To fully utilise these, consumers must change both their behaviour and habits. Understanding consumer reactions is an important part of creating successful business models.





Eva  
Karlsson

VD, Houdini  
CEO, Houdini

Illustration  
Kristian Andréason

*Eva Karlsson is the CEO of Houdini Sportswear. Houdini is a sustainable outdoor clothing company with a product philosophy centered around products with a long life, versatile performance and minimalist constructions.*

**Hej Eva! Vilka ser du som de största utmaningarna idag runt textil, miljö och cirkularitet?**

På ett tekniskt plan finns redan det mesta vi behöver för att gå från linjärt till cirkulärt. Däremot råder brist på handlingskraft, både från näringsliv och politik. Det är dyrt att ställa om då nästan allt som är hållbart kostar mer. För att ge ett exempel är en jungfrulig råvara som polyester fortfarande avsevärt billigare än återvunnen polyester, trots att den innebär större belastning och risk för oss och planeten. Den textila värdekedjan är så komplex att det vore orimligt att se konsumenttryck som den främsta drivkraften i omställningen. Främsta anledningen till att den ändå accelererat en aning är en ökad efterfrågan på klimatsmarta produkter, vilket är superbra!

*Hi Eva! What do you see as the greatest challenges when it comes to textiles, environment and circularity today?*

Technically speaking, we already have most of what we need to go from linear to circular. But there is a lack of industrial and political initiative. The transition is expensive, since nearly everything that is sustainable costs more. To give an example: a virgin raw material such as polyester is still significantly cheaper than recycled polyester, even though it entails a greater impact and risk for us and for the planet. The textile value chain is so complex that it would be unreasonable to see consumer pressure as the primary driving force of this change. The main reason that it has still accelerated a bit is the increased demand for climate-smart products, which is great!

# Vårt fokus är utveckling av ett cirkulärt ekosystem med cirkulära materialflöden – snarare än utveckling av nya stilar.

## Hur ser din roll som VD för Houdini ut och hur arbetar ni mot hållbarhetsmål 12?

Som VD i ett bolag med ungefär 50 anställda innebär det att vi jobbar otroligt tajt tillsammans och med diverse partners; leverantörspartners, innovationspartners, akademiker, våra kunder och andra bolag. Vårt hållbarhetsarbete ligger utspritt i hela organisationen som en del av varje individs ansvar och det inkluderar förstås också mig. Jag leder det arbetet precis som jag leder det andra övergripande arbetet på Houdini.

## Ett av Houdinis mål är att 100 procent av alla produkter ska vara cirkulära 2022. Hur ska ni ta er dit?

Vi har jobbat med detta sedan 2001 och vet vilket förändringsarbete som har krävts för att nå våra mål. Idag är 66 procent av våra produkter cirkulära och i nästkommande kollektion når vi 84 procent. Vårt fokus är utveckling av ett cirkulärt ekosystem med cirkulära materialflöden – snarare än utveckling av nya stilar. På vissa plagg har vi kommit halvvägs; ofta kan de återvinnas men de är inte tillverkade av återvunna fibrer. Eller tvärtom; de är tillverkade av återvunna fibrer men de är inte återvinningsbara på grund av att tekniken inte existerar. Att nå den sista procenten är förstås svårast.

## Hur vill Houdini påverka resten av textilbranschen med sitt arbete?

Idag finns vi på 19 marknader och har en god tillväxt, men vi är fortfarande ett nischföretag sett ur ett globalt perspektiv. Vi trivs med vår position på marknaden och som kompromisslöst nischföretag kan vi skapa ringar på vattnet och dela med oss av den erfarenhet och kunskap vi har. Det är viktigt för oss att dela och tillgängliggöra hållbar innovation med alla som kan ha nytta av den. Och vi vill även visa kunder att det går att ställa krav på sitt favoritvarumärke.

## What is your role as CEO of Houdini and how do you work towards achieving the Sustainable Development Goal 12?

As the CEO of a company with around 50 employees, I work really closely with my staff and with various partners: suppliers, innovators, academics, our customers and other companies. Our sustainability efforts are made across the entire organisation as part of everyone's individual responsibility, and that includes me of course. I am leading this work just like I am leading the other overall activities at Houdini.

## One of Houdini's goals is for 100 per cent of all your products to be circular by 2022. How will you get there?

We have been working with this since 2001 and we know what change has been necessary to reach our goals. Today, 66 per cent of our products are circular, and in the next collection we will reach 84 per cent. Our focus is on the development of a circular ecosystem with circular material flows – more than developing new styles. For certain items, we are half-way there; a lot of the time, they can be recycled, but they are not made from recycled fibres. Or conversely, they are made from recycled fibres but they are not recyclable because the technology does not exist. Attaining those final percentage points is the hardest of course.

## How would Houdini like to influence the rest of the textile industry with your work?

We are currently active on 19 markets, and we are seeing good growth, but we are still a niche company from a global perspective. We are happy with our market position, and as an uncompromising niche company we can make ripples and share the experience and knowledge we have. It is important for us to share and make sustainable innovation available to anyone that may benefit from it. And show customers that you can have expectations on your favourite brand.

## Hur ser den cirkulära processen ut rent konkret för ett utvalt Houdiniplagg?

Det ultimata cirkulära systemet är naturen, där allt konstant återgår till att bli en resurs i kretsloppet. Förutom vårt mål 2022 har vi satt ett mål 2030 där vi arbetar mot ett cirkulärt system utan avfallsströmmar. Idag definierar vi en cirkulär produkt som att den antingen ingår i den tekniska eller organiska livscykeln. I den tekniska cykeln använder vi mono-material i så stor utsträckning som möjligt, dvs. hela plaggen är tillverkat i ett och samma material. Produkten är så pass ren att när den återvinns krävs väldigt lite handpåläggning.

## Är det alltså konsumentens uppgift att se till att detta sker?

Ja, att plaggen faktiskt kommer tillbaka till oss för återvinning är en del av processen som vi inte har möjlighet att kontrollera idag. Det är också en av anledningarna till att vi jobbar med cirkulära affärsmodeller där vi har möjlighet att inspirera och informera kunden att ge tillbaka produkten till oss för återvinning när den är utsliten. Det kan t.ex. ske i samband med att vi hjälper till med reparationer eller secondhandförsäljning.

## Vilket plagg skulle du ta med dig till en bergstopp?

Då skulle jag plocka med vårt nya skal som är i 100 procent merinoull. Ullfibern vävs i utsträckt tillstånd och resultatet blir ett otroligt tätt material som fortfarande andas och samtidigt står emot väder. Helt tack vare ullens naturliga egenskaper. Jag skulle i princip kunna lämna den där att brytas ned, endast knappar och blixtlås hade jag behövt ta med mig tillbaka hem.

## Ett enda tips för framtiden?

Ställ om! Det finns fortfarande chans att ta ledarposition inom hållbarhet och tillsammans kan vi visa vägen för en hel värld! Om man missar chansen att vara med i denna transformation tycker jag att man gör sig själv en väldigt stor otjänst, både affärsmässigt och på ett personligt plan.

## Practically speaking, what is the circular process for any given Houdini item?

The ultimate circular system is nature, where everything constantly goes back to being a resource in the cycle. Other than our 2022 goal, we have set one for 2030 where we work towards a circular system with no waste flows. Today we define a circular product as one that is part of either the technical or the organic life cycle. In the technical cycle, we use a mono-material approach to the greatest extent possible, i.e. the whole item is made from a single material. The product is clean enough that recycling requires very little processing.

## So it's up to the consumer to make this happen?

Yes, making sure that the clothes are actually returned to us for recycling is a part of the process that we are unable to control today. It's also one of the reasons why we are working with circular business models where we have the opportunity to inspire and inform our customers to return our products for recycling when they are worn out. This can be done, for example, through us helping with repairs or second-hand sales.

## Other than our 2022 goal, we have set one for 2030 where we work towards a circular system with no waste flows.

## What piece of clothing would you bring to a mountain top?

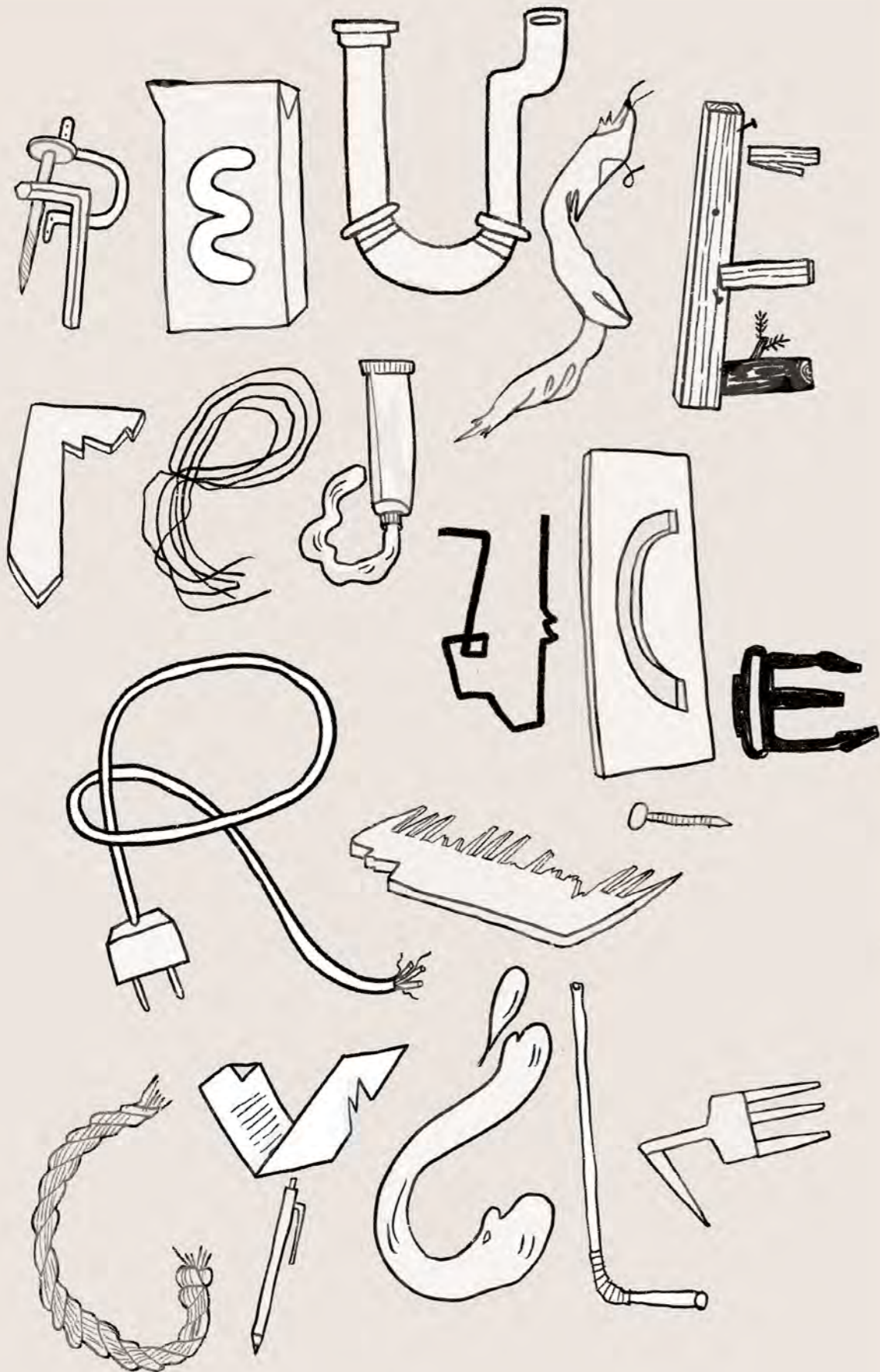
For that, I would bring our new shell, which is made from 100 per cent Merino wool. The wool fibres are woven while stretched, which results in an incredibly dense material that is both breathable and weather-resistant all at once. All thanks to the natural properties of the wool. I could essentially leave it there to degrade; I would only need to bring the buttons and zips back home.

## A single tip for the future?

Transition! There is still time to take the lead in sustainability, and together we can show the whole world the way! If you miss out on the opportunity to be part of this transformation, I think you are doing yourself a great disservice, both professionally and personally.



## Minskat avfall *Reduced Waste*



Skapa incitament för minskat avfall  
och bortfall i produktionskedjan.  
*Create incentives for reduced waste  
and wastage in the production chain.*

# 06

**Avfall ses redan i designskedet som en resurs och behandlas på rätt sätt för att senare återanvändas eller återvinnas.**

**Det sker genom förändrade konsumtions- och beteendemönster och förbättrade cirkulära produktionsmetoder.**

*Waste is considered a resource already in the design phase and must be processed correctly to be reused or recycled at a later stage.*

*This is done through altered patterns of consumption and behaviour and through improved circular production methods.*



## Að sögn Bill Gates er binding og varðveisla á koltvísyringi ein af þeim tækninýjungum sem eru á lokastigi þróunar.

Að sögn Bill Gates er binding og varðveisla á koltvísyringi ein af þeim tækninýjungum sem eru á lokastigi þróunar. Á því sviði er Ísland í framvarðasveit. CarbFix hefur þróað leið til að binda koltvísyring og aðrar lofttegundir sem myndast við losun. CarbFix-verkefnið miðar að því að binda koltvísyringinn áður en hann berst út í andrúmsloftið og dæla honum niður í berglög, þar sem hann binst við bergið sem steindir. Í lok árs 2018 hafði 52.000 tonnum af jarðhitalofttegundum frá jarðvarmavirkjuninni á Hellisheiði verið dælt niður í bergið til bindingar. 2/3 þessara lofttegunda voru koltvísyringur og 1/3 brennisteinsvetni, en samtals voru þetta 40 prósent af heildarlosun frá virkjuninni.

til endurvinnslu. Þetta lítur Krónan á sem skammtímalausn sem er ætlað að hvetja framleiðendur til að bjóða umhverfisvænni umbúðir – eða alls engar.

According to Bill Gates, capturing and storing CO2 is one of the next technological breakthroughs. Iceland is at the forefront of this development. CarbFix is an industrial process to extract CO2 and other gases from emissions. The CarbFix project looks at the possibility of absorbing CO2 before it reaches the atmosphere and instead pumping it down into the ground, where it is mineralised. Towards the end of 2018, 52,000 tonnes of volcanic gases from the Hellisheiði geothermal power plant had been captured and put in the ground.

At Krónan's grocery stores, it is possible to relieve your products of excessive packaging on site. The store then sends the plastic and paper to recycling. Krónan views this as a short-term solution before manufactures can offer more green packaging – or none at all.

## Sveitarfélög á Íslandi hafa ákveðið að hætta allri urðun á lífrænum úrgangi á Íslandi fyrir árslok 2020.

Sorpa, byggðasamlag um endurvinnslu, tók á móti 263.000 tonnum af úrgangi árið 2018. Helmingurinn var endurunninn og helmingurinn fór í urðun. Sveitarfélög á Íslandi hafa ákveðið að hætta allri urðun á lífrænum úrgangi á Íslandi fyrir árslok 2020. Þess í stað á að endurvinna úrganginn, um 20.000 tonn á ári, í nýrri lífgas- og moltugerðarstöð sem taka á í notkun á næsta ári. Metangas er hægt að nýta sem eldsneyti á ökutæki. Ætla má að þegar stöðin er komin í fullan rekstur verði hægt að endurvinna 95 prósent af öllu heimilissorpi sem fellur til á höfuðborgarsvæðinu.

2/3 was CO2 and 1/3 was hydrogen sulphide, which represents a total 40 per cent of the power plant emissions.

In 2018, the municipal waste company Sorpa received 263,000 tonnes of waste. Half was recycled and half was put in a landfill. The municipal authorities have decided to stop all landfill dumping of organic waste in Iceland by the end of 2020. This waste, around 20,000 tonnes annually, is instead to be recycled at the new biogas and compost facility that has been launched during the year. The production of methane gas can be used for vehicle fuel. Once in full use, 95 per cent of all household waste in the metropolitan area is expected to be recycled.

Í matvöruverslunum Krónunnar er hægt að taka matvælin sem á að kaupa úr óþarfa umbúðum í búðinni. Verslunin sendir svo plast og pappír

## HerääPahvi!-hanke tutkii, miten metsä- ja ruokateollisuuden sivuvirtoja voitaisiin hyödyntää esimerkiksi elintarvikke-pakkausten valmistuksessa.

HerääPahvi!-hanke tutkii, miten metsä- ja ruokateollisuuden sivuvirtoja voitaisiin hyödyntää esimerkiksi elintarvikkepakkausten valmistuksessa. Yhdistämällä luovien alojen osaamista bio- ja kiertotalouteen on mahdollista löytää uusia kaupallistamisen mahdollisuuksia. Nykyisin sivuvirtoja käytetään pääasiallisesti energiaksi tai kompostoidaan. Hankkeen yhtenä lyhyen aikavälin tavoitteena on lisätä ymmärrystä teollisuuden sivuvirtojen uusista käyttötavoista. Pitkällä aikavälillä pyritään luomaan ekosysteemi, jossa aiemmin jätteenä pidetyistä sivuvirroista muodostuu arvokkaita lopputuotteita.

Kansalliseen Vähennä, vältä, kierrätä ja korvaa – muovitiekartta Suomelle -julkaisuun on koottu toimia muovin kestävään käyttöön. Toimintasuunnitelma sisältää kymmenen toimenpidettä, joiden tavoitteena on vähentää muovijätettä. Fossiilisten raaka-aineiden tarve pienenee kierrätystä ja tuotesuunnittelua kehittämällä sekä kiertotalouden innovaatioiden ja kiertotalouteen sijoittamisen edellytyksiä parantamalla. Maailmassa heitetään vuosittain pois 1 300 miljoonaa tonnia ruokaa, josta suurin osa on edelleen syömäkelpoista. YK:n elintarvike- ja maatalousjärjestön mukaan Suomessa vastaava luku on vuosittain 335–460 miljoonaa kiloa. Rahalliselta arvoltaan se vastaa 500 miljoonaa euroa. Foller on luonut ruokahävikin pienentämiseksi alustan, jossa ruokakauppojen parasta ennen -päiväystä lähestyvät elintarvikkeet jäljitetään antureiden ja elektronisten merkintöjen avulla. Tuotteiden hinnat laskevat automaattisesti, ja niitä aletaan markkinoida kuluttajille.



HerääPahvi! (Wake Up Cardboard!) Image Credit: Antti Haapio

The project HerääPahvi! looks at how waste from the forest and food industry can be used, for example in the manufacture of food packaging. Combining creative industry with bioeconomy and circular economy makes it possible to find growth opportunities in industries like forestry, agriculture and horticulture. Today, the waste is used for energy or compost. One short-term effect of the project is a growing understanding of new uses for waste, and in the longer term, it creates an industrial ecosystem where waste becomes valuable end products.

The project “Reduce and Refuse, Recycle and Replace – the Plastics Roadmap for Finland” lays out the road to the sustainable management of plastics. The action

plan contains ten steps that identify what needs to be done to reduce waste. The need for fossil products is reduced by improving recycling and product design to create the conditions for innovation and investments in a circular economy. Globally, 1,300 million tonnes of food is wasted every year, most of it still edible. For Finland, the number is 335–460 million kg per year according to the UN Food and Agriculture Organization, with a total value of EUR 500 million. In order to reduce food waste, the award-winning concept Foller has created a platform where food that is nearing the sell-by date is tracked and managed with the help of sensors and electronic labelling. The price is automatically reduced and the product is marketed.



## Fastigheter står idag för 40 procent av den totala energi- användningen i Sverige.

Fastigheter står idag för 40 procent av den totala energianvändningen i Sverige. För att klara miljömålen måste detta minska. Friendly Building satsar på moderna modulhus med miljötänk. De så kallade passivhusen är välisolerade och med minimalt värmeläckage. Inbyggd teknik tar tillvara den energi som alstras inomhus av människor och elektrisk utrustning, och tillsammans med solpaneler blir det ett nollenergihus som producerar lika mycket energi som förbrukas. Volymelement av stål och betong byggs på plats enligt exakta ritningar i en permanent fabrik, vilket håller nere kostnaderna. Stommen byggs av återvunnet stål.

I Sverige gav klädinköp under 2017 en klimatpåverkan som motsvarar 850 000 varv bilkörning runt jorden. Endast en procent av all textil återvinns till nya

kläder, och enligt rapporten "A Nordic Textile Strategy" kan bättre insamling och återvinning skapa 4000 nya jobb i Norden. Om textilier blir våta eller smutsiga försvårar det möjligheten till återvinning. Eskilstuna Energi & Miljö startade för några år sedan Rosa påsen för att samla in textilier. Dessa läggs i påsen och slängs i det vanliga sopkärlet och sorteras. Användbara kläder går till välgörenhetsarbete och sämre tyger blir till industritrasor.

Innovationsprogrammet RE:Source arbetar för att Sverige ska bli världsledande på att minimera och dra nytta av avfall. Programmet är ett samarbete mellan Sveriges stora forskningsinstitutioner och stödjer projekt som söker lösningar på samhällets outnyttjade avfallsströmmar.

Properties currently represent 40 per cent of the total energy consumption in Sweden. Friendly Building is investing in modern and green modular houses. These "passive" houses are well-insulated and have minimal heat leakage. Built-in technology uses the energy generated indoors, which together with solar panels makes for a zero-energy house that produces as much energy as it uses. Volume elements made of steel and concrete are built on site according to detailed blueprints in a permanent factory, which keeps costs down. The framework is made from recycled steel with floor structures of steel and wood.

In 2017, clothing purchases in Sweden yielded a climate impact that corresponds to a car driving 850,000 laps around the globe. Only one per cent of all textiles are recycled into new clothes, and according to the report "A Nordic Textile Strategy",

improved collection and recycling could create 4,000 new jobs in the Nordics. If textiles become dirty or wet, it complicates the possibilities of recycling or reusing them. A few years ago, Eskilstuna Energi & Miljö started the pink bag project to collect textiles. They are placed in the bag and thrown in the regular waste to be sorted. Usable clothes go to charity and unusable ones are turned into industrial rags.

The innovation programme RE:Source is striving to make Sweden a world leader in minimising and utilising waste. It is a collaboration between Sweden's main research institutions to support projects seeking solutions to society's untapped waste flows.





## I Norge resirkuleres det meste av alle panteflasker og -bokser.



Flaskefond. Image Credit: Flaskefond

I Norge resirkuleres det meste av alle panteflasker og -bokser. I 2018 ble det satt rekord med nærmere 1,2 milliarder pantede flasker og bokser, og man kunne gjenvinne 7918 tonn aluminium og 20 568 tonn plast. Høy pant og miljøavgift på plastprodukter har plassert Norge i verdenstoppen. Til tross for dette forsvinner rundt 150 millioner flasker og bokser fra systemet hvert år. Et pantebasert innovasjonsfond, Flaskefond, samler inn returglass hos selskaper og ved store arrangementer, og pengene gjeninvesteres i oppstartsselskaper med bærekraftig og økologisk potensial.

Hvert år havner rundt 13 000 tapte fiskegarn i norske farvann, ifølge Miljødirektoratet. "Spøkelsesgarn" i nylon brytes ikke ned, men fortsetter å fange marine dyr. I et prosjekt finansiert av Fiskeri- og havbruksnæringens forskningsfinansiering og Forskningsrådet har forskere derfor jobbet for å utvikle garn som brytes ned etter en tid i havet. Forskerne har også undersøkt om nedbrytningen fører til utslipp av mikroplast i havet.

Frigjør dine data, oppfordrer Waste IQ-prosjektet. Ved å utnytte den samlede kraften fra forskjellige teknologier har prosjektet som mål å gjøre avfallshåndtering, blir smartere og mer effektiv. Via en digital plattform som holder orden på all avfallshåndtering blir det enkelt både å samle inn og dele data. Plattformen er åpen for alle og er utviklet i samarbeid med BIR – Bergensområdet interkommunale renovasjonsselskap. Prosjekter igangsettes i flere nordiske byer.

In Norway, the majority of all bottles and cans are recycled. The record was set in 2018, with the recycling of 1.2 billion units, comprising 7,918 tonnes of aluminium and 20,568 tonnes of plastic. High deposits and an environmental tax on plastic products are among the reasons why Norway is a world leader. Even so, around 150 million bottles and cans disappear from the system every year. An innovation fund based on bottle deposits, The Bottle Fund, collects recyclable bottles from companies and large events, and the money is reinvested in start-ups with sustainable and ecological potential.

Every year, around 13,000 fishnets are lost in Norwegian waters. "Ghost nets" made from nylon do not decompose but rather continue to ensnare marine animals. In a project funded by the Norwegian Seafood Research Fund and the Research Council of Norway, researchers have therefore been working to develop a net that breaks down after some time in the water. The researchers have also looked at whether the degradation causes microplastic emissions in the sea.

The Waste IQ project encourages you to free your data. By utilising the collective force of various technologies, the project intends to make waste management smarter and more efficient. Using a digital platform to keep track of all waste management makes it easy to collect and share data. The platform is open access and developed in collaboration with BIR. The project was initiated in several Nordic cities.

## Hvert sekund produceres der godt og vel ti ton plast på verdensplan.

Hvert sekund produceres der godt og vel ti ton plast på verdensplan. Danske husholdninger og virksomheder producerer hvert år 340.000 ton plastaffald, hvoraf ca. 63 procent afbrændes. Plast, som havner i naturen, forsvinder ikke, men nedbrydes langsomt i mindre dele for at blive til mikroplast. Af alt indsamlet affald i Danmarks natur udgør plast 39 procent, og en plastpose eller -flaske har en nedbrydningstid på ca. 500 år. "Plastik uden spild" er den danske regerings plastikhandlingsplan. Visionen er et mere cirkulært forbrug af plast, hvor produkter designes til genbrug og genanvendelse og ikke indeholder skadelige kemikalier. Produktion af en flaske af genbrugsplast indebærer et halvt så stort udledning af kuldioxid som en ny, men plasten kan være teknisk kompliceret at arbejde med.

Stop Spild Af Mad er Danmarks største frivillige forbrugerbevægelse. Denne og andre organisationers arbejde har resulteret i massivt fokus på madspild og inspireret danskerne til at spare 25 procent i forhold til tidligere år. Det svarer til, at man har sparet 14.000 ton mad på seks år. Individuelle initiativer, herunder distribution af overskudsmad til hjemløse og pop-ups med mad med kort udløbsdato, er også iværksat. I appen "Too Good To Go" sælges overskudsmad fra restauranter og bagerier til lavere priser.

På Bornholm er målet at genbruge og genanvende alt affald i 2032. "Bornholm showing the way – without waste 2032" interagerer med flere af FN's 17 verdensmål. Forbrænding forsvinder som alternativ.

A little over ten tonnes of plastic per second is produced in the world. Danish households and businesses produce 340,000 tonnes of plastic waste per year, of which around 63 per cent is incinerated. Plastic that ends up in nature does not

*Manufacturing a bottle from recycled plastic entails around half the CO2 emissions of a new one, but the plastic can be technologically complicated to work with.*

disappear but is slowly broken down into "microplastics". Of all the waste collected in the Danish nature, 39 per cent is plastic. "Plastics without waste" is the Danish Government's plastics action plan. The vision is a more circular use of plastic, where products are designed for reuse and recycling without any hazardous chemicals. Manufacturing a bottle from recycled plastic entails around half the CO2 emissions of a new one, but the plastic can be technologically complicated to work with. Stop Wasting Food is Denmark's largest non-profit consumer movement. The work of this organisation and others has led to a massive focus on food waste, inspiring

the Danes to save 25 per cent more than before. Approximately 14,000 tonnes of food has been saved over six years. There are also individual initiatives, such as distributing leftover food to the homeless or pop-ups selling food with short sell-by dates. The app "Too Good To Go" sells leftover food from restaurants and bakeries at reduced prices.

In Bornholm, the aim is to recycle and reuse all waste by 2032. "Bornholm showing the way – without waste 2032" integrates

several of the UN's 17 Sustainable Development Goals. Incineration is no longer an option.



**Rustan  
Nilsson**

**Miljöpedagog, Sysav**  
*Environmental Educator, Sysav*

**Illustration**  
Kristian Andréason

*Rustan Nilsson is an Environmental Educator specialised in waste, consumption and sustainable development. Using waste as the starting point, he looks into which behaviours that either contributes or counteracts the development towards a sustainable society.*

**Hej Rustan! Vad skulle du säga är den största myten kring avfall?**

Definitivt myten kring industriavfall och att folk tror att det inte har med dem själva att göra. Det stämmer bara ifall man tittar på vad du lägger i soptunnan. Historiskt sett slänger vi idag mer än någonsin och det ökar hela tiden. När min mormor föddes (hon lever fortfarande) slängdes i genomsnitt 30 kilo per person och livstid och idag slängs 500 kilo per person och livstid. Det rör endast det avfall som uppstår i ens eget hem – den stora mängden är ju det avfall som uppstår i produktionen av det du konsumerar. För varje enskild soppåse som slängs har det uppstått 80 soppåsar någonstans i världen för att producera det du slängde. Det är tragiskt! I och med att det är dina sopor och din konsumtion är det även dina egna ekologiska fotavtryck.

**Hi Rustan! What would you say is the greatest myth about waste?**

Definitely the myth surrounding industrial waste and people thinking that it has nothing to do with them. That's only true if you look at what you throw in the bin. Historically speaking, we are producing more waste than ever, and it keeps increasing. When my grandmother was born, a person produced an average of 30 kg of waste in their lifetime, and now the corresponding figure is 500 kg per person and lifetime. This only relates to the waste from your home – the vast majority is the waste produced in the production of what you consume. For each individual bag of waste you throw away, another 80 bags have been produced somewhere in the world to produce what you discarded. That's tragic!



### Om vi fortsätter att konsumera som nu men återvinner mer – ligger vi på noll då?

Sopsortering är bra, och det är enkelt att sopsortera; om du ändå ska slänga en grej varför inte slänga den i A istället för B eller C? Det inte så komplicerat och målet är ju att bidra till att cirkulera material och reducera jungfruliga resurser. Men man ska komma ihåg att det ofta är minst tio gånger bättre att inte slänga någonting alls! En stor andel av svenskarna gör inte den direkta kopplingen mellan sin konsumtion och mängden avfall det genererar.

### Vilka lösningar finns på detta?

Om vi tittar på hur har samhället investerat och "löst" detta så beslutade de exempelvis att ge folk en brun påse att lägga matsvinnet i. Vi fick en brun hållare att förvara den bruna påsen i och därefter en ny tunna eller ett fack i den existerande att lägga det i. Man har fått ta in nya bilar för att kunna hämta just den här nya tunnan eller en två- eller fyrfacksbil för att kunna ta facket. Utöver det har man byggt en förbehandlingsanläggning så som vi har här på Sysav, som gör maten till så kallad "slurry". Därefter finns det tankbilar som kan

### *If we keep consuming as we do, but recycle more – would it balance out?*

Recycling is good, and recycling is pretty easy: if you're going to throw something away, why not just put it in bin A instead of in B or C? It's not that complicated, and the aim is to contribute to circulating material and reducing the use of virgin resources. But it is important to remember that it's often at least ten times better not to throw anything away at all! A large proportion of Swedes will not make the direct link between their consumption and the amount of waste it generates.

### *Are there any solutions to this problem?*

If we look at how society has made investments to "solve" this, it was for example decided to give people a brown bag for their food waste. We also got a brown holder to keep the brown bag in, and then a new bin or compartment to throw it into. And to pick up this new bin, they had to bring in new refuse lorries or ones with more compartments. In addition, a pre-treatment facility has been built, like the one we have here at Sysav, which turns the food waste into "slurry". Then there are tanker lorries that can suction up this slurry and drive it to the facility that

## *But – again – it would be so much more cost-efficient not to throw away the food in the first place!*

pumpa upp slurryn och köra den till biogasanläggningen som producerar biogas och biogödsel. Man har också skapat en infrastruktur för att tanka bilar med biogasen. Allt det här är ju enorma investeringar från samhällets sida – jättebra naturligtvis eftersom det är bättre för miljön och klimatet jämfört med att elda upp det. Men – återigen, det är otroligt mycket mer kostnads-effektivt att inte slänga maten alls! Det är detta faktum som driver mig att förändra folk beteende när det gäller just avfall.

### Hur arbetar du med att förändra konsumtionsmönster?

En annan myt om oss människor är att vi är förnuftsstyrda. Att fortsätta tro det är förödande – vi måste börja acceptera att vi är mer vane- och behovsstyrda. Som miljöpedagog på Sysav är min roll att föreläsa, informera, besöka organisationer och skolor men även att ta emot besök. De senaste åren har man framförallt börjat förstå betydelsen av hållbar konsumtion; att den stora effekten uppnås genom att minimera sin konsum-

produces biogas and bio-fertiliser. An infrastructure has also been created to put the biogas into cars. All of these are enormous investments by society – which is great of course, since it's better for the environment and the climate than simply burning the waste. But – again – it would be so much more cost-efficient not to throw away the food in the first place! And it is this fact that drives me to change people's behaviour when it comes to waste.

### *How do you work with changing consumption patterns?*

Another great myth when it comes to people is that we are rational. Holding onto this belief is devastating – we have to start accepting that we are creatures of habit and need. As an environmental educator at Sysav, my role is to lecture, inform, visit organisations and schools but also to receive visitors. In the past few years, we have started to understand the importance of sustainable consumption; that the greatest effect will be achieved by minimising consumption rather than by sorting your waste correctly. The issue has become very complex of late, and we have been

# För varje enskild soppåse som slängs har det uppstått 80 soppåsar någonstans i världen för att producera det du slängde.

tion, snarare än hur man sorterar sitt avfall. Frågan har på sistone blivit väldigt komplex och vi har kunnat se att vår primära målgrupp är bred och välutbildad, vilket kräver mycket kompetens från vårt håll. För mig har det inneburit att experimentera för att förstå vilka metoder och tillvägagångssätt som fungerar bäst. Vi utgår från FN:s mål 12 i stora delar av det vi gör; minska mängden avfall och halvera matsvinnet i världen. Mitt arbete handlar om att utmana normer kring avfall och att ställa saker på sin spets; att ställa fler frågor än att nödvändigtvis komma med svar. Vi testar effektiva verktyg och metoder, bilder, siffror/statistik för att inspirera, och ser vilka reaktioner som uppstår.

### Hur tror du framtidens avfallshantering ser ut i världen?

En viktig fråga med sopsortering är naturligtvis att vi behöver cirkulera materialen och ställa om våra livsstilar – annars når vi varken klimatmål eller Agenda 2030. Antingen är man med på omställningen och är man inte det är man faktiskt emot det, skulle jag säga. Om 15–20 år kommer vi att se en förskjutning till att avfallsbolagen tar hand om det som går att cirkulera. Nu är vi lite mitt emellan; vi tar in en del grejer som vi sorterar ut och skickar vidare tillbaka till industrin direkt. Dessa loopar kommer att bli mindre och mer lokala – ett företag som vill göra skillnad kommer se till att få tillbaka produkten in i sin egen produktion utan att gå via en mellanhand. Ett producerande företag kommer att se till att få in sin resursförsörjning i sina egna system och loopar. Därför kommer Sysav att fungera som den klassiska avgiftaren i framtiden – vi kommer att ta hand om det som inte bör återvinnas. Det ska helt enkelt inte finnas cancerogena saker och ting i omlopp. Vid återvinning finns det små mängder som inte håller kvaliteten; fibrerna har blivit för korta eller plasten har blivit för sammanblandad, kontaminerad eller färgad. Det kallas "rejekt" inom återvinningsindustrin och det kan Sysav ta hand om och energiåtervinna.

able to see that our primary target group is both broad and well-educated, which requires a lot of skill on our part. We take our point of departure in Sustainable Development Goal 12 in much of what we do; reducing the amount of waste and cutting global food waste in half. My work is about challenging norms when it comes to waste and pursuing the core issues at hand; it's more about asking questions then to necessarily provide the answers. We are testing effective tools and methods, images, numbers/statistics to inspire, and we are seeing which reactions we get.

### *What do you think global waste management will be like in the future?*

One important issue of sorting waste is that we need to circulate materials and make lifestyle changes – otherwise we will never attain the climate objectives or fulfil Agenda 2030. You are either a part of the transition or not, and if you aren't, then you are actually against it, I would say. In 15–20 years, we will see a shift towards waste management companies processing products that can be circulated. Right now, we are somewhere in between; we are taking some things that we immediately sort and send right back to the industry. These loops will become smaller and more local – a company that wants to make a difference will make sure to get the product back into its own production cycle without intermediaries. A production company will make sure to include resource provision in its own systems and loops.

# Delningsekonomi *Sharing Economy*

Främja delningsekonomi för ökad nytta av  
produkter, tjänster och platser.

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





# 07

**Delningsekonomi minskar åtgången av resurser genom att varor, tjänster och platser utnyttjas effektivare. Med digitaliseringen som verktyg går allt fler från att själva äga till att utbyta kompetens samt både hyra och låna saker.**

*The sharing economy reduces the consumption of resources by ensuring that goods, services and locations are used more efficiently.*

*With digitalisation as a tool, more and more people can go from owning to exchanging knowledge as well as renting out and borrowing items.*

## I Norden er der en høj grad af tillid mennesker imellem, hvilket skaber god grobund for leje af et lokale eller udlån af penge til et mikroprojekt.

I Norden er der en høj grad af tillid mennesker imellem, hvilket skaber god grobund for leje af et lokale eller udlån af penge til et mikroprojekt. Trafik og bolig er vigtige sektorer inden for deleøkonomien, ligesom tjenester, græsrodsfinansiering, uddannelse og brugte varer. I 2017 fungerede Aarhus som et urbant laboratorium for deleøkonomi. Her indsamledes bl.a. information om overnatninger, sameje af elbiler og fordelingen af byens ressourcer. I dag er Smart Aarhus en byudviklingsplatform, som omfatter projekter såsom Aarhus City Lab og Open Data DK.

"Strategi for vækst gennem deleøkonomi" fra Erhvervs- og Vækstministeriet giver politiske

skattemyndigheder om automatisk rapportering af værternes lejeindtægter og udlejningsdage til Skat. Det er første aftale af sin slags, og systemet forventes at være i brug fra 2021. Formålet er at forenkle deklARATIONEN.

In the Nordics, the level of trust between people is high, which creates a good foundation for renting out a room or lending money to microprojects. Traffic and accommodation are important sectors of the sharing economy, as are services, grass-roots funding, education and second-hand goods. In 2017, Aarhus functioned as an urban laboratory for the sharing economy. Data was collected on accommodation, co-ownership of electric cars and the distribution of city resources. Today, Smart Aarhus is an urban development platform

creation of a market for sharing economy insurance products.

In 2018, the mediation platform Airbnb reached an agreement with the Danish Customs and Tax Administration to automatically report rental income and days rented for each host. It is the first agreement of its kind, and the system is expected to be operational in 2021. The aim is to simplify tax returns.

## Den danske regering vil endvidere bidrage til at skabe et marked for deleøkonomiske forsikringsprodukter.

retningslinjer for, hvordan deleøkonomien kan udvikles. Den indeholder 22 initiativer, som skal bidrage til at skabe mere tillid i deleøkonomien, sikre korrekt skattebetaling, understøtte, at deleøkonomien bidrager til nye jobmuligheder, og sikre, at Danmark også i fremtiden kan følge med udviklingen på området. Den danske regering vil endvidere bidrage til at skabe et marked for deleøkonomiske forsikringsprodukter.

including projects such as the Aarhus City Lab and Open Data DK.

The Danish Ministry for Industry, Business and Financial Affairs' "Strategy for growth through the sharing economy" provides political guidelines on the development of the sharing economy. It contains 22 initiatives intended to contribute to increased trust in the sharing economy, secure correct tax contributions, support the sharing economy's contribution to new job opportunities and ensure that Denmark continues to keep up with the developments in this field. The Danish Government also wants to contribute to the

I 2018 indgik formidlingsplatformen Airbnb en aftale med de danske

## Delningsekonomin har två spår; den som ger affärsmöjligheter och den som verkar på gräsrotsnivå.

Delningsekonomin har två spår; den som ger affärsmöjligheter och den som verkar på gräsrotsnivå. För att underlätta entreprenörskap och innovation krävs ändringar av nuvarande regelverk. Då vi delar lägenheter och prylar är tillit hårdvaluta, och relationen mellan jämlika parter (Peer-2-Peer) kräver nytänkande.

Vinstdrivna delningstjänster ger ofta upphov till rekyleffekter, både positiva och negativa – blir det billigare och enklare kan vi göra mer. Ska delningsekonomin bana väg mot en mer hållbar konsumtion är det därför upp till var och en att se till att de pengar som sparas inte läggs på annan konsumtion som lämnar ett ännu större avtryck, menar Karin Bradley, ansvarig för regeringens utredning om delningsekonomi. Kungliga Tekniska Högskolan i Stockholm har undersökt vad som händer om pendlingsresor med bil i Stockholm ersätts med självkörande taxibilar. Beräkningarna pekar på att även vid rusningstrafik kan resorna utföras med åtta procent av de bilar som är i bruk idag.

Göteborg ska med tiden bli "Sharing City Göteborg" där det blir naturligt att dela, låna och byta. En satsning är projektet "Dela mera" med den digitala tjänsten "Smarta Kartan", där platser där invånarna exempelvis kan låna verktyg och byta kläder lyfts fram. Satsningen sker i nära samverkan med bibliotek och kulturhus. Det nya kvarteret "The Embassy of Sharing" i Hyllie vill göra Malmöstadsdelen socialt inkluderande och grön, där miljöteknik kan testas och utvecklas.



Sharing City Göteborg. Image Credit: Göteborgs Stad

The sharing economy has two tracks: business opportunities and the grassroots level. In order to facilitate entrepreneurship and innovation, changes to the current regulations are needed. When we share apartments and belongings, trust becomes a hard currency and the peer-2-peer relationship requires innovative thinking.

For-profit sharing services often have rebound effects, both positive and negative – when it's cheaper and easier, we can do more. If the sharing economy is to pave the way for more sustainable consumption, it is therefore up to each individual to ensure that the money saved is not spent on other consumption with an even greater footprint, according to Karin Bradley, head of the government commission on the sharing economy. KTH Royal Institute of

Technology has examined what happens if car commuting in Stockholm was replaced by self-driving taxis. The estimations indicate that even at rush hour, these journeys could be carried out with eight per cent of the cars currently in use.

Gothenburg is aiming to become "Sharing City Gothenburg" where sharing, borrowing and swapping comes naturally. One initiative is the "Share more" project with a digital "smart map" of places where residents can borrow tools and exchange clothes. The initiative is done in close collaboration with libraries and culture institutes. The new city district "The Embassy of Sharing" in Hyllie aims to make this part of Malmö socially inclusive and green, and a testbed for environmental technology.



Að sögn sænsku hugveitunnar Timbro hefur Ísland náð besta árangri allra landa í heiminum á sviði deiliahagkerfa.

VARIABLES	N	MEAN	SD	MIN	MAX
TSEI	112	0.0901	0.174	0.000124	1.177
GDP per capita	114	20,435	21,760	806.0	163,294
Economic freedom	114	6.940	0.882	2.920	8.810
Limited government	114	6.422	1.322	3.420	9.490
Legal integrity	114	5.476	1.583	2.050	8.880
Sound money	114	8.530	1.350	1.940	9.840
Freedom to trade	114	7.215	1.108	3.320	9.250
Regulatory freedom	114	7.059	1.109	2.360	9.120
Average years of schooling	114	8.437	3.124	1.241	13.42
Globalization (KOF)	114	64.10	15.15	31.87	91.70
Share under 40 years	114	60.70	8.152	45.54	105.5
Share with broadband	113	0.144	0.135	0.000124	0.444
Social trust	114	25.59	14.18	5.774	68.08

Table 5.1: Descriptive statistics

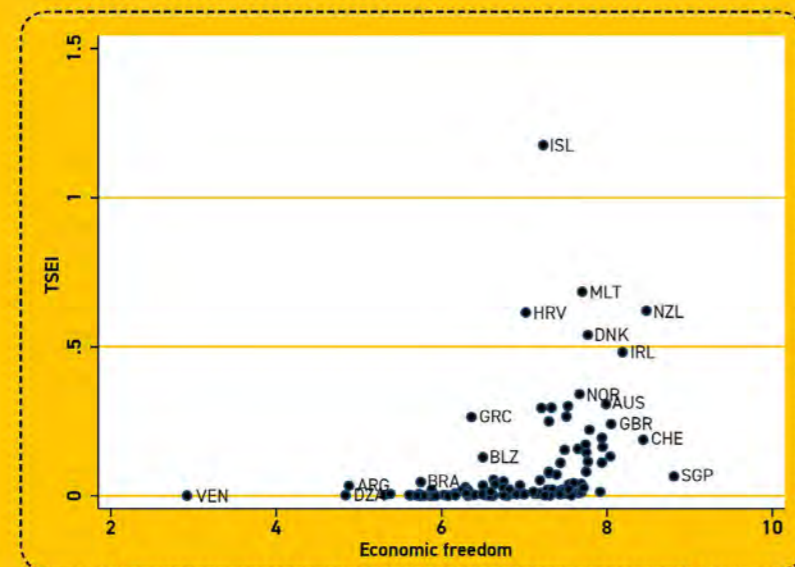


Figure 5.1 The relationship between economic freedom and sharing economy usage.

VARIABLES	(1)	(2)	(3)	(4)	(5)
	TSEI	TSEI	TSEI	TSEI	TSEI
Economic Freedom	0.0699*** (0.0160)	0.0398*** (0.0124)	0.0123 (0.0124)	0.0162 (0.0121)	0.0165 (0.0117)
Log GDP per capita		0.0463** (0.0805)	-0.0176* (0.0878)	-0.00336 (0.231)	-0.00748 (0.231)
Share w broadband			0.825*** (0.221)	0.917*** (0.253)	0.962** (0.437)
Average years of schooling				-0.0112* (0.00673)	-0.0111* (0.00657)
Share under 40 years					0.000599 (0.00297)
Observations	112	112	111	111	111
R-Squared	0.127	0.199	0.344	0.356	0.356

Robust standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 5.2: TSEI, country-level regressions

Education, country-level openness and a relatively young population are positively associated with sharing economy usage. Plotting sharing economy usage against aggregate economic freedom illustrates that sharing economy usage is higher in economically free countries, but suggests that other factors matter as well. Image Credit: Timbro

Að sögn sænsku hugveitunnar Timbro hefur Ísland náð besta árangri allra landa í heiminum á sviði deiliahagkerfa. „Timbro Sharing Economy Index“ eða „deiliahagkerfisvísir Timbro“ er ítarlegt yfirlit yfir þá þætti sem knýja deiliahagkerfi heimsins í dag og er unnið í samstarfi við fræðimenn hjá háskólanum í Pennsylvaníu og háskólanum í Lundi og samtök atvinnurekenda, á grundvelli gagna frá 213 löndum. Ísland er með 100 stig og örugga forystu, en Turks- og Caicos-eyjar eru í öðru sæti, með 66,9 stig. Löndin í efstu sætunum eiga það sameiginlegt að byggja verga þjófðarframléiðslu að stórum hluta á ferðamennsku og búa að styrkum innviðum fyrir internet. Meðal Norðurlandanna er Danmörk í áttunda sæti, Noregur í 16. sæti, Svíþjóð í 42. sæti og Finnland í því 45.

Þegar íslenskt efnahagslíf byrjaði að rétta úr kútnum eftir efnahagshrunið árið 2008 og ferðamennska fór að aukast svo um munaði var það einmitt deiliahagkerfið sem dafnaði hvað mest, til að mæta sívaxandi eftirspurn. Íslendingar nota samfélagsmiðla mikið

og níu af hverjum tíu landsmönnum eru á Facebook, samkvæmt könnun Market and Media Research. Vara og þjónusta gengur kaupum og sölum – eða er auglýst gefins – á mörgum og mismunandi vefsvæðum, herbergi eru leigð út og bílar samnýttir.

Útleiga einkaaðila á ónotuðu húsrými eða einkabílum hefur hugsanlega komið í veg fyrir að íslenska hagkerfið ofhitnaði á ný. Útleiga einkaaðila skilar oft ávinningi fyrir umhverfið þar sem einkaheimili eru yfirleitt með minni orkupörf en hótél, eins og rannsókn VISTA Analyse hefur sýnt fram á.

Iceland is number one in the world when it comes to the sharing economy, according to Swedish think tank Timbro. With the help of researchers, the Swedish Entrepreneurship Forum and data from 213 countries, the Timbro Sharing Economy Index seizes on what drives the world's sharing economies. With 100 points, Iceland is far ahead of the Turks and Caicos Islands, which is at second place with 66.9 points. In common for the countries at the top of the list is that they

are economies where a large part of GDP is based on tourism, and they have a stable internet infrastructure. Out of the Nordic countries, Denmark is in eight place, Norway in 16th, Sweden in 42nd and Finland in 45th place.

When the Icelandic economy recovered from the financial crash in 2008 and tourism took off, the sharing economy grew to meet the demand. Icelanders also use social media a lot. Nine out of ten are on Facebook according to a survey by Market and media research. Different platforms are used to buy, sell and give away items, while rooms are let and cars are shared. Using the popular carpooling portal Samferða.net, you can find travel companions for shorter or longer journeys.

Having private individuals rent out their rooms or their cars for periods where they would not otherwise be used has also stopped the Icelandic economy from overheating. Private leasing often has environmental gains, as households generally have a lower energy consumption than hotels, according to a VISTA Analyse study.

## Behovet for å dele smartere vokser.

Behovet for å dele smartere vokser. Byene våre er fulle av ubrukte ressurser, for eksempel biler som står parkert 95 prosent av tiden. Samtidig trenger folk nye tjenester og informasjon om hva som finnes. Den tekniske plattformen Urban Sharing kobler sammen mennesker med hva som er tilgjengelig. Opprinnelig er plattformen til for sykkeldeling, men den er designet for enkelt å kunne omstilles til enhver form for deling, fra dyrkingspartier og smarte avfallssystemer til multifunksjonelle bussholdeplasser. I modellen inngår innsamling av data og analyser.

En viktig forutsetning for friluftsliv i Norge er allemannsretten. Med mer enn 300 000 medlemmer er Den Norske Turistforening, DNT, Norges største friluftsansjon. DNT arbeider for at flere skal få gode naturopplevelser, og for å sikre de fremtidige generasjoner muligheten til å ferdes fritt i naturen. Det handler om å ta vare på de grunnleggende behovene til dagens mennesker uten å ødelegge for dem som kommer etter oss. DNT har over 500 selvbetjente hytter over hele Norge som medlemmer kan dele. Systemet er tillitsbasert og unikt i verden. DNT er kritisk til vindkraftverk, som sies å forårsake store sår i naturen og forandre landskapet for alltid. DNT er ikke imot vindkraft, men ønsker strengere begrensninger for hvor man kan bygge anlegg. De mener at det må legges større vekt på natur- og friluftslivsverdiene når det planlegges hvor mange vindkraftanlegg som skal bygges, og hvor de skal plasseres.



Allemannsretten Norway. Image Credit: Iryna Inshyna / Shutterstock

The need for smarter sharing grows. Our cities are full of untapped resources, such as cars that are parked 95 per cent of the time. At the same time, people need new services and information about what is available. The technical platform Urban Sharing connects people with available services. The platform was created for bike sharing, but designed to easily switch to any type of sharing, from allotments to smart waste management systems to multi-functional bus stops. Data collection and analysis is included in the model.

An important condition for outdoor life in Norway is the public right of access – everyone's right to share nature. With more than 300,000 members, the Norwegian Trekking Association (DNT) is Norway's

largest outdoor activity association. DNT is striving for more people to have good nature experiences and to ensure the future generations' possibilities of moving around freely in nature. The members have access to more than 500 cabins all over Norway, in a world-unique trust-based system. It is a matter of providing people today with their basic needs, without ruining anything for those to come. DNT is critical of wind farms, which are said to create damage to nature and change the landscape forever. DNT is not against wind power, but would like to see stricter limitations on where the plants can be built. Their argument is that more focus must be placed on natural and outdoor values when planning how many wind farms are built and where.

## Jakamistalous merkitsee tilapäistä käyttöoikeutta omistamisen sijaan, jolloin materiaaleja, osaamista, resursseja, aikaa ja tiloja voidaan jakaa tehokkaasti.

Jakamistalous merkitsee tilapäistä käyttöoikeutta omistamisen sijaan, jolloin materiaaleja, osaamista, resursseja, aikaa ja tiloja voidaan jakaa tehokkaasti. Työ- ja elinkeinoministeriön raportin mukaan jakamistalouden luomien markkinoiden arvo voi ylittää pelkästään Suomessa jopa 1,3 miljardiin euroon vuonna 2020. Toistaiseksi kuluttajien käytettävissä on ollut alustoja, joissa tuotteita ja palveluita voi vaihtaa, ostaa ja myydä. Verotuksellisia ja turvallisuuteen liittyviä uudistuksia sekä menetelmiä ideoiden testaamiseksi joustavasti ja kustannustehokkaasti tarvitaan kuitenkin.

Alustoihin liittyvissä liiketoimintamalleissa luodaan lisäarvoa tuomalla yhteen ne, jotka antavat jotain lainaksi, ja ne, jotka haluavat lainata. Sharetriben avulla kuka tahansa voi vuokrata digitaalisen alustan, jolle voi perustaa liiketoimintaa. Tekniikasta ja päivityksistä vastaa Sharetribe. Kinspiring on puolestaan Suomen suurin pikkulasten vaatteiden ja tarvikkeiden jakamisalusta.

Alustat eivät ole ainoastaan tavaroita, vaan myös osaamista varten. LifeLearn jakaa jäsentensä tietämystä ympäri maailmaa. Osallistujat voivat auttaa muita valmentamalla ja opettamalla tai sitten vain kehittää omia taitojaan. LifeLearn toimii muun muassa esikouluissa, yliopistoissa ja käsityöaloilla. Esimerkiksi Turun yliopistossa tehdään tutkimusta esikouluista ja oppimisesta työpaikoilla LifeLearn-alustan avulla.

As the sharing economy entails access rather than ownership, material, knowledge, resources, time and space are used more efficiently. According to the report 9/2017 from the Ministry of Employment and Economy, the market value created by the sharing economy amounts to 1.3 billion dollars by 2020 in Finland alone. So far, the consumer industry has taken the lead on platforms for trading, purchasing and

ing, or be the person learning something new. A few areas where LifeLearn has been successful are higher education, crafts and preschools. Turku University is conducting a study of preschools and learning in workplaces with the LifeLearn platform.

*According to the report 9/2017 from the Ministry of Employment and Economy, the market value created by the sharing economy amounts to 1.3 billion dollars by 2020 in Finland alone.*

selling goods and services. Reforms are needed in terms of taxes and security, but also methods to flexibly and cost-effectively test ideas.

The platform business model is about creating added value for everyone participating by quickly connecting the borrower with the lender. The platform mediates the transaction, but is not part of it. With the help of Sharetribe, anyone can rent a digital platform. The service allows you to share your business, while Sharetribe handles the technology and updates. Kinspiring is Finland's largest sharing platform for clothes and equipment for toddlers.

The platform is not only for objects, but just as much for knowledge. LifeLearn shares the members' knowledge across the world. Help others by coaching and teach-



*Emmy Laura Perez Fjalland is a writer, analyst and researcher specialised in understanding places and practices, collaborations and communities. She describes herself as “Full-heartedly determined to contribute to sustainable world-making”.*



**Emmy Laura Perez Fjalland** Ph.d., forsker og ekstern lektor  
*PhD, MA, Researcher and Lecturer*

**Illustration**  
Kristian Andréason

**Hej Emmy! Du forholder dig ret kritisk til deleøkonomi og moderne digitale deleøkonomiske platforme. Hvad er de vigtigste konklusioner i din forskning?**

Jeg mener, at begrebet deleøkonomi er for vagt formuleret. Der findes mange forskellige fortolkninger af målet, formålet og de aktiviteter, der er knyttet til begrebet. I min forskning har jeg set, at begrebet stadig er uklart, men synes at være forbundet med hyperkapitalistiske og globale platforme. I første omgang blev hensigten med at stille 'ledig kapacitet' til rådighed fortolket som miljømæssige og sociale fordele. Der var en masse ting og ydelser derude, der ikke blev sat i spil, som kunne stilles til rådighed, og der var derfor ingen grund til at fremstille nye produkter. Samtidig var der kritiske røster, som mente, at det kun var muligt for de i forvejen privilegerede at deltage i deleøkonomien.

*Hi Emmy! You have quite a critical approach to the sharing economy and today's digital sharing platforms. What are the main findings in your research?*

I believe that there is a vagueness of the wording Sharing Economy in English, Spanish and French, and there are many different interpretations of the aim, the purpose and the activities related to the term. In my research I have seen that the concept is still vague but seems to be associated with hyper-capitalist and global platforms. At first, the intention to provide 'idle capacity' with the sharing economy was interpreted with environmental and social benefits. There was a lot of much under-used stuff out there that could be made accessible; hence there was no need to produce new products. Parallel to this, critical reviews argued that it was only the already privileged that had the possibility to take part in that kind of economy.

Desuden mente de f.eks., at delebilordninger øger problemet med trængsel og forurening, fordi der ville komme flere biler i gaderummet.

Efterhånden fandt jeg ud af, at deleøkonomi og idéen om 'ledig kapacitet' var noget mere nuanceret og havde både gode og dårlige sociale, miljømæssige og økonomiske konsekvenser. Spørgsmål om rådighed, fordeling og grundige etiske og politiske overvejelser i forhold til relevans og interesse skal inddrages. Jeg tror, at det haster med at gennemtænke vores udnyttelse af ikke-menneskelige ressourcer som materialer og produkter og de politiske og etiske aspekter. Endvidere må man ikke glemme de menneskelige kompetencer og ressourcer.

#### Hvordan tror du, at vi kan løse problemerne med klimaforandringer i forhold til bæredygtighed ved hjælp af deleøkonomiske initiativer?

Efter min mening skal måden, hvorpå vi anvender jordens ressourcer, ændres radikalt. Lige nu er jeg lidt i tvivl om disse deleøkonomiske on demand-ydelser nu også er løsningen, idet vi

Furthermore, they could for example see that car-sharing would increase pollution and congestion because more cars would be driving on the streets.

Gradually, I discovered that the sharing economy and its ideas about 'idle capacity' was nuanced to have both good and bad social, environmental and economic consequences. Questions of accessibility and distribution, idle capacity and careful ethical and political considerations of relevance and interest must follow. Together, this contributed to a different understanding of the sharing economy, which later became synonymous with hyper-neoliberalism and a driver for a digital platform economy. I think there is an urgent need to re-think our utilisation of non-human resources like materials and goods, and the political and ethical implications. Furthermore, one should not forget human competences and human resources.

#### *In what way do you think we are able to respond to environmental changes connected to sustainability with a sharing economy?*

I would say that our way of consuming the world's resources needs to change fundamentally. Currently

## *I think there is an urgent need to re-think our utilisation of non-human resources like materials and goods, and the political and ethical implications.*

synes at blive endnu mere fremmedgjorte over for de systemer, mennesker og naturressourcer, der faktisk gør det muligt at stille disse ting og ydelser til rådighed. For at kunne løse problemerne med klimaforandringer tror jeg, at de forskellige former for relationer og tilhørsforhold skal genoprettes, men set ud fra et etisk aspekt. Platforme og digitale platforme kan bruges til at visualisere og optimere udveksling af materialer og mobilitet i forhold til, hvordan ting og ydelser transporteres, hvor de kommer fra, og hvem der har lavet dem. Men systemerne kan også gøre dem endnu mere usynlige – vi kan bare bestille en vare, som så bliver leveret lige til døren.

#### **Tror du, at mennesket er skabt til at dele?**

Det spørgsmål er der mange svar på. Adfærdspsykologer hævder f.eks., at mennesker er sociale væsner, som ønsker at være en del af en gruppe, og på den måde, vil vi gerne dele. Jeg tror, vi bliver nødt til at grave dybere og undersøge disse spørgsmål nærmere. Vi bliver nødt til at udvikle flere systemer, hvor vi får mere kvalitativ viden om,

I am a little doubtful if these on-demand sharing economy services are the solution since we seem to get even more disconnected from the systems, people and natural resources that actually enable those goods. For us to be able to respond to environmental change I think those different kinds of relationships, attachments and links need to be restored but in ethical terms. Platforms and digital platforms can visualise and enable some of the material flows and the mobilities of how things move around; where they come from and who have made them. But the systems can also make them even more invisible – we are able to just order a product and it arrives straight to our door.

#### *Do you think that people by nature want to share?*

That question could be answered in many ways. Behavioural psychologists for instance argue that humans are social beings; we want to be part of a group and in that sense, we want to share. I believe that we need to dig much deeper and more exploratively into these kinds of questions. We need to design more

# I lokalsamfundene finder der en slags deling sted, men for at styrke delingstankegangen skal materialer fremstilles på en sådan måde, at de kan anvendes på mere cirkulære måder.

hvad vi kan dele, hvad vi **ikke** ønsker at dele, og hvad vi **bliver nødt** til at dele. Jeg tror, at det er langt mere vigtigt at finde ud af, **hvordan** vi kan dele mere, **hvad** vi kan dele mere af, og med **hvem** vi kan dele. Nogle materialer og ting kræver en mere omfattende form for tillid end andre. Der er mange interessante aspekter ved det spørgsmål, du stiller. Jeg tror ikke, at det handler om, hvorvidt mennesker er selviske eller ej, eller om det optager dem, eller de er ligeglade. Der er f.eks. undersøgelser, som viser, at jæger- og samlersamfund og forhistoriske landbrugssamfund hjalp og delte med hinanden for at overleve.

#### **Hvordan ser fremtiden ud for deleøkonomien ifølge dig?**

For mig er deleøkonomien i øjeblikket en trend og et modeord, og deling bliver i vidt omfang markedsført som udlejning, leje og opgaver, og det skaber en anden usikkerhed med uklare rettigheder og utryghed. Måske ville en mere passende betegnelse være opgaveøkonomi eller gig-økonomi. I lokalsamfundene finder der en slags deling sted, men for at styrke delingstankegangen skal materialer fremstilles på en sådan måde, at de kan anvendes på mere cirkulære måder. Hele produktionslinjen og ressourcerne skal gennemtænkes for at gøre det muligt at dele disse ting og ydelser. Jeg bryder mig ikke om at generalisere omkring deleøkonomiske platforme, fordi der findes også nytænkende virksomheder og platforme med løsninger til, hvordan vi skal bebo kloden. Men i mange af de virksomheder, der startede som kommercielle deleøkonomiske virksomheder, oplever jeg, at de stadig har en meget lineær økonomi. I den forstand tror jeg ikke, meget har ændret sig.

systems where we have more qualitative knowledge about *what* we can share, what we *do not* want to share and what we *need* to share. I think it is much more crucial to find out *how* we could share more, *what* we could share more of and with *whom* we could share. Some materials and matters need a more significant kind of trust than other. There are many levels that are interesting to the question you pose. I do not think it is about humans being selfish or not, or about caring or not caring. There are for instance studies showing that hunter-gatherer cultures and early agricultural societies in older times were based on sharing and mutual aid in order to survive.

#### *What is the future of sharing economy according to you?*

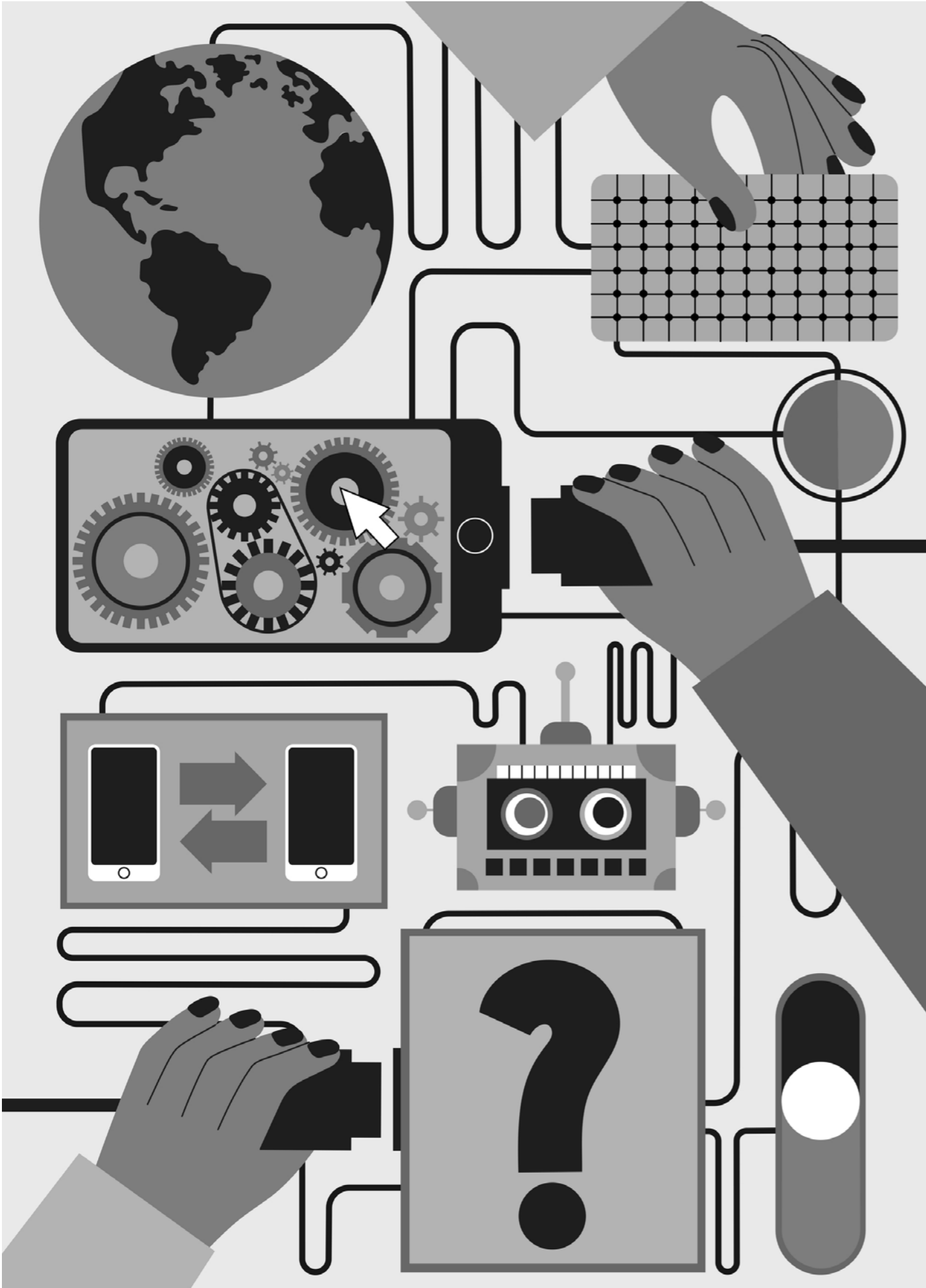
To me, the sharing economy is a bit of a trend and buzz word at the moment and the sharing gets widely marketized into leasing, renting and gigs, and this creates another precarity with vague rights and security. Maybe a more appropriate name would be the task economy or gig economy. In local communities, a collaborative kind of sharing is taking place, but to increase sharing, materials need to be produced in a way it can be used in more circular ways. The whole production line and the resource line has to be redesigned to enable sharing of these goods. I do not like being universal about sharing economy platforms as fruitful new organisations and platforms are also appearing and rethinking how we are inhabiting this planet. But in many companies that started out as sharing economy companies, I see that they still have a very linear economy. In that sense I do not think much has changed.



# Robotkärlek

## *Robot Love*

Stimulera ny teknik, digitalisering, robotar och AI som verktyg för mer hållbara lösningar.  
*Encourage new technology, digitalisation, robots and AI as tools for more sustainable solutions.*



**Digitalisering och etiskt ansvarsfulla tekniska innovationer skapar nya möjligheter för ett hållbart samhälle. Artificiell intelligens – AI – kan generera sociala och ekonomiska fördelar i samhälle.**  
*Digitalisation and ethically responsible technical innovations create new opportunities for a sustainable society. The use of AI can generate social and economic benefits for society.*

08



## AI, Internet of Things och digitalisering förändrar våra liv under den fjärde industriella revolutionen.

AI, Internet of Things och digitalisering förändrar våra liv under den fjärde industriella revolutionen. Det krävs att vi litar på tekniken även om vi många gånger inte förstår den, och transparens är viktigt för tilliten.

Inom cirkulär ekonomi finns stor potential för AI, enligt en rapport från Ellen MacArthur Foundation och Google, då maskininlärning kan öka takten på produktutveckling. Realtids- och korttidsdata om produkter och användare gör det dessutom enklare att förutsäga efterfrågan och underhåll. AI kan också användas för att optimera logistiken vid sortering, återvinning och återproducering. Sveriges första robot som sorterar blandat bygg- och industriavfall finns i Malmö hos företaget Carl F. Sensorer och AI sköter robotens två plockarmar vid sortering av sten, trä, hårdplast och metall.

I export- och investeringsplattformen "Smart City Sweden" presenteras svenska klimat- och miljölösningar med utgångspunkt i målen för Agenda 2030. I regeringens "Strategi för Levande städer" samarbetar näringsliv, offentlig sektor och akademi för systemförändringar. Målet är att genom digitalisering, ny miljöteknik och andra innovativa instrument bidra till en mer hållbar stadsutveckling. Digitaliseringen skapar möjlighet för självkörande

bilar och bussar, men vad innebär fler elfordon och laddningsstationer för elförsörjning och gatumiljö? I ett pågående forskningsprojekt koordinerat av Kungliga Tekniska Högskolan synas modeller för framtidens smarta gator.

AI, the Internet of Things and digitalisation are changing our lives in the fourth industrial revolution. At the same time, we have to trust the technology, even if we do not understand it and transparency is important.

### *AI can also be used to optimise the logistics of sorting, recycling and reproduction.*

In the circular economy there is great AI potential, according to a report by the Ellen MacArthur Foundation and Google, in that machine learning can increase the rate of product development, and real-time and short-term data on products and users make it easier to predict demand and maintenance. AI can also be used to optimise the logistics of sorting, recycling and reproduction. Sweden's first robot that sorts construction and industrial waste is found in Malmö, with the company Carl F. Sensors, and the two arms of the robot are controlled by AI when sorting rocks, timber, hard plastic and metal.

The export and investment platform "Smart City Sweden" presents Swedish climate and environmental solutions based on the Agenda 2030 goals. In the Government's "Strategy for Liveable Cities", the industrial, public and academic sectors work together to change the system. The goal is to use digitalisation, new green technology and other innovative instruments to contribute to a sustainable urban development. Digitalisation creates opportunities for self-driving cars and buses, but what do more electric vehicles and charging stations

mean for the electricity supply and street environment? KTH is currently coordinating a research project to examine models for the smart streets of the future.

## Innsamling av store mengder data identifiserer mønstre.

Innsamling av store mengder data identifiserer mønstre. Når innsamlet data behandles og sorteres, er det mulig å se sammenhenger og konsekvenser. eSmart Systems utvikler programvareløsninger for inspeksjon og vedlikehold av kraftledningsnett. Ved hjelp av kunstig intelligens og bildeggenkjenning kan programvaren automatisk gjenkjenne objekter og finne feil i strømmettet. eSmart Systems' Connected Drone kan analysere flere bilder på én time enn hva som kan gjøres manuelt på ett år. Dette bidrar til å redusere vedlikeholdskostnader, redusere feilprosenten og forlenge levetiden. eSmart Systems leverer også en løsning som gjør det mulig for lokale aktører som produserer mer strøm enn de bruker selv, for eksempel med solceller, å bli "energibønder" og tilby overskuddsenergi på et lokalt marked.

Ettersom vår eksistens føles truet, blir forestillinger om fremtiden lett dystopiske. Kan industriell design skape mer håpefulle fortellinger? Speculative Solar (AHO) bruker virtual reality (VR) for å stimulere en fiktiv fremtid der bærekraftige løsninger kan oppleves og undersøkes, i prosjektet i form av en 3D-trykt optisk solcelle. Håpet er å oppdage fremtidige teknologier som designere kan utforme her og nå for langsiktige klimatiltak.

Undervannsdronen Blueye Pioneer fungerer ned til 150 meters dyp og gir et vindu til livet under overflaten. Blueye springer ut fra det maritime forskningsmiljøet ved NTNU. Les mer i kapitlets intervju med Christine Spiten.



eSmart Systems. Image Credit: Trond-Atle Bokerod

The collection of large quantities of data is a way to identify patterns. When collected data is processed and sorted, correlations and consequences become discernible. eSmart Systems develops software solutions for inspection and maintenance of the power grid. With the help of artificial intelligence and image recognition, the software can automatically recognise objects and find faults in the network. eSmart Systems' Connected Drone can analyse more images in one hour than what could be done manually in a year. This contributes to reducing maintenance costs, reduces failure rates and extends equipment life. eSmart Systems also offers a solution enabling local actors that produce more electricity than they use, for example with solar cells, to become "energy farmers" and sell surplus energy on a local market.

Since our existence seems to be under threat, the future is often pictured as a dystopia. Could industrial design shape

more hopeful narratives? Speculative Solar (AHO) uses virtual reality (VR) to stimulate a fictitious future where sustainable solutions can be experienced and examined, in the project in the form of a 3D-printed optical solar cell. The hope is to discover future technologies that designers can create here and now for long-term climate measures.

The underwater drone Blueye Pioneer is functional at depths of up to 150 metres, creating a window to life below the surface. Blueye is the result of work from the maritime research environment at NTNU. Find out more in the chapter's interview with Christine Spiten.

## AI bliver en mere og mere integreret del af vores liv.

AI bliver en mere og mere integreret del af vores liv. SPACE10 udforsker, hvordan teknologiske gennembrud såsom mixed reality, kunstig intelligens og digitale fabrikationsmetoder kan give mennesker nye muligheder. For at tage højde for de etiske aspekter og få flere til at overveje spørgsmålene udviklede SPACE10 "Do you speak human?". Mennesker fra 139 lande forholdt sig til, hvordan de ser på AI, og hvordan de ønsker, det skal bruges og designes. Resultatet tyder på, at vi foretrækker AI-redskaber med menneskelige egenskaber, fx stemme, personlighed og emotionelle svar.

I projektet CHAIN – Smart Water Networks – ser Alexandra Institutet på, hvordan vandforsyning kan gøre nye intelligente teknologier tilgængelige for vandsektoren. Der er store drifts- og miljømæssige fordele i at bruge disse sammen med eksisterende systemer. På sigt skaber CHAIN værdi i form af effektiv drift, også under ekstreme forhold. Forbrugerne sikres fortsat stabil vandforsyning, og virksomheder får mulighed for at udvikle nye tjenester og produkter.

Visse mikroalger vil muligvis kunne bruges som kilde til at skabe lys. Dette er man i gang med at undersøge på Danmarks Tekniske Universitet. Mikroalger afgiver et turkisblåt lys takket være biokemiske reaktioner, men der er helt klare udfordringer – det kræver, at algerne er i bevægelse, og de lyser kun i kort tid. Gener fra mikroorganismene skal også kunne overføres til andre og mere effektive grønne organismer.

AI is increasingly intertwined with our lives. SPACE10 investigates how technological breakthroughs such as mixed reality, artificial intelligence and digital manufacturing methods can give people new opportunities. To include ethical aspects and encourage people to contemplate these issues, SPACE10 created "Do you speak human?". People in 139 countries answered a survey on their opinions on AI, its use and design. The results indicate that we prefer AI tools with human-like traits, such as a voice, a personality and emotional responses.

In the project CHAIN – Smart Water Networks – the Alexandra Institute explores ways to make artificial intelligence available to the water sector. There are large operational and environmental benefits to gain from using these technologies together with existing systems. In the longer term, CHAIN creates value in the form of effective operation, also in extreme conditions. Users are guaranteed a steady water supply, and operations have opportunities to develop new services and products.

Certain microalgae constitute a potential light source, which is something currently being investigated at the Technical University of Denmark. Microalgae emit a turquoise light through biochemical reactions, but there are some evident challenges: the algae have to be moving and only emit light in short bursts. Genes from these microorganisms would also have to be transferred to other, more effective green organisms.





## Iðnbyltingar fyrri alda hverfðust um gufu og olíu, en iðnbyltingin sem nú stendur yfir grundvallast á internetinu og gervigreind.

Iðnbyltingar fyrri alda hverfðust um gufu og olíu, en iðnbyltingin sem nú stendur yfir grundvallast á internetinu og gervigreind. Sterkir innviðir fyrir net og gífurlegt framboð á orku auðvelda Íslandi að innleiða snjallausnir. Læknar og tölvunarfræðingar hafa þróað sprotaverkefnið TrackEHR, sem er vefviðmót sem gerir læknum kleift að deila meðferðaráætlunum og heilsufarsupplýsingum með sjúklingum sínum. Sjúklingar á legudeildum fá daglega mikið magn flókinna munnlegra upplýsinga um heilsufar sitt og rannsóknir benda til þess að

hámarka siglingarhraða geta skip náð allt að fimm prósentu eldsneyttissparnaði og minnkað um leið losun. Kerfið hefur verið sett upp í yfir 600 skipum.

Nettónlistarskólinn Mussilla miðlar grunnþekkingu til nemenda sinna til að gera þeim kleift að bæði spila og semja eigin tónlist. Trappa og Kara Connect eru fyrirtæki sem tengja sérfræðinga í m.a. heilbrigðisþjónustu og kennslu við notendur gegnum vefsvæði. Markmiðið er að tryggja öllum jafnan aðgang að þjónustu og þekkingu.

## Sjúklingar á legudeildum fá daglega mikið magn flókinna munnlegra upplýsinga um heilsufar sitt og rannsóknir benda til þess að allt að 40 prósent þeirra eigi erfitt með að skilja þessar upplýsingar.

allt að 40 prósent þeirra eigi erfitt með að skilja þessar upplýsingar. Með TrackEHR geta heilbrigðisstarfsmenn miðlað nýjum upplýsingum um meðferð og heilsufar hratt og skiljanlega til sjúklinganna. Sjúklingarnir geta einnig deilt upplýsingunum sem þeir fá gegnum vefsvæðið með aðstandendum sínum.

Hugbúnaðar- og sjávarútvegsþjónustufyrirtækið Marorka hefur hannað gagnagrunnsmiðaðar rauntímagreiningar og vöktun fyrir sjávarútvegsfyrirtæki. Með því að

Where previous industrial revolutions have revolved around steam and oil, this one is based in the Internet of Things and intelligent systems. A robust network and surplus of energy makes Iceland well-equipped for smart solutions. Doctors and computer scientists are responsible for the medical platform TrackEHR, a start-up that allows doctors to share treatment plans and health results with their patients. Admitted patients will receive complicated verbal information on their health every day, and studies indicate that as many as 40 per cent have trouble understanding it.

With TrackEHR, medical staff can quickly share new information regarding treatment and health conditions with the patients, as a complement to the verbal information. Patients can also share the information they receive on the platform with their families.

Marorka Onboard caters to the shipping industry, with data-based real-time analyses and monitoring. By optimising their speed, a vessel can save up to five per cent of its fuel consumption and thereby reduce emissions. With better information on what is actually happening, it is also possible to quantify the savings. The system is installed on more than 600 vessels.

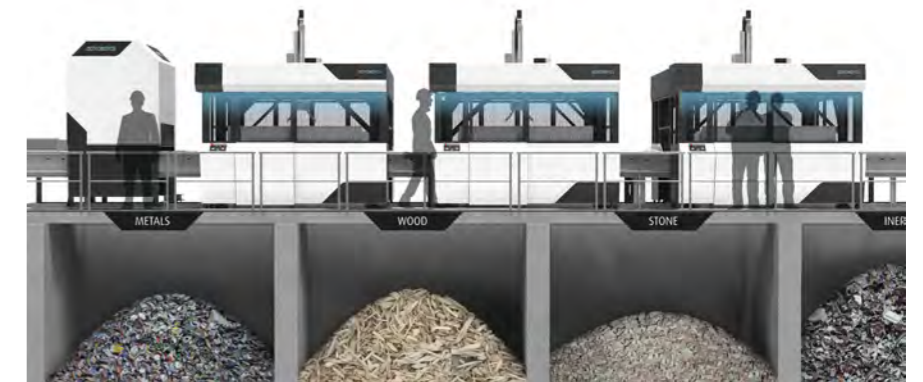
Mussilla Music School is an app teaching pupils basic skills in playing and creating their own music. Trappa and Kara Connect are companies that create a virtual link between users and experts, for example in health and education. The vision is to give everyone the same access to resources and knowledge.

## Big data ja siihen liittyvä tekniikka voivat tarjota yhä tarkempaa tietoa, mutta uudet menetelmät vaativat myös uudenlaista osaamista.

Big data ja siihen liittyvä tekniikka voivat tarjota yhä tarkempaa tietoa, mutta uudet menetelmät vaativat myös uudenlaista osaamista. "Global Skills Index 2019" -julkaisussa mitattiin 60 valtion mahdollisuutta vaikuttaa aktiivisesti tulossa oleviin muutoksiin. Mittauksen kohteena olivat valtioiden osaaminen yrittäjyyden, tekniikan ja tietotekniikan osalta. Suomi, Ruotsi ja Norja ovat korkealla kaikissa kolmessa kategoriassa, mikä perustuu panostukseen koulutuksessa ja yrityksissä. Sitra tarkasteli omassa tutkimuksessaan yritysten valmiutta siirtyä datavetoiseen talouteen. Tutkimuksen mukaan suomalaisyritysten on korkeasta osaamistasostaan huolimatta vaikea nähdä liiketoimintamahdollisuuksia ja kilpailuetua tiedon jakamisessa saksalaisiin, hollantilaisiin ja ranskalaisiin yrityksiin verrattuna.

Yksi osa kiertotaloutta ovat ratkaisut jätteiden määrän pienentämiseksi. ZenRobotics oli ensimmäinen yritys, joka käytti AI-ohjelmoituja robotteja jätteiden lajitteluun. Robotit kehitettiin Aalto-yliopistossa tehdyn tutkimuksen pohjalta, ja ne lajittelevat nopeammin ja tarkemmin kuin ihmiset.

Monilla teollisuusaloilla vaihdetaan laitteita tai komponentteja turvallisuussyistä jo ennen kuin ne ovat kuluneet loppuun. Konecranes käyttää etävalvontaa laitteistojensa eliniän pidentämiseksi. Laitteistojen



Heavy Picker, ZenRobotics. Image Credit: ZenRobotics

suorituskykyä valvotaan jatkuvasti reaaliaikaisilla tiedoilla, mikä mahdollistaa korjausten tekemisen heti vikojen ilmetessä. Asiakkailla on pääsy kaikkiin tietoihin, ja he voivat helposti arvioida laitteistojensa uusimistarpeen.

Big data and connected technology can provide companies and societies with more precise facts, but new methods require knowledge. The publication "Global skills Index 2019" measures the possibilities of 60 countries to play an active role in the coming changes. The countries' expertise in enterprise, technology and computer science is measured. Finland, Sweden and Norway score highly across the categories, most likely due to their large investments in schooling and within companies. In its own study, Sitra looked at companies' willingness to embrace a data-driven economy. Despite their high level of expertise, Finnish companies see fewer business opportunities and competitive advantages

to data sharing than their German, Dutch and French counterparts.

Solutions towards reduced wastefulness are part of the circular economy. ZenRobotics was the first company to use AI-programmed robots to sort waste. The robots were created with the help of research from Aalto University and sort quicker and more accurately than humans.

Within the industrial sector, equipment and components are often changed for safety reasons before they are worn out. Konecranes uses remote surveillance to extend the life of the equipment. Real-time data on the equipment's performance is read continuously, which enables repairs as soon as the need arises. Customers have access to all data and can more easily determine if the equipment needs to be updated.



**Christine Spiten**

**Medgründer, Blueye Robotics**  
*Co-Founder, Blueye Robotics*

**Illustration**  
Kristian Andréason

*Christine Spiten is Co-Founder of Blueye Robotics and Senior Corporate Advisor, Plastic & Circular Economy at WWF. Her passion for the sea is evident throughout both her entrepreneurial skills and her way of life.*

**Christine, du har en stor lidenskap for havet. Hvordan oppsto den?**

Jeg falt i havet da jeg var fire år, og fikk se verden under overflaten for første gang. Da skjønte jeg at vi også er del av en undervannsverden. Jeg er fremdeles i en læringsprosess om hvordan dette samspillet fungerer, men vi er helt avhengige av et sunt hav for å skape en god fremtid for planeten og menneskeheten. Jo bedre kjent du blir med havet, desto mer vil du bry deg om det – vi trenger at folk begynner å bry seg!

**Hvordan begynte reisen din med Blueye Robotics?**

Jeg grunnla Blueye Robotics sammen med mine tre medgründere i 2015, like etter at jeg hadde fullført masteroppgaven min om potensialet for undervannsdroner – ROV-er. Jeg hadde brukt omtrent ett år på å undersøke og kartlegge ulike markedsmuligheter for undervannsdroner med

*Christine, you have a great passion for the ocean. How did that come about?*

The first time I fell in, as a 4-year-old, and got to see the world below the surface, I realised that we are part of the underwater world as well. I am still in the learning process of this connection, and we are totally and utterly dependent on a healthy ocean for a healthy future of the planet and for humanity. The more you get to know the ocean, the more you come to care about it – we need people to start caring!

*How did your journey with Blueye Robotics start?*

Three colleagues of mine and I founded Blueye Robotics in 2015. I had just finished my Master's thesis on underwater exploration using small underwater drones – ROVs. I had spent approximately one year investigating and mapping out the market opportunities for underwater drones and the greatest needs for underwater inspections. Travels to Tanzania and



# *The Blueye gives ship owners the possibility to perform underwater inspections off-shore instead of having to wait for days to get into harbour and perform the inspection manually with the use of costly scuba divers.*

spesielt fokus på miljøovervåkning. Feltarbeid i Tanzania og Zanzibar inspirerte meg til å se på hvordan teknologi kunne brukes til å kartlegge forekomsten av ulovlig dynamittfiske, og hvordan det rammer marine økosystemer og mennesker som lever av dem. I Brasil lærte jeg mer om undervannsrobotikk og hvordan man kan bruke undervannsdroner til miljøovervåkning.

## **På hvilken måte er Blueye viktig i arbeidet med å redde havene?**

Først og fremst handler det om å gjøre havet synlig og tilgjengelig for folk. Utover det tilbyr vi et verktøy som bidrar til bærekraftig høsting og bærekraftig utvikling av havene. Vi fokuserer i hovedsak på to markeder – skipsfart og havbruk – og ingen av dem er kjent for å være spesielt bærekraftige eller grønne. Skipsfartsindustrien bruker undervannsdrone for å inspisere skips-skrog for f.eks. algevekst. Jo mer vekst det er på skroget, desto saktere beveger skipet seg, og desto mer drivstoff forbruker det. På den måten er dette direkte knyttet til klimautslipp og CO<sub>2</sub>-avtrykk. Blueye muliggjør inspeksjoner til havs i stedet for at skipene må vente i lang tid på å komme seg til en havn og utføre inspeksjonen manuelt ved hjelp av dykkere, noe som også innebærer økte kostnader og ikke er helt risikofritt. Fiskeoppdrettere bruker Blueye Pioneer til å inspisere merdene sine for eventuelle hull og overvåke fôringsoperasjoner under vann.

## **Kunstig intelligens, eller AI, kan gjøre mye bra med tanke på bærekraftig utvikling. Ser du noen etiske eller sosiale problemer med den økende bruken?**

Ikke så mye under vann som over vann. Man har ikke de samme personvernutfordringene under

Zanzibar inspired me to look into how a small user-friendly technology could be used for mapping the occurrence of dynamite-fishing and its destruction of the coral reefs. In Brazil, I learned more about robotics and explored how to use underwater drones for environmental monitoring.

## ***In what way is the Blueye important in the work to save the oceans?***

First of all, it is about making the ocean visible and accessible to people. Furthermore, we provide a tool to enhance sustainable harvesting and sustainable development of the oceans. Shipping and aquaculture are two markets that we focus on – neither of them known for being very sustainable or green. The shipping industry uses the underwater drone to detect growth of algae and barnacles on the ship hull. The more growth there is on the hull, the slower the ship moves and the more fuel it consumes. In that sense this is directly connected to climate emissions and a major driver of CO<sub>2</sub> emissions. The Blueye gives ship owners the possibility to perform underwater inspections off-shore instead of having to wait for days to get into harbour and perform the inspection manually with the use of costly scuba divers. Fish farmers use our Blueye Pioneer to inspect their nets and to monitor feeding. They also detect holes through which the fish may escape.

## ***Artificial intelligence, or AI, can do a lot of good in terms of sustainable development. Do you see any ethical or social problems with its increased use?***

Not so much underwater as above water. You do not have the same privacy challenges underwater as you have above. We see interesting opportunities in combining AI with the Blueye Pioneer to make the drone perform inspections automatically with the

vann som over. I fremtiden ser vi interessante muligheter for å kombinere AI med Blueye Pioneer for å få dronen til å utføre inspeksjoner automatisk ved hjelp av bildegjenkjenning og algoritmer som f.eks. kan oppdage hull i et fiskenett, en svakhet i et skrog eller algevekst på det. Rapporter og videoer kan sendes direkte til en tredjepart. I dag er dronen på inspeksjonsstedet sammen med en operatør, og en beslutningstaker kan overvåke inspeksjonen direkte fra hvor som helst i verden.

Jeg tror ikke AI er en løsning i seg selv. Men når AI gjør ting enklere og mer effektive for oss, åpner det spennende muligheter! Ved bruk av AI kan vi nå mye lengre innenfor bærekraftige løsninger og innovasjon, så lenge det på en eller annen måte er kontrollert av mennesker. Generelt sett er ikke teknologi i seg selv løsningen på noe. Det er måten vi bruker teknologien på som kan føre verden fremover.

## **Selv bor du i en båt. Hvordan er båtlivet?**

Å bo i en båt gjør at man blir ekstra bevisst på eget forbruk samt på kvaliteten på de tingene man velger å kjøpe, ettersom man har begrenset med plass. Jeg kjøper bare ting med lang holdbarhet og miljøvennlige, gode tekstiler, som for eksempel

## **With the use of AI we can go so much further within sustainable solutions and innovation, as long as it is somehow controlled by humans.**

ull istedenfor bomull eller syntetisk polyester, fordi ull ikke holder på fuktighet, noe som er praktisk når du bor i en båt. Jeg unngår også plastemballasje og -avfall så mye som mulig. Og det er veldig nyttig å ha en undervannsdrone så jeg kan sjekke at alt er i orden med båten uten at jeg trenger å hoppe uti selv – havvannet her i Norge jo stort sett ganske kaldt.

## **Hvis du kunne være en fisk eller et sjøpattedyr, hva ville du valgt?**

Hmm, en blekksprut eller en delfin. Jeg opplevde ganske mange delfiner rundt båten da jeg krysset Atlanterhavet. De henger alltid sammen i grupper, og de er lekne og virker veldig glade og fulle av energi. De spiser mindre fisk og blir vanligvis ikke spist selv. Det virker som et lykkelig liv å være en delfin. Den gigantiske stillehavsblekkspruten har ni hjerner og tre hjerter, og også blått blod – kanskje de er de virkelige kongene på planeten vår?

use of image recognition and algorithms that can discover a hole in a fishnet or a weakness in the ship hull or growth on it. Reports and videos can be sent off directly to a third party. Today, the drone is at the inspection site together with an operator and a third-party decision-maker can monitor the inspection live from anywhere in the world.

I do not think AI is a solution on its own. But when AI is making things more efficient and easier for us, it is great! With the use of AI we can go so much further within sustainable solutions and innovation, as long as it is somehow controlled by humans. Just look at the amazing ways AI can be used in hospitals and medtech and educational technology. In general, technology itself is not the solution to anything; it is the way we choose to use the technology that can move the world forward.

## ***You live on a boat yourself. What is boat life like?***

Living on a boat makes you strict on consumption and also on the quality of the items that you choose to buy, as you live in a limited space. You only buy long-lasting stuff and only textiles like wool etc. that don't soak up humidity and which are practical in a maritime environment. I also avoid plastic packaging and waste as much as possible. It is the closeness to

the ocean that I really love. And it is very handy to have an underwater drone to check that everything is fine with the boat so that I do not have to jump in myself.

## ***If you could be a fish or a marine mammal, which one would you be?***

Hmm, an octopus or a dolphin. I have been around dolphins quite a lot while crossing the Atlantic Ocean. They always hang out in groups and they are playful and seem very happy and energetic. They eat smaller fish and usually do not get eaten themselves. It seems like a happy ocean life to be a dolphin. The giant pacific octopus has nine brains and three hearts, and also blue blood – perhaps they are the true royals of our planet...?



# Hållbar upphandling *Responsible Procurement*

Uppmuntra och stödja myndigheter och privata organisationer att inkludera hållbarhet i upphandlingar.

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





09

Med modern upphandling och ansvarsfull hantering av skattemedel blir den offentliga sektorn oerhört viktig för en hållbar utveckling. Då all upphandling får hållbarhet som kriterium skapas en effektiv och angelägen möjlighet att påverka.

*Modern procurements and responsible use of tax funds make the public sector an essential part of sustainable development. When all procurements have a sustainability criterion, it creates an effective and important possibility to make a difference.*

I Danmark bruger man hvert år ca. 300 mia. kroner på indkøb i den offentlige sektor.

I Danmark bruger man hvert år ca. 300 mia. kroner på indkøb i den offentlige sektor. Miljøministeriet har etableret netværk og hjemmesider, hvor indkøbere kan finde de grønne kriterier, de skal opfylde for at fremme bæredygtigt indkøb.

I 2015 fremlagde regeringen en handlingsplan med det mål at fordoble den økologiske dyrkning frem mod 2020. Den offentlige sektor baner vejen ved at overgå til økologisk dyrkning på offentligt ejet jord og servere økologisk mad på sygehuse og i offentlige institutioner. I dag er Danmark det land i verden, hvor salg af økologiske produkter udgør den største andel af det samlede salg. Indsatsen i forhold til eksport af økologiske varer skal fokuseres yderligere. Ifølge Økologisk Handlingsplan 2020 kan øget eksport være med til at drive omlægningen til økologi.

Partnerskab for offentlige grønne indkøb, GPP, er en sammenslutning af danske kommuner, regioner og offentlige organisationer. GPP vil drive markedet i en grønnere retning gennem fælles indkøb. Grønne indkøbskriterier fungerer som vejledning for kommunerne, så de kan integrere miljøkravene i deres metoder, og sender samtidig et stærkt signal til alle leverandører. Allerede i 1998 udviklede Kolding en politik for grønt bæredygtigt indkøb, som de har haft stor succes med. I 2015 vandt byen den danske Green Purchasing Award for sit indkøb af brintbiler. Kolding tænker kriterierne for EU's miljømærkning ind i sine indkøb og køber i dag næsten 100 procent grønt ind.



Organic Food Denmark. Image Credit: EQRoy / Shutterstock

In Denmark, an annual DKK 300 billion is used for public procurement. The Ministry of Environment and Food has developed networks and websites where purchasers can find green criteria to promote sustainable procurement.

In 2015, the Government presented an action plan with the aim of doubling the organic farming by 2020. The public sector paves the way by transitioning to organic farming on publicly owned land and by serving organic food at hospitals and public institutions. Denmark is currently the country where the sale of organic products represents the largest proportion of total sales in the world. Increased exports can help push the ecological transition, according to the Danish Organic Action Plan 2020.

The Partnership for Green Public Procurement (GPP) is an association of Danish municipalities, regions and public organisations. GPP aims to move the market in a greener direction through joint procurement. Green procurement criteria will provide guidance for municipalities to integrate environmental requirements in their methods, which sends a strong signal to suppliers. As early as in 1998, Kolding produced a policy for green sustainable procurement, which has been highly successful. In 2015, the city was given the Green Purchasing Award for its procurement of hydrogen vehicles. Kolding includes the EU Ecolabel criteria in its procurement and currently has almost 100 per cent green procurements.

Ísland stefnir að því að verða kolefnahlutlaust eigi síðar en árið 2040.

Ísland stefnir að því að verða kolefnahlutlaust eigi síðar en árið 2040. Reykjavíkurborg hefur sett sér það markmið að draga úr losun gróðurhúsalofttegunda um 73 prósent fyrir árið 2030. Þar sem borgin sækir raforku og hitaveitu til endurnýjanlegra orkugjafa eru það samgöngurnar sem valda mestri losun. Árið 2017 mátti rekja 70 prósent allrar losunar til samgangna. Takmarkið er að bílar og almenningsamgöngur skili engri beinni losun gróðurhúsalofttegunda árið 2030.

Til að Reykjavíkurborg geti náð þessu takmarki hafa verið gefin út svo kölluð „græn skuldabréf“. Í gegnum „Græna rammann“ (Green Bond Framework) gefst kostur á að styðja við umskipti í sjálfbærari aðferðir með því að fjárfesta í verkefnum með umhverfislegum ávinningi. Verkefni sem falla undir verkefnið verða að skila mælanlegum árangri. Flokkar sem falla undir verkefnið eru t.d. endurnýjanleg orka, aðgerðir til að fyrirbyggja og takmarka mengun, sem og verndun og viðhald líffjölbreytileika á landi og legi. Forsendur fyrir skuldabréfaútgáfunni (GBP) eru viðmiðunarreglur sem hvetja til gagnsæis og opinna viðskiptahátta.

„Grænt bókhald“ er hluti af „Grænum skrefum í ríkisrekstri“, sem er ætlað að auðvelda ríkisstofnunum að haga rekstri sínum og starfsemi á umhverfisvænni

hátt. Grænt bókhald er verkfæri til að fylgjast með mikilvægustu umhverfisþáttum starfseminnar, greina tækifæri til að draga úr neikvæðum umhverfisáhrifum þess og setja sér markmið fyrir næstu ár. Verkefnið er styrkt af umhverfisráðuneytinu.

Iceland aims to be carbon-neutral by 2040. Reykjavik's goal is to reduce greenhouse

*The goal is for all car and public transport to be free from direct emissions of greenhouse gases by 2030.*

emissions by 73 per cent before 2030. Since the city's electricity supply and heating comes from renewable energy sources, the transport sector causes the largest emissions, being responsible for 70 per cent of all direct emissions in 2017. The goal is for all car and public transport to be free from direct emissions of greenhouse gases by 2030.

Green bonds have been created for Reykjavik to achieve the objective. The Green Bond Framework makes it possible to support the transition to more sustainable methods by investing in projects with environmental benefits. The projects included must have measurable results. Categories include renewable energy, measures to prevent and limit pollution,

and the preservation of biodiversity on land and in water. There are four types of bond. The Green Bond Principles (GBP) are voluntary guidelines recommending transparency and openness.

Green accounting is used to help government institutions organise their activities in a greener way. It is a tool used for monitoring the most important environ-

mental aspects of the activities, analysing the possibilities of reducing negative environmental impact and setting goals for the coming years. The project is funded by the Icelandic Ministry for the Environment and Natural Resources.



## Vår samhällsekonomi påverkas av offentlig upphandling och i Sverige står offentliga inköp för 17 procent av BNP.

Vår samhällsekonomi påverkas av offentlig upphandling och i Sverige står offentliga inköp för 17 procent av BNP. Detta viktiga verktyg för skattefinansierad verksamhet förutsätter därför ett strategiskt grepp om inköpsprocessen. I propositionen "Politik för gestaltad livsmiljö" poängteras att staten både kan och ska vara förebildlig. Offentlig upphandling är ett effektivt styrmedel för att nå samhällspolitiska mål.

För att utveckla de offentliga upphandlingarna har regeringen tagit fram en nationell strategi med sju inriktningsmål kopplade till Agenda 2030. Det övergripande är "Offentlig upphandling som strategiskt verktyg för en god affär". Övriga mål beskriver vilka delar som behöver ingå för att köpet ska bidra till att utveckla den offentliga verksamheten. I mål nummer 6 poängteras att miljöhänsyn behöver öka. Ju tidigare i processen miljö- och hållbarhetsarbetet vägs in i inköpsarbetet, desto större blir möjligheten att få resultat.

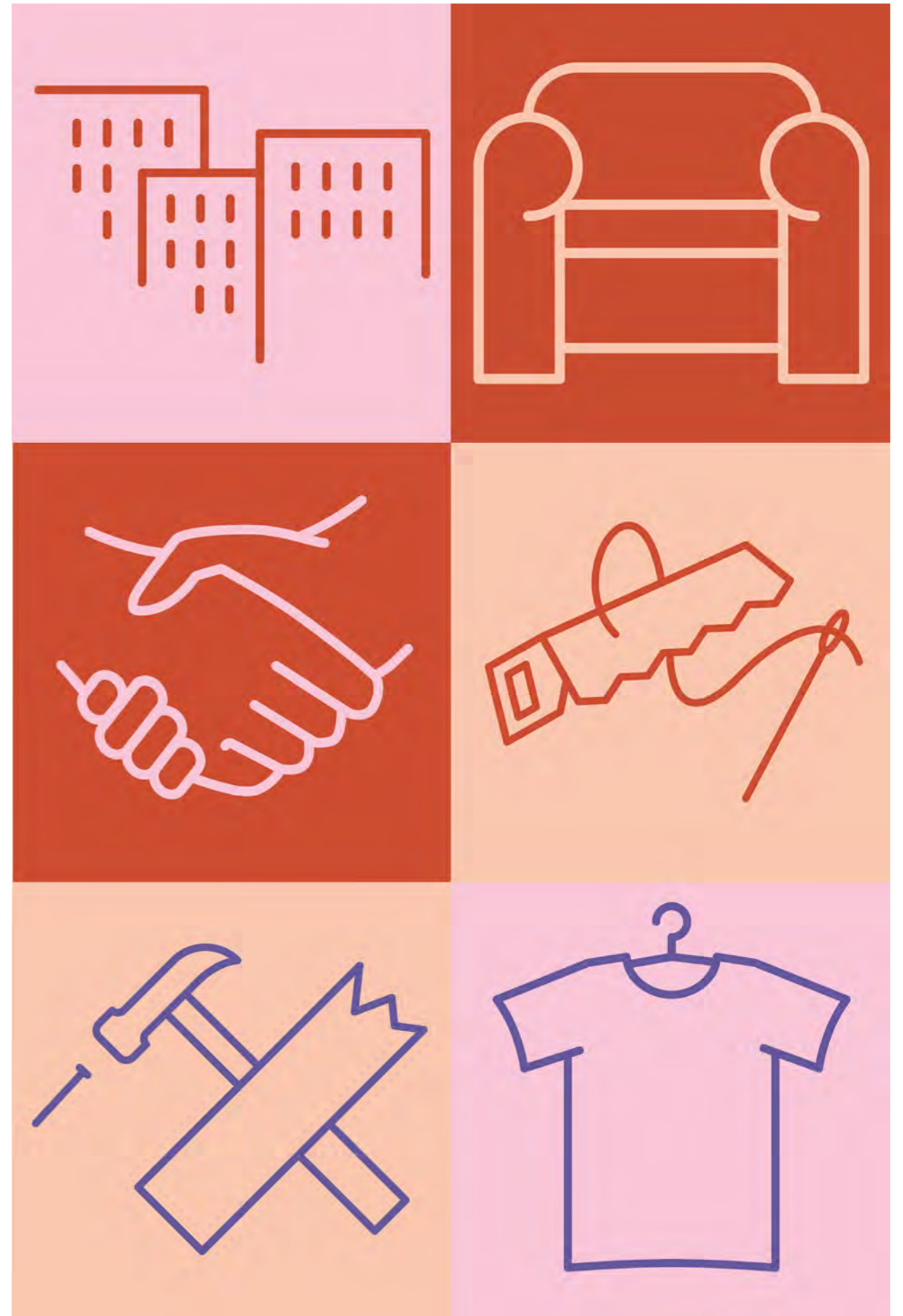
Mycket pågår på lokal nivå. "Cirkulära Göteborg" är ett initiativ från Göteborgs stad som vill driva utvecklingen mot en cirkulär ekonomi. Kommunerna Uppsala, Linköping, Norrköping och Eskilstuna har tagit fram verktyg för klimateffektiv upphandling av plast, "Jakten på plasten". I initiativet #ModUpp2020 är målet att hälften av alla upphandlade it-produkter i offentlig sektor ska ha miljö- och sociala hållbarhetsmärkning 2020.

Our economy is influenced by public procurements, and in Sweden, public purchasing represents 17 per cent of GDP. This important tool for tax-funded activities therefore requires a strategic approach to purchasing. The Government Bill "Policy for Designed Living Environment" emphasises that the central government can and must be a role model. Public procurement is an effective instrument to attaining social policy goals.

To develop public procurements, the Government has produced a national strategy with seven targets linked to Agenda 2030. The overall goal is "public

procurement as a strategic tool in good business". Other objectives describe which elements need to be included for the purchase to contribute to the development of public services. Objective 6 underlines the need for increased environmental consideration. The earlier environmental and sustainability considerations are weighed into the purchasing process, the more likely they are to give results.

Much is happening at the local level. "Circular Gothenburg" is an initiative by the City of Gothenburg aiming at directing development towards a circular economy. The municipalities of Uppsala, Linköping, Norrköping and Eskilstuna have developed tools for the climate-efficient procurement of plastics in the project "Jakten på plasten". The goal of the #ModUpp2020 initiative is for half of all procured IT products in the public sector to be environmentally, socially and sustainably certified by 2020.



Cirkulära Göteborg. Image Credit: Göteborgs Stad

## Suomessa julkisten hankintojen arvo kohoaa vuosittain 35 miljardiin euroon, mikä vastaa noin 16 prosenttia BKT:sta.

Suomessa julkisten hankintojen arvo kohoaa vuosittain 35 miljardiin euroon, mikä vastaa noin 16 prosenttia BKT:sta. KEINO on verkkopohjainen osaamiskeskus, joka tukee julkisia hankintoja. Pää tavoitteina vuosina 2018–2021 on lisätä innovatiivisten ja kestävien hankintojen määrää sekä saada julkinen hankinta aktiivisesti käytettäväksi johtamistyökaluksi. Lisäksi hankintayksiköissä pyritään jakamaan kokemuksia avoimesti ja oppimaan toinen toisiltaan. Suomi on liittynyt osaksi myös kansainvälistä Procure2Innovate-verkoston.

Niin kutsutun innovatiivisen hankinnan kohteena on uusi tai merkittävästi parannettu tuote tai palvelu, joka ei vielä ole laajasti käytössä. Kyseeseen voi tulla myös uudenlainen tapa toteuttaa jokin hankinta tai hanke, esimerkiksi rakennusurakka. Hankintasopimukseen voi sisältyä uuden ratkaisun kehitystyötä tai pilotointia.

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Helsinki tarvitsi osana älykkään liikennejärjestelmän strategiaansa tilannepäivityksen kaupunkiliikenteestä. Kun erilaisten liikennekameroiden tuottamaa dataa piti arvioida, tehtiin innovatiivinen hankinta. Tavoitteena oli verrata useita vaihtoehtoja ennen ostoa ja selvittää, millaista dataa liikennekameroiden avulla voidaan tuottaa ja analysoida. Kaupunki sai

kolmen rinnakkain toteutetun hankkeen ansiosta kolme vaihtoehtoa, jotka sisälsivät arvokasta tietoa eri ratkaisujen vahvuksista ja heikkouksista.

In Finland, the total value of public procurements is EUR 35 billion per year, which corresponds to roughly 16 per cent of GDP. KEINO is a network-based consortium to support public procurement. The main objectives for the years 2018–2021 is to increase the number of innovative and sustainable procurements in the country; for public procurements to be considered a management tool to be used actively; and for procurement units to openly share their experiences and learn from each other. Finland is also involved in the international network Procure2Innovate.

“Innovative” procurement is used to purchase new or clearly improved products or services that are not yet well-established. It can also be a new way of carrying out

the procurement or its implementation, for example a construction contract. The procurement may include the development of a new solution or a pilot project.

As part of their strategy for intelligent transport systems, Helsinki needed an update on the city’s traffic situation. Because data from different traffic cameras needed to be evaluated, an innovative

procurement was carried out. The aim was to compare several alternatives before awarding the contract and to see which data could be produced and analysed using traffic cameras. Thanks to three parallel projects, the city had three alternative solutions with valuable information on the strengths and weaknesses of the different solutions.

## I mars 2019 oversteg andelen nyregistrerte elbiler for første gang de fossildrevne i Norge.

I mars 2019 oversteg andelen nyregistrerte elbiler for første gang de fossildrevne i Norge. Ifølge et vedtak i Stortinget er målet at bare biler med nullutslipp skal selges i 2025. Insentivtiltak som momsfristak, avskaffelse av bompenger, gratis parkering og retten til å bruke kollektivfelt har økt i populariteten. Insentivene beholdes fram til slutten av 2021.

Difi – Direktoratet for forvaltning og IKT – er ansvarlig for å modernisere anskaffelsene i offentlig sektor. Difi forvalter også de nasjonale felleskomponentene Digital postkasse, ID-porten og Kontakt- og reservasjonsregisteret. Difi har utviklet krav og kriterier som er lette å ta i bruk for offentlige innkjøpere. F.eks. opplever virksomheter en reduksjon i matsvinn på 30–60 prosent når de setter i gang systematisk kartlegging for deretter å sette inn målrettede tiltak, og for mat og drikke finnes det derfor krav og kriterier innen matsvinn, emballasje, tropisk avskoging og utvalg av varer.

Innovative anskaffelser skal øke innovasjonseffekten ved offentlige anskaffelser. NHO, KS, Difi, Innovasjon Norge og Forskningsrådet er programansvarlige, og NHO har prosjektlederansvaret. Det handler om å utnytte mulighetene som ligger i anskaffelsesregelverket og virkemiddelapparatet til å kjøpe bedre produkter og tjenester. Målgruppen er offentlige virksomheter, leverandører og bransjeforeninger, i tillegg til aktører som skal fremme innovasjon, samt utviklings-/FoU-aktører.



*Innovative anskaffelser.* Image Credit: Nasjonalt program for leverandørutvikling

In March 2019, the number of newly registered electric cars in Norway exceeded the corresponding number of fossil-fuelled cars. According to a parliamentary decision, the goal is for only zero-emission cars to be sold by 2025. Stimulating measures such as VAT and toll exemptions, free parking, and the right to use public transport lanes have increased the popularity. The incentives will remain in place until the end of 2021.

The Agency for Public Management and eGovernment (Difi) is responsible for modernising public sector procurements. Difi also manages the national components Digipost mailbox, ID-porten and the common contact register. Difi has developed requirements and criteria that are easy for public purchasers to use. Operations see a reduction in food waste of 30–60 per cent

when they introduce systematic mapping and then implement targeted measures, and when it comes to food and drink, there are consequently requirements and criteria regarding waste, packaging, deforestation and product selection.

Innovative procurement is intended to increase the innovative effect of public procurements. The programme is carried out by NHO, KS, Difi, Innovation Norway and the Research Council of Norway with NHO as the project manager. It is also a matter of utilising the possibilities entailed by the procurement regulations and policy instruments to buy better products and services. The target group consists of public agencies, suppliers and trade associations along with actors promoting innovation and R&D.





**Elina  
Ojala**

**Johtava asiantuntija, KEINO and Motiva**  
*Senior Expert, KEINO & Motiva*

**Illustration**  
Kristian Andréason

*Elina Ojala is a Senior Expert in Sustainable Public Procurement at Motiva/KEINO. In her work she brings together the various parties of the procurement chain so that they can develop products and services in a more responsible way.*

**Hei Elina! Vastuulliset hankinnat ovat kuuma puheenaihe. Millä tavoin niiden avulla voidaan kehittää kestävää yhteiskuntaa?**

Kestävillä tai vastuullisilla hankinnoilla voidaan saavuttaa pitkäaikaisia tehokkuussäästöjä, minimoida luonnonvarojen käyttöä, vähentää päästöjen ja jätteiden syntyä sekä edistää innovaatioita. Käsitteellä organisaatiot voivat myös ilmaista sitoutuvansa kestävään kehitykseen. Yhteiskunnassa tapahtuneiden muutosten vuoksi viimeisen kymmenen vuoden aikana kestävä tai vastuullisen hankinnan prosessi on muuttunut ja kehittynyt merkittävästi. Lisäksi Suomen uusi hallitus on kiinnittänyt paljon huomiota innovatiivisiin ja vastuullisiin hankintoihin. Työssäni osaamiskeskus KEINÖssä ja valtion kestävä kehityksen yhtiö Motivassa keskityn kestäviin julkisiin hankintoihin. Suurena toiveenamme on lisätä tulevaisuudessa julkisen puolen kestäviä hankintoja!

*Hi Elina! Responsible procurement is a hot topic. In what way can it be used as a tool to develop a sustainable society?*

Sustainable or responsible procurements can support long-term efficiency savings, minimise the use of natural resources, reduce the harmful impact of pollution and waste and encourage innovation. It also works as a practical expression of an organisation's commitment to sustainable development. Due to changes in society over the last decade, the process of sustainable or responsible procurement has changed and progressed significantly. In addition, the new government in Finland has put a lot of attention and focus on innovative and responsible procurement. In my work at the competence centre KEINO and at Motiva, I work with sustainable public procurements. We have great hopes to do more sustainable public procurements in Finland in the future!

### Antaisitko kolme ehdotusta kestävästä julkisista hankinnoista?

Tekemällä enemmän yhteistyötä julkiset viranomaiset voisivat välttää tekemästä asioita yksin ja ratkaista ongelmia sen sijaan yhdessä. Heidän pitäisi tehdä enemmän yhteistyötä myös markkinoiden ja yritysten kanssa ymmärtääkseen niitä paremmin. Lisäksi on tärkeää, että viranomaisten viesti markkinoille on yhtenevä sen sijaan, että se vaihtelee kaupungista toiseen. Heidän on harkittava tarkasti, koska heillä on valtava vastuu viisaasta rahankäytöstä. Heidän käyttämänsä julkiset varat on tarkoitettu hyvien asioiden rahoitukseen: he investoivat ihmisten tarvitsemiin palveluihin ja samalla he edistävät liiketoimintaa löytääkseen uusia liiketoimintaratkaisuja ja tapoja tehdä maailmasta hiukan kestävämpi. Heidän merkityksensä on valtava.

### Millaisia ovat tyypilliset vihreät kriteerit?

Se vaihtelee suuresti. Se riippuu siitä, millaisia tuotteita tai palveluja olet hankkimassa, joten esimerkin antaminen on todella vaikeaa. Yksi

### *Please give three suggestions on how to do sustainable public procurements?*

Public authorities need to cooperate more so that they avoid doing things by themselves – instead they should solve problems together. They should also cooperate more with their markets and companies to achieve a greater understanding. Furthermore, it is important that the authorities send the same kind of message to the markets instead of having it one way in one city and another way in another city. They need to think twice because they have a huge responsibility to use the money wisely. The public funds they use are intended to finance good things; they invest in the services needed for the people and at the same time they drive businesses forward to find new business solutions and ways to make the world a bit more sustainable. Their role in this is huge.

### *What are typical green criteria?*

It varies a lot. It depends on what kind of products or services you are purchasing, so it is really hard to give an example of that. One of the hot topics to solve in the future is how to move people and goods. For

## *Public authorities need to cooperate more so that they avoid doing things by themselves – instead they should solve problems together.*

tulevaisuuden suurista haasteista on se, kuinka ihmiset ja tavarat liikkuvat paikasta toiseen. Esimerkiksi Suomessa on monia pieniä kaupunkia eikä maamme ole kovin tiheästi asuttu. Kustannustehokkaiden, laajalle levinneiden ja ympäristöystävällisten kuljetuspalvelujen hankinnalle ja järjestämiselle on valtava tarve.

### Jos maailma olisi täydellinen, kuinka ihmiset ja organisaatiot tekisivät työtä kestävien hankintojen parissa?

Sanoisin, että tulevaisuudessa jokaisella organisaatiolla tulee olla osaamista hankintojen tekemiseen niin, että ne ovat aina kestäviä. Niillä on tietoa ja organisaationsa mandaatti tehdä enemmän kestäviä hankintoja, joten ei ole kyse siitä, "pitäisikö tehdä vai ei". Se olisi lähtökohta.

### Yleisesti oletetaan, että pienten toimijoiden on vaikeaa osallistua kestäviin julkisiin hankintoihin.

On tärkeää tietää, mitä vaikutuksia hankinnalla halutaan saavuttaa. Mielestäni kaikissa hankinnoissa, pienissä tai suurissa, tärkeintä on keskus-

example, in Finland there are many small cities and we are not that densely populated. There is a huge need to procure and arrange more cost-effective, widespread and environmentally friendly public transport services.

### *In a perfect world, how do you see people and organisations working with sustainable procurement?*

I would say that in the future, each organisation should have the knowledge of how to evaluate the procurements so that they are always sustainable. They have the knowledge and the mandate from the organisation to do more sustainable procurements so it is not a question of 'should we do it or not?'. It would be a starting point.

### *There might be a general assumption that it is quite difficult for smaller actors to take part in the sustainable public procurements.*

It is really important that you know what impact you want to achieve with the procurement. I think in all procurements, whether they are small or big, the key

## Tekemällä enemmän yhteistyötä julkiset viranomaiset voisivat välttää tekemästä asioita yksin ja ratkaista ongelmia sen sijaan yhdessä.

tella markkinoiden kanssa, jotta hankintayksiköt tietävät ja ymmärtävät markkinatilanteen; miltä ne näyttävät ja kuinka niitä voidaan kehittää tulevana vuosina hankintojen avulla. Tällaisen vuoropuhelun tulisi alkaa varhain, jotta kaikenlaiset yritykset saisivat tietoa hyvissä ajoin eikä viime tipassa.

### Millainen on tyypillinen hankintaprosessi?

Sanotaan, että ihannemaailmassa hankintayksiköillä on paljon aikaa käytettäväksi suunnitteluvaiheessa. Ne asettavat hankinnoille tavoitteet ja ovat läheisessä vuorovaikutuksessa markkinoiden kanssa. Niiden ei tarvitsisi käyttää paljon aikaa tarjouspyyntöjen lähettämiseen, koska ne ovat tehneet kotiläksynsä hyvin. Tarjousprosessin jälkeen niiden on oltava aktiivisia myös sopimuskauden aikana ja oltava vuorovaikutuksessa valittujen sopimustoimittajien kanssa. Näen meidän olevan jo menossa tähän suuntaan, mutta aikaa ja resursseja tarvitaan edelleen.

### Onko arjessasi "omaa hankintaa" ja ympäristökriteerejä, joiden on täytyttävä?

Tänä päivänä ainakin Suomessa puhutaan paljon kestävästä kuluttamisesta. Ihmiset stressaavat ilmastoasioista sekä omaa elämää ja ympäristöä parantavien valintojen tekemisestä. Yritän huomioida näitä asioita omassa elämässäni. Esimerkiksi kotona olemme vähentäneet punaisen lihan kulutusta kuluneena vuonna. Kun ostan jotakin, mietin ensin, tarvitsenko sitä todella vai voisinko vaikka lainata sen joltakulta.

is to have a dialogue with the market in order for the procurement units to know and understand the reality of the market; what does it look like and how can it be developed in the coming years and procurements. The dialogues should start early so that all kinds of companies get information in advance and not ad hoc.

### *What is a typical procurement process?*

Well, let us say that in the ideal world, the procurement units have a lot of time to use in the planning phase. They set the goals for the procurements and what they want to achieve, and they have a close dialogue with the markets. They would not have to spend much time on the actual process of sending out a call for tenders, because the homework has been done properly. After the tender process, they need to be active also in the contract period, and to have a dialogue with the companies that have been chosen. I see that we are moving in that direction. But it still needs time and resources.

### *Do you have "your own procurement" in your everyday life with a set of environmental criteria that need to be fulfilled?*

Yeah, today we talk a lot about sustainable consumption, at least in Finland. People are stressing about climate issues and the range of choices to make to improve your own life and the environment. I try to take these things into account in my personal life. At home, we have for example focused on how to reduce the consumption of red meat during the past year. When I buy a product, I try to ask myself if I really need it. Or could I borrow it from someone maybe?



# Sustainable behaviours & consumption patterns



## Nudging Nudging

**Påverka konsumenter till hållbara  
förhållningssätt och beteenden.**

*Influence consumers to adopt sustainable  
attitudes and behaviours.*

# 10

Ísland / Iceland  
149

Danmark / Denmark  
147

Suomi / Finland  
152

Sverige / Sweden  
148

Norge / Norway  
151

**Att ändra beteenden är inte enkelt, men dagens klimat- och miljökris ställer saker på sin spets. Som hjälp för att bryta invanda mönster behöver vi såväl ansvarsfull teknisk innovation som förebilder, goda berättelser och kultur.**

*Changing behaviours is not easy, but the current climate and environment crisis are bringing matters to a head. To help us break the pattern, we need responsible technological innovation and role models, good examples and culture.*



Dansk Nudging Netværk (DNN) er et netværk af forskere, virksomheder, organisationer og politikere.

Dansk Nudging Netværk (DNN) er et netværk af forskere, virksomheder, organisationer og politikere. DNN vil skabe interesse for nudging i den politiske proces, men opfordrer også til diskussion om faldgruber i et forsøg på at opnå en adfærdændring. Hvordan sikrer man, at det etiske ansvar overholdes, når ønsket er at ændre menneskers adfærd? DNN holder til på Roskilde Universitet og har en stærk kobling til The European Nudging Network (TEN). To gange om året afholdes Nudgeaton, hvor medlemmer i netværket kan få bearbejdet deres problemstillinger. 20 studerende fra Kommunikation på Roskilde Universitet skal arbejde med virksomheders problemstillinger i et helt semester. Tidligere studerende har bl.a. stået bag de velkendte fodspor ved skraldespandene i København, som opmuntrer indbyggerne til at holde byen ren. De studerende har også effektiviseret receptionen på Rigshospitalet og løst en konflikt med fejlparkerede cykler, som blokerede vejen. Med kraftig orange tape lavede man fem felter, hvor cyklisterne burde parkere, og plakater, der beskrev, hvordan det fungerede. Det resulterede i en klar forbedring.

Forskningsbaserede iNudgeyou skal udvikle og kommunikere strategier til pro-sociale formål. iNudgeyou har

forstået en lang række eksperimenter, projekter, research og undervisning sammen med bl.a. Erhvervsstyrelsen, Miljøstyrelsen, Finanstilsynet, Styrelsen for Arbejdsmarked og Rekruttering, Verdensbanken og Europa-Kommissionen.

The Danish Nudging Network (DNN) is a network of researchers, enterprises, organisations and politicians. DNN wants to build interest in nudging in the political process, but also encourages discussion on pitfalls in the approach to changing

### *How do you ensure ethical responsibility when the aim is to change people's behaviour?*

behaviour. How do you ensure ethical responsibility when the aim is to change people's behaviour? DNN is located at Roskilde University and has strong ties to the European Nudging Network (TEN). The Nudgeaton is an event held twice per year, where members of the network can have problems worked through. 20 communications students at Roskilde University will be working on these problems over an entire semester. Former students have, among other things, created the well-known footprints leading to Copenhagen waste bins. The students have also streamlined the reception at Rigshospitalet and

solved a conflict with incorrectly parked bicycles that were in the way. Using bright orange tape, they created five areas where cyclists are allowed to park, with associated posters to explain their function. This led to a clear improvement.

The research-based iNudgeyou is intended to develop and communicate strategies for prosocial purposes. iNudgeyou has conducted a range of experiments, projects, research and education together with the Danish Business Authority, the Danish Environmental Protection Agency, the

Danish Financial Supervisory Authority, the Danish Agency for Labour Market and Recruitment, the World Bank and the European Commission.

Nudging är en gren inom beteendekonometri som handlar om hur människors beteenden kan påverkas genom att arrangera en valsituation.

Nudging är en gren inom beteendekonometri som handlar om hur människors beteenden kan påverkas genom att arrangera en valsituation. Metoden är huvudsakligen ett verktyg för myndigheter och organisationer att få medborgarna att tänka långsiktigt. Beteendevetenskap och -ekonomi, liksom nudging, bidrar också till att beslutsfattare inkluderar beteendeinsikter i sitt arbete.

Såväl Beteendelabbet som nätverket Nudging Sweden arbetar med att via beteenden verka för en mer hållbar framtid. I samarbete med Beteendelabbet ville ICA få sina konsumenter att handla mindre kött och mer vegetariskt. Genom skyltning och fysisk placering minskade försäljningen av köttfärs under sju veckor med 917 kg, medan försäljningen av morötter och bönor ökade med 956 kg. Om detta skulle införas i alla ICA:s butiker under ett år, skulle klimateffekten motsvara fler än 25 000 varv runt jorden med bil. Du kan också bli en "doconomist". Med hjälp av appen Doconomy går det att koppla samman sin konsumtion med hur den påverkar planeten. På så sätt ser du tydligt hur du kan minska ditt koldioxidavtryck dag för dag.

Att påverka genom att ändra momssatser är ett annat styrmedel. 2017 blev det billigare att reparera och förlänga livslängden på mindre saker som cyklar, kläder och skor i Sverige, då moms sänktes från 25 till 12 procent. En skattereduktion infördes också för reparation och underhåll av vitvaror i bostaden.



Credit card with a carbon-emission spending limit, Doconomy. Image Credit: Doconomy

Nudging is a branch of behavioural economics relating to how people's behaviour can be affected by setting up a choice. The method is mainly a tool for government agencies and organisations to encourage citizens to think long-term. Behavioural science and economics, like nudging, also contribute to decision-makers including behavioural insights in their work.

Behaviour Lab Sweden and the network Nudging Sweden both strive to promote a more sustainable future through behaviour. In collaboration with Behaviour Lab Sweden, ICA wanted to prompt its customers to buy less meat and more vegetables. Using signs and physical placement, the sale of minced meat dropped by 917 kg over seven weeks, while the sale of carrots and beans went up by 956 kg. If this practice was introduced in all of ICA's shops for one year, the climate effect would be equivalent to more than 25,000 laps around the globe in a car. You too can be a

"doconomist". With the help of the app Doconomy, it is possible to link your consumption to its effect on the planet. This allows you to clearly see how you can reduce your carbon footprint, day by day.

Changed VAT rates is another control instrument. In 2017, it became cheaper to repair and extend the life of smaller objects such as bicycles, clothes and shoes in Sweden, when VAT was reduced from 25 to 12 per cent. A tax reduction on repairs and maintenance of household appliances was also introduced.



## Hönnun sem er byggð á hugsjón hefur mikil áhrif og getur breytt hegðun okkar.

Hönnun sem er byggð á hugsjón hefur mikil áhrif og getur breytt hegðun okkar. Á Ísafirði er gangbraut sem er máluð á götuna með þrívíddaráhrifum og virðist svífa í lausu lofti yfir götunni. Þessi sjónblekking fær ökumenn til að hægja á sér þegar þeir aka um þröngar göturnar í þessum gamla útgerðarbæ. Fyrirtækið sem hannaði þessa gangbraut heitir Vegamálun GÍH og svipaðar gangbrautir er að finna á Indlandi, í Rússlandi og í Kína.

Mikið magn matvæla endar í ruslinu. Þetta á sér stað á öllum stigum framleiðslukeðjunnar: við ræktun, uppskeru, við flutninga, á veitingahúsum og hjá neytendum. Vakandi – gegn sóun matvæla, eru sjálfseignarsamtök á Íslandi á sviði baráttunnar gegn matarsóun og leitast við að auka meðvitund um og draga úr sóun. Rakel

Garðarsdóttir átti frumkvæði að stofnun samtakanna, en hún hefur frá 2018 setið í dómnefnd umhverfisverðlauna Norðurlandaráðs. Hún hefur þróað vörumerkið Verandi, þar sem endurvinnsla og hringrásarhagkerfi eiga samleið á sviði snyrtivöruframleiðslu.

Umhverfissamtökin Blái herinn berjast gegn uppsöfnun plasts í hafi. Allt frá stofnun árið 1995 hafa samtökin verið í fararbroddi þegar kemur að hreinsun við strendur og hafnir á Íslandi. Yfir 65.000 klukkustundum hefur verið varið í yfir 200 aðgerðir þar sem 6.000 sjálfboðaliðar hafa hreinsað 1.425 tonn af rusli úr náttúru Íslands. Árið 2018 var Blái herinn, ásamt Landvernd, tilnefndur til umhverfisverðlauna Norðurlandaráðs 2018 fyrir viðtækt áttátt sitt Hreinsum Ísland, 100 skipulagðar hreinsunaraðgerðir á strandsvæðum.

Thought-provoking design makes a difference and changes behaviour. A pedestrian crossing in Ísafjörður painted in 3D appears to be hovering over the road. This optical illusion makes drivers slow down when driving along the narrow streets of the old fishing village. The company that created the crossing is Vegamálun GÍH, and there are similar crossings in India, Russia and China.

A lot of food ends up in the waste bin. This can happen in all steps of the chain: during cultivation, harvesting, transport, in shops and restaurants and finally with the consumer. Vakandi is Iceland's largest non-profit organisation working with food waste with the aim of creating awareness and reducing waste. Its founder, Rakel Garðarsdóttir, has been on the jury for the Nordic Council Environment Prize since 2018. She has also created the brand

Verandi, where recycling and circular economy meet beauty products.

The members of the environmental organisation The Blue Army focus on the plastics in the oceans. Since the start in 1995, The Blue Army has been one of the driving forces behind cleaning Iceland's coasts and harbours. More than 65,000 hours have been spent on more than 200 projects involving 6,000 volunteers removing 1,425 tonnes of waste from the Icelandic nature. The Blue Army was nominated along with Landvernd for the Nordic Council Environment Prize in 2018 for its nationwide "Keep Iceland Clean" project, which organised more than 100 beach cleaning events.





## Å bruke nudging til atferdsendring har vist seg å være vellykket, men reiser også etiske spørsmål.

Å bruke nudging til atferdsendring har vist seg å være vellykket, men reiser også etiske spørsmål. En måte å unngå manipulasjon på er åpenhet om hvem som implementerer handlingen og hva som forventes oppnådd. The Norwegian Nudging Network gjennomfører initiativ som bidrar til et bedre liv og samfunn, for eksempel sunnere spisevaner, ved hjelp av empirisk forskning. Universitets- og forskningspartner er OsloMet - Storbyuniversitetet.

Studioet bruker Floke, en metode og modell som gir nye svar på hva samfunnet trenger, med utgangspunkt i vanskelige spørsmål.

Innovasjonsstudioet Æra utvikler strategier for bærekraftig vekst gjennom designmetodikk. Studioet bruker Floke, en metode og modell som gir nye svar på hva samfunnet trenger, med utgangspunkt i vanskelige spørsmål. Dette gjøres gjennom innovasjonsprosesser på tvers av verdikjeden, der samfunnet står som bestiller og flere aktører jobber med problemstillingen. Rederiforbundet og WWF var de viktigste samarbeidspartnerne bak Circular Cleanup, problemløsning for å unngå at avfall havner i havet. Gruppen utviklet et rammeverk for hvordan man kan en fungerende verdikjede rundt håndtering av plastforurensning.

CHOOOSE ønsker å inspirere til kreativ og klimapositiv atferd ved

å kjøpe utslippsrettigheter for karbonfjerning. Pengene går til FN-regulerte miljøprosjekter i utviklingsland, en handlingsorientert tilnærming til klimakrisen. 2019 var CHOOOSE en av finalistene i Serendipity Challenge og det første nordiske selskapet som ble stemt fram som en av topp 10 globale startups i Extreme Tech Challenge 2018.

Using nudging to create behavioural change has proven successful, but it also

raises ethical questions. One way of avoiding manipulation is transparency regarding who is implementing a certain measure and what it aims to achieve. The Norwegian Nudging Network is carrying out measures contributing to a better life and society, such as healthier eating habits, with the help of empirical research. Their university and research partner is the Oslo Metropolitan University.

The innovation studio Æra develops strategies for sustainable growth through design methods. The studio uses Floke, a method and model that creates new answers to difficult questions about societal needs. This is done through innovative processes across the value chain, where society is the customer and several actors are involved in working on the problem. The Norwegian Shipowners' Association and WWF

were the main partners behind Circular Cleanup, which involved problem-solving to avoid waste from harbours ending up in the oceans. The group created a framework for developing a functional value chain for plastic pollution management.

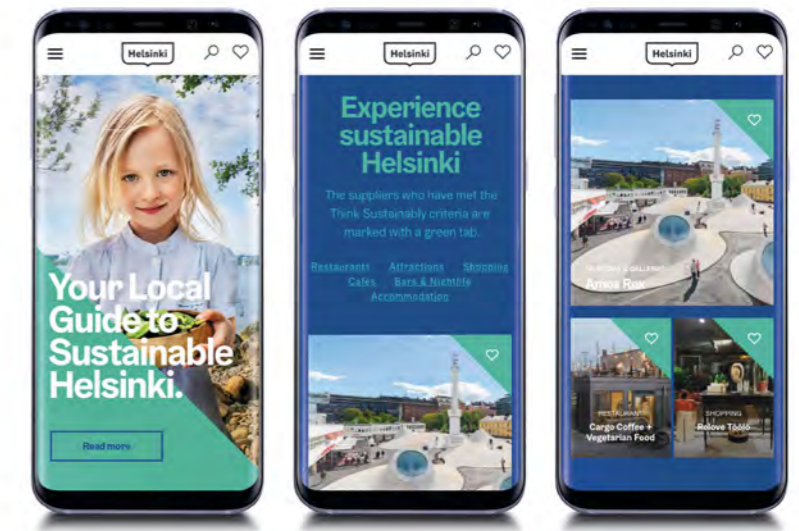
CHOOOSE aims to inspire creative and climate-positive behaviour by purchasing emission allowances. The money goes to UN-regulated environmental projects in developing countries, which is an action-oriented approach to the climate crisis. In 2019, CHOOOSE was the first Nordic company to be voted into the top 10 global start-ups in the Extreme Tech Challenge 2018.

## Helsingin tavoitteena on olla hiilineutraali vuoteen 2035 mennessä, mikä vaatii sekä rakenteellisia muutoksia että arjen ratkaisuja.

Helsingin tavoitteena on olla hiilineutraali vuoteen 2035 mennessä, mikä vaatii sekä rakenteellisia muutoksia että arjen ratkaisuja. Think Sustainably on palvelu, joka auttaa Helsingissä asuvia tai siellä vierailevia tekemään kestävämpiä valintoja. Koska yksilön valinnoilla on suuri merkitys, Think Sustainably listaa muun muassa kaupungin ravintoloita, myymälöitä ja retkikohteita, jotka toimivat ekologisesti ja sosiaalisesti kestävällä tavalla. Listalle pääseminen edellyttää Demos Helsingin, paikallisten etujärjestöjen ja kestävyysasiantuntijoiden laatimien kriteerien täyttämistä.

Miten ilmastoystävällisesti elät? Tee elämäntapatesti. Lähes 70 prosenttia Suomen kasvihuonekaasupäästöistä syntyy siitä, miten kansalaiset asuvat, liikkuvat ja syövät sekä mitä he ostavat. 100 smart ways to live sustainably -sivusto esittelee tapoja hyvään elämiseen planeettamme kantokyvyn rajoissa. Ympäristövaikutukset on laskettu jokaisen valinnan osalta, samoin kuin mahdollinen kokonaisvaikutus, jos jokainen asukas valitsisi samoin. Jos esimerkiksi joku vaihtaisi auton sähköpyörään ja pyöräilisi 100 km viikossa huhti- ja marraskuun välillä, henkilön hiilijalanjälki pienenesi yhdeksän prosenttia vuodessa. Laskelmat ja määritykset on tehnyt D-mat Oy, joka on erikoistunut hiilijalanjäljen laskemiseen.

Vaikka luomuelintarvikkeiden markkinaosuus Suomessa on vain 2,4 prosenttia, luomutuotteiden käyttö lisääntyy nopeasti. Luomutuotteiden



Think Sustainably. Image Credit: Futurice / N2 Albiino

myynti on kasvanut 2010-luvulla kymmenellä prosentilla vuosittain.

Helsinki aims to be carbon-neutral by 2035, and the transition requires both structural changes and everyday choices. Think Sustainably is a service in Helsinki that helps residents and visitors to make more sustainable choices. Since individual choices make a big difference, Think Sustainably lists restaurants, businesses and destinations in the city that are working with environmentally friendly and socially sustainable methods. The members must meet specific criteria developed by Demos Helsinki, local interest groups and sustainability experts.

How climate-smart is your lifestyle? Take a test. Nearly 70 per cent of Finland's greenhouse emissions are caused by how people

live, travel, eat and purchase. The website "100 smart ways to live sustainable" shows you how to live a good life within the limits of what the planet can take. The environmental impact of each choice is calculated along with the potential effect of every citizen making the same choice. If, for example, a person trades his/her car for an electric bicycle and uses it to travel 100 km per week between April and November, his/her carbon footprint is reduced by nine per cent per year. The calculation and specification was made by D-mat Oy, a company that specialises in carbon footprint calculations.

Even if the market share of organic food is only 2.4 per cent, the use of such products is growing fast. In the 2010s, the sale of organic products has increased by ten per cent annually.



**Nathalie  
Green**

**VD, Doconomy**  
*CEO, Doconomy*

**Illustration**  
Kristian Andréason

*Nathalie Green is the CEO of Doconomy, a fintech company with the vision of enabling a sustainable lifestyle for everyone through an easy-to-use mobile banking service for everyday climate action.*

**Hej Nathalie! Nudging handlar om att påverka konsumenter till hållbara förhållningssätt och beteenden genom att göra vissa val enklare. Hur är Doconomy relaterat till nudging?**

Sättet att förenkla valen handlar om att skapa en medvetenhet. Doconomy brinner för klimatfrågan och den ligger oss väldigt varm om hjärtat. Vi har nu en enorm utmaning framför oss när det gäller att ställa om. Folk behöver förstå hur deras klimatpåverkan ser ut och det är få som har full koll på sitt klimatavtryck. Där ser vi Doconomy som en del av en utbildningsinsats. Det är först när vi har lyckats medvetandegöra människors konsumtionsmönster som vi faktiskt kan förändra.

**Du uppmuntrar folk att bli "doconomister". Hur blir jag det?**

Folks privatekonomi är idag ett sätt att agera. Doconomy tillhandhåller en app som heter Do med syftet att medvetandegöra människor kring

*Hi Nathalie! Nudging is about influencing consumers to adopt sustainable approaches and behaviour by making certain choices easier. How is Doconomy related to nudging?*

The way to simplify these choices is a matter of creating awareness. At Doconomy, we are passionate about the climate, and this issue is close to our hearts. We are facing an enormous challenge in transitioning. People need to understand their own climate impact, and few really have full awareness of their carbon footprint. This is where Doconomy comes in as part of an educational initiative. Only when we have made people aware of their consumption patterns can we actually make a change.

*You encourage people to become "doconomists". How do I become one?*

Today, people can use their private finances as a way to act. Doconomy provides an app called "Do", which is intended to make people aware of their



# Det är först när vi har lyckats medvetandegöra människors konsumtionsmönster som vi faktiskt kan förändra.

sin klimatpåverkan. Samtidigt får de ett verktyg att förändra sig. Vår vision är att tillhandahålla en hållbar livsstil för så många människor som möjligt där vi skapar ett "community" som består av användarna som kan peppa och stötta varandra till en mer hållbar konsumtion.

**Genom att själv använda er tjänst har du själv blivit varse om ditt eget klimatavtryck. Vad har du upptäckt?**

För min del har jag blivit överraskad över den klimatpåverkan olika typer av livsmedel jag konsumerar faktiskt har. Det är svårt att göra rätt när man vill köpa närproducerat och samtidigt ekologiskt och med lågt koldioxidavtryck. Det är många parametrar att ta hänsyn till. Jag tror att många människor, inklusive jag själv, genomgår en stor omvälvande förändring just nu. Det är svårt att veta vad man ska göra för att verkligen göra skillnad. Det finns inte många konkreta verktyg och kunskapsglapp som finns behöver åtgärdas.

**Hur beräknas det klimatavtryck som exempelvis konsumtion av en kaffe innebär?**

Beräkningen är gjord på kategorinivå där varje industri och bransch har sin egen kategorikod. Handlar du till exempel på en livsmedelsbutik finns det en kategorikod som heter supermarket och handlar du snabbmat finns det en kategorikod som heter fast food. Dessa finansiella data används globalt på alla världens marknader. Vi tittar på koldioxidutsläppet i genomsnitt i varje bransch kopplat till kategorikoden, baserat på vad respektive bransch har för utsläpp i snitt relaterat till kostnaden som spenderas i branschen. Detta är idag det mest effektiva sättet att beräkna koldioxidavtryck på ett automatiserat sätt när det gäller just konsumtion. Idag jobbar vi parallellt med ett initiativ där vi tittar på att leverera samma

climate impact. At the same time, they are given a tool for change. Our vision is to provide a sustainable lifestyle for as many people as possible by creating a community consisting of our users who can encourage and support each other in achieving more sustainable consumption.

*By using your service yourself, you have become more aware of your own impact on climate. What did you learn?*

Personally, I was surprised to see the actual climate impact of the various foods that I consume. It is difficult to do the right thing when you want to buy locally produced food that is also organic and has a small carbon footprint. There are many parameters to consider. I think that a lot of people, me included, are going through a major change right now. It is hard to know how to make a real difference. There are very few concrete tools to use, and the knowledge gap we have needs to be rectified.

*How does the app calculate climate impact, for example from the consumption of one cup of coffee?*

Calculations are made at a category level, where each sector and industry has its own category code. Say that you go grocery shopping, then there's a category code called "supermarket", and if you buy fast food there's another category for that. This financial data is used globally on all the markets of the world. We look at the average carbon dioxide emissions in each industry linked to the category code, based on the average emissions of each industry in relation to the cost expenditure of that industry. This is currently the best way to calculate carbon footprint automatically when it comes specifically to consumption. Today, we are also working with a parallel initiative where we are investigating the possibility of providing the same data but at a product level. This would

data fast på produktnivå. Det kommer att kräva en helt annan typ av samarbete och partnerskap med specifika varumärken och företag.

**Finns det några risker med delandet av data, GDPR och digitalisering generellt?**

När det gäller GDPR och den typen av risker kopplade till regelverk så är det en otrolig trygghet att samarbeta med en bankaktör som vi gör. Vi har kunnat nyttja den kunskap Ålandsbanken har kring regelverk för att säkerställa att vi har rent mjöl i påsen. Risken ligger eventuellt i andra typer av partnerskap där vi vill samarbeta med varumärken. Låt säga att vi blir kontaktade av ett varumärke som verkar i en väldigt ohållbar bransch – flygbranschen är ett konkret exempel. Ska vi samarbeta med aktörer för att det är bra att de agerar eller ska vi säga nej för att vi tycker att de borde göra mer eller kanske att de inte borde existera alls? Det där är en knepig fråga och det

require a completely different level of collaboration and partnership with specific brands and enterprises.

*Are there any specific risks in terms of data sharing, GDPR and digitalisation in general?*

When it comes to GDPR and regulatory-type risks, it is a great comfort to be working with a bank sector operator as we are. We have been able to use Ålandsbanken's knowledge of regulations and compliance to ensure that we stay honest. The potential risk could instead lie in other types of partnership, where we intend to collaborate with brands. Let us say that we are contacted by a brand in a highly unsustainable industry – the airline industry would be a good example. Should we collaborate with them because it is a good thing that they are taking action, or should we say no because we think they can do more, or perhaps they should not exist at all? That is a tricky issue, and it is extremely important that we are clear on where we stand as a company.

*Should we collaborate with them because it is a good thing that they are taking action, or should we say no because we think they can do more, or perhaps they should not exist at all?*

är extremt viktigt att vi är tydliga med var vi som bolag står.

**Hur vill ni med Doconomy se att livsstilar förändras inom 15 år?**

Behovet att täcka det här kunskapsgap som finns är globalt och vi har för avsikt att komma ut med vår lösning i hela världen. Vi hoppas kunna påverka de globala målen i Agenda 2030 och Doconomys bidrag är att leverera på de mål som alla världens ledare, både i näringslivet och politiker, har kommit överens om att vi ska leverera på. Om man ska vara helt krass behöver människors avtryck halveras under de närmsta tolv åren. Inom de närmsta tio åren ska Doconomy ut i tio länder, nå minst fem miljoner människor och 500 miljoner i koldioxidutsläpp.

**Jag tror precis att du värvat en doconomist.**

Vad kul! Ja, nu kör vi.

*What kind of lifestyle changes would Doconomy like to see within 15 years?*

The need to bridge the knowledge gap is global, and we intend to distribute our solution across the world. We hope to impact the Sustainable Development Goals set out in Agenda 2030, and Doconomy's contribution is to deliver on the goals agreed on by all the leaders of the world, both in business and politics. To be blunt, people need to reduce their carbon footprint by half in the next twelve years. Within the next ten years, Doconomy will be launched in ten countries, reach at least five million people and 500 million in carbon emissions.

*I think you have just recruited a doconomist.*

Great! And off we go.

# Transparens *Transparency*

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

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





# 11

Värdekedjor och cykler är oftast stora, komplexa och svåra att förstå. Inte minst krävs transparens inför den teknik som vi blir allt mer beroende av. Ny teknologi, bättre certifieringar och företagsrapportering ökar transparensen och hjälper oss att fatta bättre beslut.

*Value chains and cycles are often large, complex and difficult to understand.*

*Transparency is necessary, not least for the technology that we increasingly depend on.*

*New technology, better certifications and corporate reporting increase transparency and help us make better decisions.*

## Sko har rett til et langt liv.

Sko har rett til et langt liv. Alfa sko har utviklet en tursko i Gore-Tex, der alle delene kan byttes ut og resirkuleres. Alle komponentene kan spores og har lav miljøpåvirkning, og Alfa foretar også reparasjonene. Også New Movements skomerke drives med full transparens som kjerneverdi. Sko lages av 100 prosent sporbare materialer fra ansvarlige produsenter. Blant annet brukes resirkulert gummi fritt for plast, lisser av resirkulerte plastflasker og innleggssåle av resirkulert naturlig fiber.

Miljøfyrtårn er Norges mest brukte system for miljøsertifisering. Det started lokalt i Kristiansand, men er nå et nasjonalt prosjekt, støttet av det norske Klima- og miljødepartementet. I dag er flere enn 300 kommuner medlemmer, og flere fylker er aktive deltakere.

Vestre Outdoor Furniture er verdens første klimanøytrale utemøbelprodusent. I 2016 implementerte de ni av FNs 17 bærekraftsmål i sin forretningsstrategi. Målene er integrert i produktutvikling, produksjon og markedsaktiviteter, og konkrete tiltak er knyttet til hvert mål. Ti prosent av overskuddet doneres til eksterne bærekraftsprosjekter. Vestre krever 100 prosent fornybar energi i hele



New Movements. Photographer: Mark Grgurić

produksjonsnettverket sitt, og innen år 2025 skal de også produsere selv. Arkitektur- og designmagasinet Dezeen har utnevnt dem til en av åtte bedrifter som viser veien innen bærekraft, og de har oppnådd Svanemerket på 150 av sine produkter.

Alfa shoes has developed a Gore-Tex hiking boot, where all the parts can be replaced and recycled. All components are traceable and have a low environmental impact, and Alfa also takes care of the repairs. New Movements Skomerke also has full transparency as a core value. Their shoes are made from 100 per cent traceable materials from responsible producers. They use recycled rubber free from plastic, laces from recycled plastic bottles and insoles from recycled natural fibres.

The Eco-Lighthouse Foundation is Norway's most widely used certification scheme. It started locally in Kristiansand

but is now a national project supported by the Norwegian Ministry of Climate and Environment. Today, more than 300 municipalities are members and several counties are active participants.

Vestre Outdoor Furniture is the world's first climate-neutral producer of outdoor furniture and has integrated nine out of the UN's 17 Sustainable Development Goals in its business strategy. The goals are integrated with product development, production and market activities, and concrete measures are linked to each goal. Ten per cent of the bottom line is donated to external sustainability projects. Vestre is demanding 100 per cent renewable energy throughout its production network, and before 2025, they intend to have their own production. The architecture and design magazine Dezeen has appointed them one of eight companies leading the way in sustainability.

## Mineraler och metaller blir allt viktigare för de tekniker som krävs för att ställa om till ett hållbart samhälle.

Mineraler och metaller blir allt viktigare för tekniker som krävs för att ställa om till ett hållbart samhälle. Trovärdiga spårbarhetsystem för miljöpåverkan är därför nödvändiga. Myndigheten Tillväxtanalys har undersökt hur förbättrad märkning kan ge information om hållbarhet runt produkter som innehåller metaller eller mineraler och konstaterar att spårning, märkning och rapportering är angeläget men komplext. Utvecklingen kan stödjas genom att låta ett svenskt forskningsinstitut etablera ett certifieringscentrum för metaller, mineraler och återvinning. Transparens inom mineralbrytning och -framställning blir extra viktigt när efterfrågan på elbilar växer. Elbilarnas laddningsbara batterier kräver stora mängder mineraler som bryts världen över. Ökad transparens inom både de sociala och miljömässiga aspekterna av mineralbrytningen är ett måste.

Forskningsinstitutet Vinnova leder ett projekt om spårbarhet, transparens och resurseffektivitet i den textila värdekedjan. För att textilier ska kunna ingå i en cirkulär ekonomi behövs mer detaljerad information om materialet. Produktinformation som identifiering, sortering och återvinning kan göras synlig med digital märkning eller så kallade RFID-taggar (Radio Frequency ID).

Den digitala hållbarhetsplattformen Worldfavor gör det enklare för företaget att hantera och utvärdera

organisationers hållbarhetsarbete. Plattformen uppmuntrar även kunskapsdelning mellan medlemsföretagen.

Minerals and metals are becoming increasingly important for technologies needed in the transition to a sustainable society. Credible traceability systems, relating to the environmental impact, are therefore necessary. The Swedish Agency for Growth Policy Analysis has investigated how improved labelling can provide information on sustainability for products containing metals or minerals and

### *Transparency in mineral extraction and production becomes particular important as the demand for electrical cars grows.*

notes that tracing, labelling and reporting are an important but complex issue. The development can be supported by having a Swedish research institute set up a certification centre for metals, minerals and recycling. Transparency in mineral extraction and production becomes particular important as the demand for electrical cars grows. The chargeable batteries of the cars require large amounts of minerals being extracted around the world. Increased transparency within the social and environmental aspects of the mineral extractions are a must.

The research institute Vinnova is leading a project on traceability, transparency and resource efficiency in the textile value chain. For textiles to be part of a circular economy, more detailed information about the material is required. Product information such as identification, sorting and recycling can be provided through digital labelling or radio-frequency identification (RFID) tags.

The digital sustainability platform Worldfavor makes it easier for companies to manage and evaluate their sustainability work. The platform also encourages

knowledge sharing between member companies.



Árið 2014 varð Ok fyrsti íslenski jökullinn sem var afskráður sem jökull í kjölfar mikillar bráðnunar jökla.

Árið 2014 varð Ok fyrsti íslenski jökullinn sem var afskráður sem jökull. Jökullinn er nú orðinn það sem vísindamenn kalla „dauður ís“. Sömu örlög gætu beðið þeirra rúmlega 400 jökla sem eftir eru á Íslandi. Á fjallshlíðinni á þessum fyrrverandi jökli var komið fyrir minningarskildi með yfirskriftinni „Bréf til framtíðar“ og er undirritað „415ppm CO2“ – mesta magn koltvísýrings sem mælst hefur í andrúmsloftinu, í maí í ár.

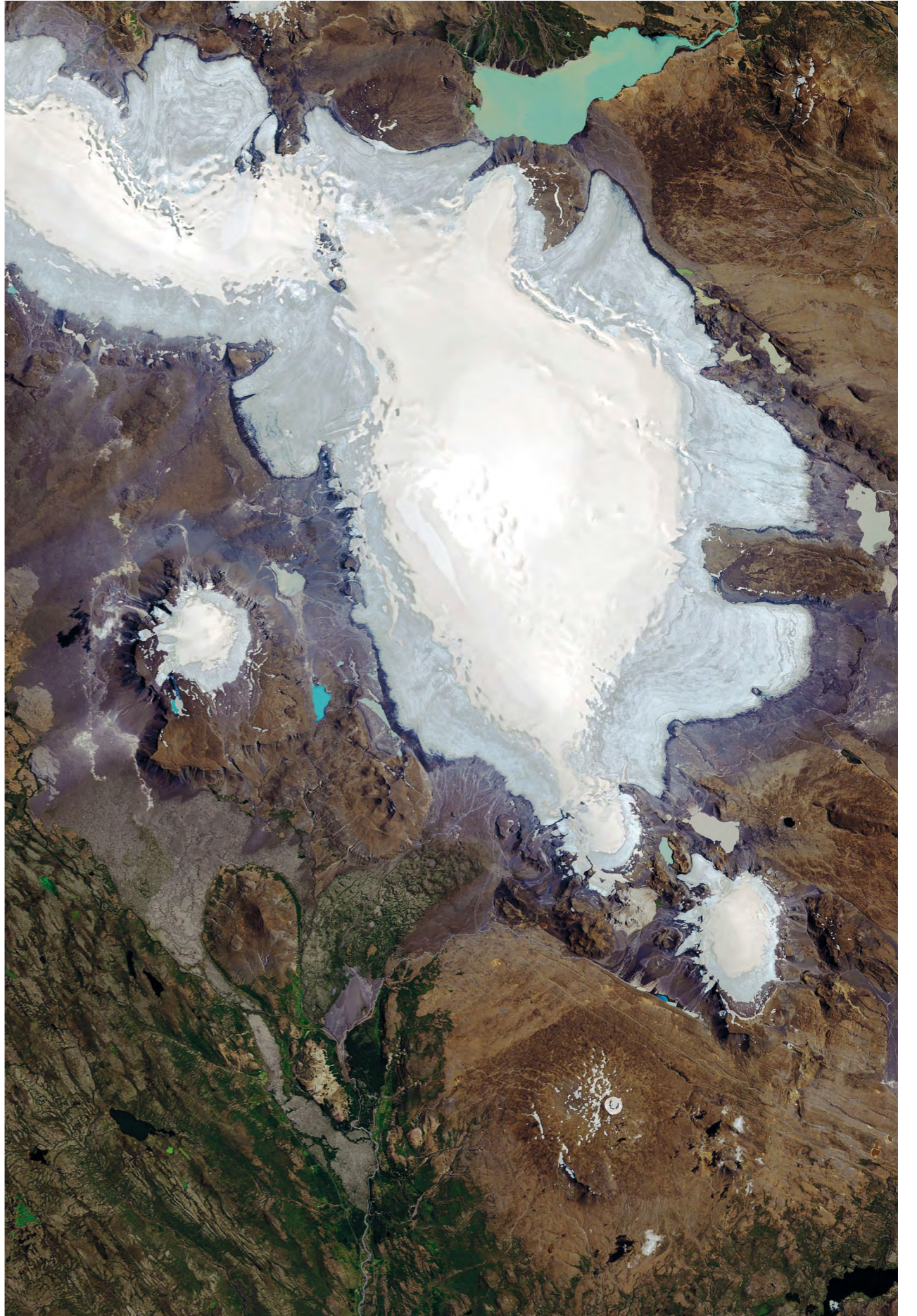
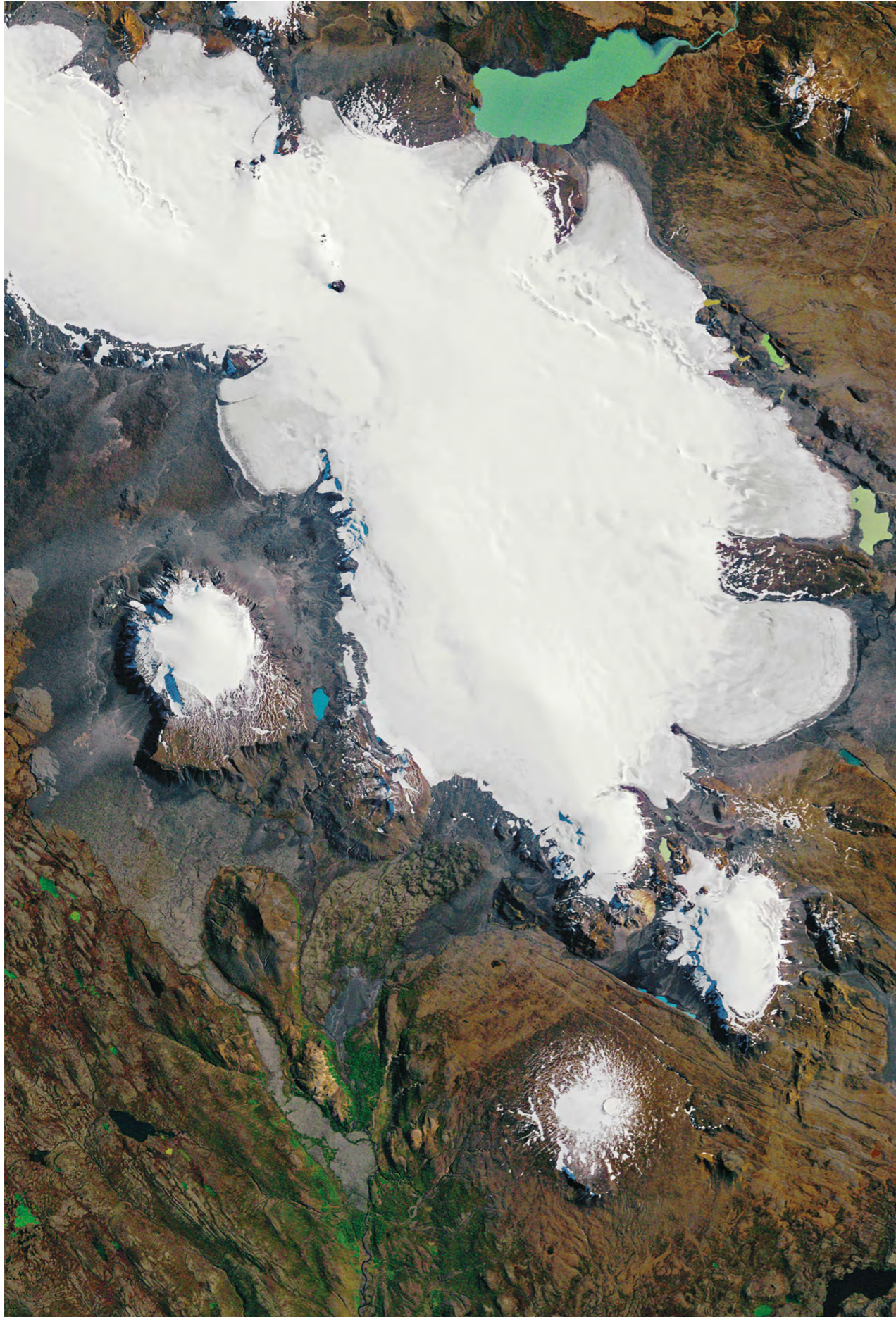
Sveitarfélagið Reykjavík notar hugbúnaðarlausnina Qlik Sense, þar sem íbúar geta nálgast ítarlegar upplýsingar um kostnaðar- og tekjuliði tengda rekstri sveitarfélagsins, gegnum vefsvæði sveitarfélagsins og þannig séð í hvað útsvarið þeirra fer. Allar skrifstofur borgarinnar eru hluti af kerfinu. Grænt bókhald veitir upplýsingar um einstaka þjónustuþætti. Með kerfisbundinni notkun getur hver stofnun sótt upplýsingar um öll innkaup og sett sér mælanleg markmið. Til dæmis getur Grænt bókhald safnað upplýsingum um þá þætti sem hafa neikvæð umhverfisáhrif og stuðlað að gagnsæi gagnvart almenningi. Áhersla er lögð á umhverfisvænar samgöngur.

In 2014, Ok became the first glacier in Iceland to lose its status as a glacier due to heavy melting, and is now referred to as dead ice. This could also become the fate of the other 400 glaciers in Iceland. On one side of the former glacier, there is now a sticker exclaiming “A letter to the future”. The author Andri Snær Magnason wrote “This monument is to acknowledge that we know what is happening and what needs to be done. Only you know if we did it”. The letter is signed “415ppm CO2” – the highest carbon dioxide level measured in the air.

Reykjavik Municipality uses the IT solution Qlik Sense. It allows residents to use the municipality website to find detailed information on the administration's costs and revenues and where their tax money goes. All offices in Reykjavik are included in the system. Green Accounting provides information on the procurement of a number of different services. When used systematically, the organisation can see the scope of all purchases and can thereby set measurable goals. Green Accounting can for example be used to gather information on the factors that entail negative environmental impact in order to create transparency in relation to the general public. The focus is on green transport.

*In 2014, Ok became the first glacier in Iceland to lose its status as a glacier due to heavy melting, and is now referred to as dead ice. This could also become the fate of the other 400 glaciers in Iceland.*







## Haluaisitko tietää, mistä syömäsi liha on peräisin?

Haluaisitko tietää, mistä syömäsi liha on peräisin? Ruokapaikkojen on maa- ja metsätalousministeriön määräysten mukaan pitänyt ilmoittaa 1. toukokuuta 2019 lähtien ruuissa ainesosina käytetyn lihan alkuperämaa. Määräykset on otettu käyttöön kuluttajien tekemien valintojen helpottamiseksi. Samat määräykset koskevat verkkokauppaa.

Lovia sai alkunsa muodin ja kulutustottumustemme negatiivisista vaikutuksista ympäristöön. Esimerkiksi muotiteollisuudessa syntyy vuositasolla 800 000 tonnia nahkajätettä. Lovia muuntaa muiden alojen ylijäämämateriaalit design-asusteiksi, kuten laukuiksi ja koruiksi, täysin läpinäkyvästi. Jokainen Lovia-tuote on ainutlaatuinen; tuotteista käy ilmi niiden alkuperä, valmistusmenetelmä, käytetyt materiaalit ja valmistaja.

Koska suklaan tuotanto voi olla eettisesti kyseenalaista, pieni Goodio-suklaatehdas päätti panostaa täyteen läpinäkyvyyteen luomusuklaallaan. Asiakkaat saavat tietää, mistä ja miten raaka-aineet on hankittu sekä miten suklaa on valmistettu. Goodio on onnistunut laatimaan läpinäkyvän liiketoimintamallin ja parantamaan raaka-aineiden ja tuottajien valintaa BEAM-rahoituksen ansiosta. BEAM (Business with Impact) on Business

Finlandin ja ulkoministeriön yhteishanke, joka tukee suomalaisia yrityksiä, yliopistoja ja organisaatioita luomaan kansainvälistä ja kestävää liiketoimintaa kehityksmaiden kanssa. Goodion suklaita viedään nykyisin yli kymmeneen maahan.

Do you want to know where the meat you are about to eat comes from? Since the 1st of May 2019, all serving establishments must report the country of origin for the meat included in its dishes, in accordance with regulations from the Ministry of Agriculture and Forestry. These regulations have been issued to help consumers. They also apply online.

Lovia was born out of the negative environmental impact of fashion and our consumption habits. The fashion industry causes 800,000 tonnes of leather waste

***Every Lovia product has its unique DNA, which reveals the origin and production method along with material and manufacturer.***

every year. Lovia transforms the surplus material into design accessories such as bags and jewellery. Every Lovia product has its unique DNA, which reveals the origin and production method along with material and manufacturer.

Since chocolate production can be ethically dubious, the little chocolate company Goodio is aiming for full transparency for its organic chocolate bars. The customers can see every step, from how and where the raw materials were procured to how the chocolate was manufactured. Goodio has been able to produce a transparent business model thanks to financing from BEAM. BEAM – Business with Impact – is a joint programme for Business Finland and the Finnish Ministry for Foreign Affairs. The programme supports Finnish companies, universities and organisations on the path to creating international and sustainable operations, while it also benefits the improvement efforts in developing countries. Today, Goodio's chocolate is currently exported to more than ten countries.

## Ifølge organisationen Transparency Internationals årlige korrupsionsindeks er Danmark i øjeblikket Europas mindst korrumperede land.

Ifølge organisationen Transparency Internationals årlige korrupsionsindeks er Danmark i øjeblikket Europas mindst korrumperede land. I top syv finder vi også Finland, Sverige og Norge. Om end vi ikke er helt fri for korrupsion, deler topfeltet kvaliteter såsom retsstatsprincippet, stærke institutioner og høj økonomisk udvikling.

Et dansk/amerikansk forskningsstudie viser, at transparens i forhold til løn skal mindske løngabet mellem mænd og kvinder. Forskerne har analyseret data fra ca. 1.000 danske virksomheder med 35-50 ansatte, som skulle fremlægge lønstatistikker baseret på køn, som blev holdt op mod en kontrolgruppe. Analysen viser, at inden forordningen introduceredes i 2006, fik mændene gennemsnitligt 18,9 procent mere udbetalt, mens lønforskellene mellem mænd og kvinder er reduceret med syv procent efter reguleringen.

Tekstilvirksomheden Kvadrat er en af verdens førende tekstilproducenter og arbejder tæt sammen med arkitekter og designere. Bæredygtighedsstrategien er holistisk. Tekstilerne udvikles med metoder, som reducerer miljøpåvirkningen mest muligt, samtidig med at anvendelsen af råvarer minimeres. Varemærket Really er specialiseret i genbrug af bomulds- og uldtekstiler til blandt andet lyddæpende paneler. Samarbejdet med designere har resulteret i produkter såsom højtalere. Kvadrat har også bidraget til tre modeller af sportsskoene Adidas Stan Smith.



Field by Alfredo Häberli, Kvadrat. Image Credit: Kvadrat

Denmark is currently Europe's least corrupt country, according to Transparency International's annual corruption index. Finland, Sweden and Norway are also in the top seven. Even if they are not completely free from corruption, the top countries share characteristics such as the rule of law, strong institutions and strong economic development.

A Danish/American research study shows that transparency regarding salaries is a step towards reducing the pay gap between men and women. The researchers have analysed data from approx. 1,000 Danish companies with 35-50 employees, which need to report salary statistics based on gender and compared to a control group. Before the regulation was introduced in 2006, the men had a 18.9 per cent higher

salary on average, whereas the salary differences between men and women has decreased by seven per cent afterwards, according to researcher analysis.

The textile company Kvadrat is one of the world's leading textile manufacturers, working closely with architects and designers. The sustainability strategy is holistic. The textiles are produced using methods to make the environmental impact as low as possible and minimise the consumption of raw materials. The brand Really specialises in recycling textiles from cotton and wool, using it for sound-absorbing panels, etc. The collaboration with designers has led to products such as speakers, and Kvadrat has also contributed to three models of the sports shoe Adidas Stan Smith.



**Jan Christian Vestre** CEO, Vestre  
CEO, Vestre

**Illustration**  
Kristian Andréason

*Jan Christian Vestre is the CEO of Vestre, one of Scandinavia's leading manufacturers of sustainable furniture for urban and outdoor public spaces. Their goal is to become "the most sustainable furniture brand in the world".*

**Hei, Jan Christian! Du er opptatt av å bruke transparens som et middel til å fremme bærekraft. Hva er forbindelse mellom disse to?**

Hvis verden skal bli mer bærekraftig på alle mulige måter, er vi avhengig av mer åpenhet. Selskapene må være åpne og ærlige om hvordan produktene deres fremstilles, hvor mye energi som går med, og hvordan arbeidsforholdene er – alt. Å gjøre transparens til en norm vil gjøre det vanskeligere for selskaper som ikke tar ansvar for miljøet, å gjemme seg. Vi ser at det går den veien allerede, og det drives åpenbart av kunder og klienter som krever mer handling. Folk har begynt å stille spørsmål og utfordre politikere og selskaper på nye måter. Hvis vi alle bidrar til dette, kan vi oppnå store endringer.

*Hi Jan Christian! You are an advocate of transparency to drive sustainability. How are these two related?*

If the world is to become more sustainable in all respects, we need more transparency. Companies need to open up and be honest and transparent about how products are being manufactured, the amount of energy that is being used and working conditions; everything. Making transparency the norm will make it more difficult for companies that do not take care of the environment to hide. We see this change already and it is clearly driven by customers and clients who demand more action. People have started to question and challenge politicians and companies in new ways. If we all contribute and collaborate, we can also make such a big change.



**Nevn fem kriterier for bærekraft som du mener er viktige når man skal utforme et nytt produkt.**

**1.**  
Vi nekter uten unntak å utvikle en fiendtlig design. Det starter med designprosessen og designfilosofien, som bør være sosialt inkluderende.

**2.**  
Lang levetid er en annen viktig side ved dette. Produktet er nødt til å vare i mange tiår. Den mest effektive måten å gjøre noe med klimakrisen på, er rett og slett å redusere ressursbruken. Dessuten må kvaliteten være av ypperste klasse.

**3.**  
Hva slags energi vi bruker, er avgjørende fordi produksjonen vår er energikrevende: Vi bruker stål, aluminium og tre. Hva slags energi bruker vi i denne prosessen? Er den 100 prosent fornybar og produsert med solcellepaneler?

**4.**  
Anskaffelse av materialer. Vi kan kjøpe stål fra hvor som helst i verden, men vi bruker uten unntak svensk stål fra SSAB. De fremstiller stålet sitt med 30 prosent mindre utslipp enn verdensgjennomsnittet.

**5.**  
En annen avgjørende side ved dette er at det ikke er nok å gjøre en forskjell i ens egen organisasjon: Vi må også bidra i et "fellesforetak" for å finansiere alle de forskjellige prosjektene. I Vestre setter vi til side 10 prosent av overskuddet til eksterne bærekraftige prosjekter. Hvis hver eneste private bedrift i Norge gjorde det samme, hadde vi mer enn doblet den nasjonale u-hjelpen.

**Hvordan jobber Vestre med transparens overfor kundene?**

Vi ønsker å være åpne – vi er for eksempel åpne om hva slags energi og hvilke materialer vi bruker, slik at alle kan se hele verdikjeden vår. Vi er åpne overfor konkurrentene våre om hvordan vi jobber med bærekraftsspørsmål. Det er fordi jeg tror det er viktig å dele kunnskaper og beste praksis. Det høres kanskje tveetydig ut, siden vi jobber for å øke salget for mange av prosjektene våre. Som aksjeselskap må vi også tenke på hvordan vi kan utvide virksomheten og øke inntektene.

**Hvordan oppnår dere den balansen?**

Vestre er et privat aksjeselskap. Vi er avhengige av god lønnsomhet for å kunne sikre arbeidsplassene, investere i ny teknologi og betale skatter og avgifter. Men vi ønsker ikke å tjene penger på

*Name five sustainability criteria you think are important when designing a new product.*

**1.**  
We refuse without any exceptions to make any hostile design. It starts with the design process and the design philosophy which should be socially inclusive.

**2.**  
Longevity is another important aspect. The product needs to last for several decades. The most efficient way to respond to the climate crisis is to simply reduce the use of resources. Furthermore, the quality needs to be top-notch.

**3.**  
The kind of energy we use is crucial since our production is consuming; we use steel, aluminium and wood. What kind of energy do we put into this process? Is it 100 per cent renewable and produced by solar panels?

**4.**  
The source of materials. We could buy steel from any country in the world, but without any exception we use Swedish steel from SSAB. They manufacture steel with 30 per cent less emissions than the global average.

**5.**  
Another crucial aspect is that it is not enough to simply make a difference in our own organisation; we also have to contribute in this joint venture to finance all the different projects. In Vestre, we put aside 10 per cent of our bottom line to external sustainable projects. If every private company in Norway would do the same, we would more than double the public budget spent on foreign aid.

*How does Vestre work with transparency towards its customers?*

We are very openminded – we share all information about what kind of energy and materials we use so that anyone can see our entire value chain for example. We are also open with our competitors about how we work with sustainability issues, because I believe it is important to share knowledge and best practice. It might sound ambiguous as many of our projects have the aim to increase sales. As a private company, we also have to think about how we can expand and increase our profits.

*And how do you balance that?*

Vestre is a privately owned company. We need to ensure our profit in order to secure work spaces, invest in new technology and to pay taxes. But we do not want to make money on things we do not believe in. We refuse to create hostile design, to design prod-

*We could probably increase our profit considerably in the short term, but it would not create permanent values and would be devastating in terms of realising a more sustainable and fair future.*

ting vi ikke tror på. Vi nekter å utvikle en fiendtlig design, å utforme produkter med kort levetid eller å bruke materialer med et stort karbonavtrykk. Det hadde antakelig økt lønnsomheten vår betydelig på kort sikt, men det ville ikke ha gitt oss varige verdier, og det ville ha vært svært ødeleggende for målet om å skape en mer bærekraftig og rettferdig fremtid. Det er også derfor vi åpent deler kunnskaper og erfaringer med konkurrentene våre. Det er kanskje ikke så smart i rene kommersielle termer, men vi ønsker å sørge for at flere produsenter fokuserer på kvalitet og gjør noe for miljøet.

**Hva er det viktigste arbeidet Vestre gjør for å skape åpenhet?**

I 2010 ble vi verdens første klimanøytrale produsent av utemøbler. Vi var også det første selskapet i bransjen som fikk det nordiske Svanemerket på produktene våre. Og så vidt jeg vet, er vi også den første møbelprodusenten som har tatt i bruk FN's bærekraftsmål. Det begynner å bli knapt med tid for å gjøre en reell forskjell for klimaet, så vi må begynne å gjøre ting annerledes. Det er det vi prøver å få til i Vestre. Og i en familieeid bedrift kan man mer eller mindre gjøre som man vil.

**Hvordan ser selskapet deres ut om 10 år?**

Vi har en visjon om å skape sosiale møteplasser og arenaer for hverdagsdemokrati over hele verden. Vi tror at byene er gode arenaer for å føre folk nærmere hverandre. Hvis vi kan treffes på tvers av kjønnsbarrierer og ulike sosiale, kulturelle, økonomiske og etniske bakgrunner, tror jeg vi får et sunnere samfunn. Vi jobber også svært hardt for å nå de 9 målene vi har satt oss av de til sammen 17 bærekraftsmålene. Det skal vi klare på mellom fem og ti år.

ucts with a short life or to use materials with a large carbon footprint. We could probably increase our profit considerably in the short term, but it would not create permanent values and would be devastating in terms of realising a more sustainable and fair future. That is also the reason why we openly share our knowledge and experiences with our competitors. Perhaps it is not very clever from a commercial perspective, but we will ensure more producers focusing on quality and the environment.

*What is the most important work Vestre does in terms of transparency?*

Already in 2010, we were the first climate neutral outdoor furniture company in the world. We were also the first company in our sector to receive the Nordic Swan Eco Label on our products. And, as far as I know, we are probably also the first manufacturer of furniture to integrate the United Nation's sustainability goals. There is not much time left now in terms of making a real difference for the climate, so we need to start doing things differently. That is what we are trying to do in Vestre. And in a family-owned business, you more or less do what you want to.

*Looking at the company in 10 years – Where will you be?*

Our vision for the future is to create social meeting places and arenas for everyday democracy all over the world. We believe that cities are great arenas for bringing people together. If we meet each other across different gender, social, cultural, economic and ethical backgrounds, I think we can create healthier societies. We are also working very hard with the nine development goals we have chosen out of the 17. In five to ten years we will reach that target.

# Framtida generationer

## *Future Generations*

**Investera i framtida generationer genom att verka för att hållbar utveckling blir ett skolämne.**

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





**Att sätta barn och unga i fokus när det gäller att förändra våra levnadsvanor är viktigt. Kanske är dagens klimat- och miljörörelse de yngre generationernas revolt?**

*It is important to focus on children and young people in order to change our living habits.*

*Maybe the climate and environment movement is the revolt of today's younger generations.*

12

## Med nasjonale skolestreiker og aksjoner vil miljøorganisasjonen Natur og Ungdom få politikere til å ta ansvar i klimakampen.

Med nasjonale skolestreiker og aksjoner vil miljøorganisasjonen Natur og Ungdom få politikere til å ta ansvar i klimakampen. I 2017 saksøkte organisasjonen sammen med Greenpeace den norske staten for å ha åpnet for oljeboring i deler av Arktis. Miljøorganisasjonene hevdet at boringen brøt med den norske grunnloven, som sier at staten skal beskytte naturen og miljøet for fremtidige generasjoner. Staten ble frikjent i Oslo tingrett, men arbeidet med "Klimasøksmål Arktis" fortsetter.

Hvordan skape et lavutslippssamfunn som er godt å leve i? Enova er Klima- og miljødepartementets organisasjon for omstilling av energibruk og energiproduksjon. Med det interaktive og nettbaserte læringsverktøyet "Enovas energiutfordring" får lærere og elever lære om energi og klima. Undervisningen har fokus på refleksjon, kritisk tenkning og løsninger for fremtiden.

Studenter ved Norges teknisk-naturvitenskapelige universitet (NTNU) samarbeider hvert år i DNV GL Fuel fighter. Målet er å bygge en så energieffektiv UrbanConcept-bil som mulig. Den elektriske bilen konkurrerer deretter i Shell Eco-Marathon. I løpet av konkurransen gjøres det fire forsøk på å kjøre mest mulig energieffektivt, og i 2019 endte Trondheims-studentene på femteplass. De kom på førsteplass for beste design.

Through national school strikes and actions, the environmental organisation Nature and Youth wants to convince politicians to assume responsibility for the



Klimasøksmål Arktis. Image Credit: Jonne Sippola / Greenpeace Erlend Tellnes Greenpeace Norge

climate issue. In 2017, the organisation joined Greenpeace in suing the Norwegian Government for opening part of the Arctic up for oil drilling. The environmental organisations argued that the drilling was in violation of Norway's constitution, which states that the Government must preserve nature and the environment for future generations. Oslo District Court sided with the Government, but the "Climate Lawsuit Arctica" project continues.

How can we create a low-carbon society with high living standards? Enova is the Norwegian Ministry of Climate and Environment's organisation for the transition of energy consumption and energy production. Using the interactive online learning tool "Enova's Energy Challenge", teachers

and pupils can learn about energy and climate. Teaching is focused on reflection, critical thinking and future solutions.

Students at the Norwegian University of Science and Technology in Trondheim participate in the DNV GL Fuel Fighter every year. The aim is to build an Urban Concept car that is as energy-efficient as possible. The battery-powered car then competes in the Shell Eco-Marathon. During this competition, each team gets four attempts to drive the most energy-efficiently, and in 2019, the students from Trondheim finished in fifth place. They also won first prize for their design.

## Ísland tók við formennsku í Norrænu ráðherranefndinni 2019 og málefni ungmenna eru meðal helstu áherslumála.

Ísland tók við formennsku í Norrænu ráðherranefndinni 2019 og málefni ungmenna eru meðal helstu áherslumála. Niðurstöður rannsóknar hjá rannsókn- og greiningarstofnuninni Nordregio sýna að ungmennum á Norðurlöndunum finnst lítið mark á sér tekið og trú þeirra á lýðræði dvinar. Á sama tíma fjölgar þeim hópi ungmenna sem hvorki stunda vinnu né sækja skóla.

UNICEF-verkefnið HEIMA miðar að því að nálgast móttöku barna hælisleitenda út frá sjónarhorni barnsins. Reynsla barna og tilfinningar í kjölfar komunnar til Íslands voru skoðaðar og ræddar og tekin voru viðtöl við lögreglumenn, foreldra, kennara og löglært fólk. Jafnt opinberar stofnanir sem félagasamtök tóku þátt í vinnustofum til að þróa lausnir sem byggðust á lausnamiðuðum aðferðum. Átta raunhæfar lausnir hafa verið settar saman og hefur ríkisstjórnin lagt fjármagn til verkefnisins, sem skilar börnunum ávinningi.

Fyrir 20 árum glímdi Ísland við alvarlegan vanda tengdan heilsufari ungmenna. Árið 1998 sögðust 42 prósent ungmenna 15 og 16 ára hafa orðið drukkin mánuðinn áður, sem er óhugnanlega hátt hlutfall. Fræðimenn og samfélagið allt tóku höndum saman um að auka framboð á frístundastarfi fyrir ungmenni, breyta lögum og reglum, koma á foreldrarölti og auknu samstarfi foreldra og skóla og breyta viðhorfum og viðmiðum. Árið 2016 hafði hlutfallið hrapað niður í fimm prósent. Möguleikar á þátttöku í tónlistarstarfi, íþróttum og

félagsstarfi hafa aukist og lögbundnum útivistartíma fyrir börn og ungmenni var komið á. Íslenska leiðin hefur nú verið tekin til fyrirmyndar víða um heim.

When Iceland assumed the chairmanship of the Nordic Council of Ministers in 2019, youth issues was one of the central points. According to a report from the research institute Nordregio, the young people in the Nordics feel that they are not being heard and their faith in democracy is faltering. At the same time, the group of young people neither working or studying is growing.

The UNICEF project HEIMA aims to understand the reception of asylum-seeking children from the child's perspective. Early in the process, children's experiences and feelings during their time in Iceland were discussed, and police officers, parents, teachers and lawyers were also interviewed.

*The UNICEF project HEIMA aims to understand the reception of asylum-seeking children from the child's perspective.*

Government and non-government organisations participated in workshops to create solutions with design-based methods. Eight concrete solutions have been formulated, and the Government has made large investments, which has led to significant gains for the children. The second part of the project includes prototypes and tests.

20 years ago, Iceland had serious problems when it came to young people's health. In 1998, 42 per cent of the country's 15 and 16-year-olds said that they had been drunk the month before, which was an alarming figure. Researchers cooperated with public actors to create a combination of leisure activities, legislative changes, parental walks and common principles, and the corresponding figure in 2016 was 5 per cent. Funding for music, art, sports and youth clubs has increased, while statutory curfews were introduced for children and young people. The Icelandic model is spreading across the world.



## 1 juli 2019 ingår hållbar utveckling i läroplanen för förskolan och regeringen har gett Skolverket i uppdrag att titta på hur Agenda 2030 kopplar till skolans styrdokument.

1 juli 2019 ingår hållbar utveckling i läroplanen för förskolan och regeringen har gett Skolverket i uppdrag att titta på hur Agenda 2030 kopplar till skolans styrdokument. "Skolan har en central roll att sprida kunskap om de globala och nationella målen till eleverna så att vi tillsammans kan nå en hållbar och rättvis framtid", säger utbildningsminister Anna Ekström. Då unga personer som Greta Thunberg står på barrikaderna ger det ringar på vattnet. Hon skapar plats för nya röster i debatten.

Matteo Giusti kombinerar hållbar stadsdesign och miljöpsykologi i sin forskning. Han lyfter fram betydelsen av att få vara nära naturen, något som många barn saknar idag. Det är också grunden för Fältbiologerna, organisationen för barn och unga som är intresserade av natur och miljö. När

miljöproblemen blev allt mer aktuella i Sverige tog Fältbiologerna plats som en av de mer radikala rösterna i frågan. Även PUSH Sverige, en webbaserad plattform som syftar till att skapa kontakt, arrangera evenemang och driva opinion, har fokus på hållbarhetsfrågor.

I projektet "Optimist för havet" samlar unga seglare plast i havet som sedan omvandlas till jollar. Uppskattningsvis finns 150 miljoner ton plast i haven – det mesta engångsartiklar. Optimist för havet vänder sig till 9-12-åringar och är ett samarbete mellan Svenska Seglarförbundet, Håll Sverige Rent och Sjöräddningssällskapet, finansierat av Postkodlotteriet.

On 1 July 2019, sustainable development became part of the preschool curriculum. The Government has also commissioned the Swedish National Agency for Education to investigate how Agenda 2030 is linked to the policy documents of the school system. "The school plays a central role in disseminating knowledge of the global and national objectives to the pupils, so that we all can achieve a sustainable and fair future," says Minister for Education Anna Ekström. Young people like Greta Thunberg are on the barricades, and it is creating ripple effects. She is making space for new voices in the debate.

Matteo Giusti combines sustainable design of cities and environmental psychology in his research. He highlights the importance of being close to nature, something that many children lack today. This is also the foundation of Nature and Youth Sweden.

As the environmental problems became increasingly high-profile in Sweden, Nature and Youth Sweden became one of the more radical voices on this issue. PUSH Sweden, a web-based platform intended to create connections, organise events and drive campaigns, is also focused on sustainability issues.

In the project "Optimist for the Sea", young sailors collect plastic from the sea, which is then turned into new dinghies. There is an estimated 150 million tonnes of plastic in the oceans – mostly disposable products. "Optimist for the Sea" is aimed at 9-12-year-olds and a collaboration between the Swedish Sailing Federation, the Keep Sweden Tidy Foundation and the Swedish Sea Rescue Society, with funding from Postkodlotteriet.





## Turning Tables Danmark arbejder med at styrke unges livssituation i Danmark gennem kreativitet.



Turning Tables Denmark. Photographer: Marine Gastineau

Turning Tables Danmark arbejder med at styrke unges livssituation i Danmark gennem kreativitet. Målsætningen er at styrke færdigheder, fællesskaber og selvværd. Film, musik og billeder bruges til at kommunikere og samarbejde. Gennem erfaringen får deltagerne oplevelsen af, at de kan lære noget nyt og gennem samarbejde nå mål for konkrete projekter.

UN City Copenhagen gør København til en af FN's globale knudepunkter. FN's danske hovedsæde har åbnet dørene for børn og unge i #UNCity4schools. Skoleelever mellem 6 og 16 år introduceres under et to timer langt besøg for seks forskellige temaer om FN's 17 verdensmål. De mål, der er omfattet, er: Afskaffelse af fattigdom, stop sult, reducer ulighed, bekæmp klimaforandringer, og styrk fredelige og inkluderende samfund. Alle besøg er gratis.

Siden 2016 har KADK, Det Kongelige Danske Kunstakademis Skoler for Arkitektur, Design og Konservering, satset massivt på FN's verdensmål. Inspireret af KADK valgte Union of International Architects (UIA) for nylig at underskrive et verdensmålsmanifest, Dhaka Deklaration. Formålet med manifestet er at få arkitektstanden til at tage verdensmålene til sig og aktivt arbejde med dem, når de udvikler, tegner og bygger fremtidens arkitektur.

Turning Tables Denmark works to improve the situation of young people in Denmark through creativity. Its goal is to strengthen skills, communities and self-worth. Film, music and photography are used as means of communication and collaboration. Through experience, the participants realise that they can learn new things and collaborate to reach goals within concrete projects.

UN City Copenhagen makes Copenhagen one of the UN's global hubs. The UN's Danish headquarters have opened its doors to children and young people in #UNCity4schools. Pupils between the ages of 6 and 16 years have a two-hour visit introducing them to six different themes surrounding the UN's 17 Sustainable Development Goals, namely: no poverty, zero hunger, reducing inequality, climate action, and peace, justice and strong institutions. All visits are free of charge.

Since 2016, the Royal Danish Academy of Fine Arts Schools of Architecture, Design and Conservation (KADK) has made great efforts in relation to the UN's Sustainable Development Goals. Drawing inspiration from KADK, the Union of International Architects (UIA) recently opted to sign the Dhaka Declaration. The objective of this manifesto is to make the architectural profession adopt the SDGs and actively strive to achieve them in developing, designing and building the architecture of the future.

## Kestävään kehitykseen ja ympäristöön liittyvän osaamisen kehittäminen on ratkaisevaa tulevaisuuden suuriin kysymyksiin vastattaessa.

Kestävään kehitykseen ja ympäristöön liittyvän osaamisen kehittäminen on ratkaisevaa tulevaisuuden suuriin kysymyksiin vastattaessa. Muutoksia tarvitaan niin yksilö- kuin yhteiskuntatasollakin, ja tässä asiassa kouluilla on keskeinen rooli

tavoitteessa: turvalliset ihmissuhteet lapsen elämässä, lasten ja perheiden osallisuuden kokeminen kasvu- ja lähiyhteisössään, perheiden yhdessä viettämän ajan lisääntyminen, lasten ja nuorten kaverisuhteiden vahvistuminen ja yksinäisyyden vähentyminen, jokaisen

The vision of a child and family-friendly Finland is at the foundation of the Finnish National Strategy for Children 2040. More than 100 researchers and organisations have collaborated to divide child well-being into areas such as relationships, learning, inclusion, safety and health. The vision is implemented through seven objectives: human relations in the child's environment; the child and their family's local community involvement; the family's time together; stronger friendships and reduced loneliness in children and young people; possibilities of an individual upbringing and learning; reduction of poverty among families with children; and allowing people the conditions to have as many children as they wish.

## Suomen kansallisissa strategioissa opetuksen tulee edistää kestävä kehitystä ja kestävä elämäntapaa.

vastuullisten ja tiedostavien kansalaisten kasvattamisessa. Suomen kansallisissa strategioissa opetuksen tulee edistää kestävä kehitystä ja kestävä elämäntapaa. Opetusta on voitava myös muuttaa nopeasti uusien tarpeiden ilmetessä. Oppilaitosten tukena työssä toimivat muun muassa Vihreä lippu -ohjelma sekä Opetus-, kasvatusta- ja koulutusalojen säätiön (OKKA) ympäristösertifikaatti.

lapsen ja nuoren mahdollisuus jatkuvaan yksilölliseen kasvuun ja oppimiseen, lapsiperheiden köyhyyden vähentyminen sekä ihmisten mahdollisuus toivomaansa lapsimäärään.

Improved knowledge on sustainable development and environment are essential for dealing with the major issues we are currently facing. Changes are required at both the individual and society level, and schools play a central part in creating responsible and knowledgeable citizens. In Finland, there are national strategies for education to promote sustainable development and sustainable lifestyles. The education must be quickly adaptable to new needs. Support for the schools in their work include the Green Flag programme and an ecolabel via the OKKA Foundation.

Kansallinen lapsistrategia 2040 perustuu visioon lapsi- ja perhemyönteisestä Suomesta. Strategia on yli sadan tutkijan ja organisaation yhteistyön tulosta. Lasten hyvinvointi jaetaan osa-alueisiin, kuten ihmissuhteet, oppiminen, osallisuus, turvallisuus ja terveys. Visio konkretisoituu seitsemässä





Sanna Vannar

Chairwoman of the Sami youth association, Sáminuorra  
Ávdđáulmusj sáme nuorajorganisasjávnnán, Sáminuorran

Illustration  
Kristian Andréason

*Sanna Vannar is the Chairwoman of The Sami Youth Organisation of Sweden – Sáminuorra – and a reindeer herder. Despite her young age, she has already been involved in suing the European Parliament and The Council of the EU for the inadequacy of the EU's climate target.*

**Buoris Sanna! Dán la iesj nuorra, dássju guoktalákgálmma. Gáktu div mielas máhttep nuorajda tjavggasup gielav vaddet?**

Mån sidáv nuorajda sajev vaddet, jut bessi vuojn-  
nut ja gullut. Udnásj nuora li mijá boahhteájgge, ja  
uddni diehti ja máhtti ienebuv dálkádakrievddad-  
imij birra ja sihti dilev rievddadit ja juojddá dahkat  
vidjura hárráj. lesj ávdđálijguovlluj bargav ja sidáv  
boahhte buolvvaj dilev buoredit. Gájka háhttuji iet-  
jájduhttet ietjasa iellemijt, gáktu viessop, man álov  
luojtpe, ja man álov mijá planehtas guorrip.

**Dán la bajássjaddam boahtsuj ja div fuolke l  
áloj barggam moadda buolva. Gáktu dálkáda-  
krievddadibme div vájkut?**

Boatsojäládus la stuorra oasse sáme kultuvras.  
lesj má aj vuojnáv gáktu boahtsu vidjura li riev-  
dam muv oanes viessomájge. Gå luondon vieso  
dagu mij dahkap, ja barggosadje l, de vuojnna dajt  
smávva merkajt nav tjielggasit. Vuorrasij giehtois

*Hi Sanna! You are young yourself, just 23. How do you feel that we can give young people a stronger voice?*

For me, it's a matter of allowing young people space, listening and being perceptive. The young people are our future, and today they are more informed and knowledgeable about climate change, while at the same time they want to make a difference and contribute to change. I myself work with a very long-term perspective and want to make life better for future generations too. Everyone needs to change their lifestyle, how we live, our emissions, and how much of our planet we consume.

*You grew up with reindeer and your family have been reindeer herders for generations. In what way does climate change affect you specifically?*

The reindeer are a major part of Sami culture. I can see how the conditions for the reindeer have changed even in my relatively short lifetime. When you live

máhtáv árvvedit gáktu ávddála lij. Áhttjám ságas oalle buorre dálvij birra – gá állo máhtij ávtán buoldan guohtot vargga járbbá dálvev. Mån iv la goassak dav vuojnnám; mij lip vierttim jánnurav birra álov birástit vaj tjoahken bissu. Huoman hádjáni. Gá boahitsu e guohtomav gávna háhttup dajt biebbmagoahitet. Dálásj dálve li elluj nav vávje gá muhttijn ilá álov rássjot ja muhttijn muohtta ávddál garsa ja nav de ednamav suolnot. Dálká-dakrievddadibme buktá állobarggijda ihkeva állo bargov. Luonndobiejsstema diehti jiekke gájkki ja jávrrretjájte lieggani.

#### **Aktan famillijaj ietjá rijkajs EU:av stiebnnijda “People’s Climate Case”:an. Mij dáhpáduváj?**

Mij dábdájma dálkádakmihttomiere majt gájka rijka duodastin lidjin ilá gádnása. Guokta lieggagrada ietjá sajen váráldin li niellja-guhtta Sámeednamin. Dat la állo. Midja buorebuv máhttep! Aktan Fiji Suollujn, Tysklándajn ja Kenyajn aktisaj ássjev vuolgadijma Europa Duobbmástávláj. Moarmesmánon jagen 2019 vásstedin e ássjev joarke, valla mij lip gujddim mierredimev. Midjij lij stiebni dagu viehkev tjuorvvot! Mij ep máhte ájda viessot daj mihttomierij.

as close to nature as we do, and have it as your workplace, you see the small signs so much more clearly. From the stories told by older people, I can imagine what it was like before. My dad talks about these dream winters – winters when the reindeer would graze on the same hill almost throughout the season. I have never experienced that; we have needed to stay outside day and night to keep the reindeer together, and they still scatter. When they have trouble finding food, we have to feed them instead. The winters today are unstable for the reindeer with too much rain or when the ground does not freeze before the snow comes and the slopes become soggy. Climate changes entail a lot more work for us as reindeer herders. This is the result of exploitation, of bogs drying out and of lakes heating up.

#### ***The EU was taken to court by Sáminuorra and a number of families in other countries in the “People’s Climate Case”. What happened?***

We experienced that the climate goals agreed by all the countries were too weak. A temperature increase of two degrees elsewhere in the world is around four to six degrees in Sápmi. That’s a lot. We can do so much better! Together with the Fiji Islands, Germany

and Kenya, we filed a joint suit with the European Court of Justice. In May 2019, we were told that they would not proceed with the application, but we have appealed the decision. For us, the application was a cry for help! We simply cannot settle with these climate goals.

#### ***In 2018, you became the chair of the National Association of Swedish Sami’s youth division. What is your vision for the Sami?***

My work is incredibly varied; one day I am playing football with Sami young people and the next I’m in a meeting with the European Parliament in Brussels. My days are extremely different and I never know what’s next. My primary goal is for Sami people and reindeer to have a good life. For me, it’s about the right to land and water where reindeer can graze in peace and the herders do not have to worry or defend their lands. Not everyone has in-depth knowledge of the Sami, in schools or in general, which leads to a lot of prejudice, hate and racism. I am trying to change this by highlighting Sami people in society.

## *A temperature increase of two degrees elsewhere in the world is around four to six degrees in Sápmi.*

#### **Jus gehtja nanos ávddánibmáj almullattjat, mij la dat dunji?**

Sámij e luotta heva bátse luonnduj, ja jurra de vuojnu gánná l állo árrum. Nanos ávddánibme l munji gá usjudaláv makkir luottajt nuppe buolv-vaj guodáv ja man tjielggasit vuojnuji. Mij sáme ájnnasin adnep vuorrasij máhttudagájt, ja mån gáhttalav nav álov gá máhttelis oahppat. Gá dal galggap ienebuv ietja bierggit, mij muv mielas la mijá boahtteájgge, háhttup gáhttalit ja oahppat gáktu duola dagu guolev buoremusát vuorkki jali suovastuhtta.

#### **Oattjov gus boahitet div guossidittjat? [Tjajmos]**

Diedon! Besa gárdijt tsággot ja tjuojkaj rijddalit. Boade guossidittjat, hejman lav álu. Dáppe ep bargojs náhkku. Ja de lulu oadtjot sierra dádjadusáv sáme viessomis!

#### ***Are you getting somewhere?***

Sometimes, it feels hopeless, but we are taking small steps forward. It is disconcerting that the Sami were raising the very same issues in the 1980s that I am working with today.

#### ***If you look at sustainable development in general, what is that to you?***

Using nature without leaving a trace is part of the Sami culture, and often you can’t even tell that there have been reindeer in a certain location. Sustainable development for me involves thinking about the tracks you are leaving behind for the future and how visible they are. The Sami people value the quiet knowledge of our elders very highly, and I am trying to learn as much as I can. In order to be self-sustaining, which I believe is the future, we need to test and learn in order to know how to, for example, best preserve or smoke fish.

#### ***Can I come visit you? [Laughter]***

Of course! You can build fences and fight the mosquitos. You are more than welcome, and I’m at home most of the time. There’s no shortage of things to do around here. And you would get a unique insight into the Sami lifestyle!

## **Dálkádakrievddadibme buktá állobarggijda ihkeva állo bargov. Luonndobiejsstema diehti jiekke gájkki ja jávrrretjájte lieggani.**

#### **Jagen 2018, dán válljasi sáme nuorajorgani-sasjávna ávddáulmutjin Svieriga bielen. Ma li div ájggomusá sámijda?**

Muv barggo l riek vijdes; avta bieje roahttov tjieltjav sámij nuoraj siegen, ja nuppe bieje tjáhkanimen EU parlamentan Brusselin. Muv bieje li nav moatteláhkáj ja iv goassak diede mij boahita. Ávdemusát sávav sámijda ja boahitsu buorre viessomav. Ja munji dat merkaj riehtáv adnet ednamijda ja tjátijda gánná boatsoj bássa ráfen guohtot ja álloniehkke ij dárba muodástuvvat jalik ednamijt várjot.

Álla gájkajn állo diedo sámij birra, skávláj ja ietján ja dajnas gávnnuji edna gátto, vasje ja rasisma. Sidáv dav ietjáduhttet ja tjalmosit sámijt sebrudagán.

#### **Manná gus ávddálijguovlluj?**

Muhttijn lásságin dábddu, valla smávva lávkij ávddánip. Le galla ahket gá sáme gáktaláklágon bajedin sámme ássijit maj mån uddni bargav.



# Index 01 - 08

## INTRO & FOREWORD

### Illustration

Kristian Andréason

## 01

### Illustration

Sandra Blikås / byHands, Norway  
Page 17

### The Nordic prime ministers

Image Credit: Regeringskansliet  
Page 22

### Plastic Pollution

Bogdan Croitoru  
Page 23

### World Overshoot Day

Image Credit: Global Footprint Network. [www.footprintnetwork.org](http://www.footprintnetwork.org)  
Page 25

### Interview Photo

Laura Kotila

### Illustration

Kristian Andréason  
Page 27

## 02

### Illustration

Julia Hermansson, Sweden  
Page 31

## SWEDEN

### People's Climate Case Fridays for future

Image Credit: Per Grunditz/  
Shutterstock  
Page 35

## NORWAY

### Framtiden i våre hender Oljefondet

Harvest Magazine  
Page 36

## ICELAND

### Draumalandið – sjálfshjálparbók handa hræddri þjóð Kona fer í stríð Ice Watch

Image Credit: Charlie Fordham-  
Bailey  
Page 37

## FINLAND

### HundrED Nodus Sustainable Design Research Group

#Iempivaatteeni  
Page 39

## DENMARK

### SPACE10/Urban Village Project

Image Credit: EFFEKT Architects for  
SPACE10

### The Index Project

Page 40

### Interview Photo

Snorri Thor Tryggvason

### Illustration

Kristian Andréason  
Page 41

## 03

### Illustration

Hanna Sakara, Finland  
Page 45

## DENMARK

### Kalundborg Symbiose

Image Credit: Kalundborg Symbiosis  
and Symbiosis Center Denmark  
Copenhagen Solutions Lab  
Strategisk Byledelse  
Page 49

## FINLAND

### Smart & Clean Aalto Sustainability Hub

Peloton Club  
Page 50

## SWEDEN

## NOD

### Mistra Future Fashion BillerudKorsnäs/Uppsala universitet

Image Credit: BillerudKorsnäs  
Page 51

## NORWAY

### Klima Østfold

### Træna

Page 53

## ICELAND

### Grænmetisráðuneytið

Image Credit: The Ministry of  
Icelandic Vegetables  
Náttúrufræðistofnun Íslands/  
Sigrún Thorlacius  
Page 54

### Interview Photo

Kalundborg Utility

### Illustration

Kristian Andréason  
Page 55

## 04

### Illustration

Daniel van der Noon, Denmark  
Page 59

## NORWAY

### NCE Maritime CleanTech DARE2C

Page 63

## FINLAND

### POLKU2030

### Synbio Powerhouse Aivan/Korvaa

Image Credit: Aivan  
Page 64

## DENMARK

### The Soul of Nørrebro

Image Credit: ©SLA  
Copenhagen Airport/Danmarks

## Tekniske universitet

Page 65

## ICELAND

### Kerecis

### Urríðaholt

### GeoStep

Page 67

## SWEDEN

### Hybrit

Image Credit: Hybrit Development

### Vinnova

### e-barometern

Page 68

### Interview Photo

Louise Nylund

### Illustration

Kristian Andréason  
Page 69

## 05

### Illustration

Arad Golan Coll, Sweden  
Page 73

## NORWAY

### Eyde Cluster

### Nordic Comfort Products

Image Credit: Bjørnar Øvrebø  
Page 77

## ICELAND

### ReSource International

### Jarðhitavatn

Page 78

## SWEDEN

### Från värdekedja till värdecykel Bioinnovation

Image Credit: Gustaf Emanuelsson,  
Bildinstitutet och Svenska Skogen

### Swedish Stockings

Page 79

## DENMARK

### Rethink Business

### Upcycle Studios

## Green Valleys

Page 81

## FINLAND

### Sitra

### Aarre

### Relooping Fashion

Image credit: VTT, The Relooping  
Fashion Initiative  
Page 82

### Interview Photo

Rikard Westman

### Illustration

Kristian Andréason  
Page 83

## 06

### Illustration

Rán Flygenring, Iceland  
Page 87

## ICELAND

### CarbFix

### Krónan

Page 91

## FINLAND

### HerääPahvi!

Image credit: Antti Haapio

### Muovitielkartta Suomelle

### Foller

Page 92

## SWEDEN

### Friendly Building

Image Credit: Mattias Hamrén

### A Nordic Textile Strategy

### RE:Source

Page 93

## NORWAY

### Flaskefond

Image Credit: Flaskefond

### Waste IQ

Page 95

## DENMARK

### Plastik uden spild

## Stop Spild Af Mad

## Bornholm showing the way

Page 96

### Interview Photo

Ann Nerlund

### Illustration

Kristian Andréason  
Page 97

## 07

### Illustration

Sandra Blikås / byHands, Norway  
Page 101

## DENMARK

### Aarhus City Lab/Open Data DK Strategi for vækst gennem deleøkonomi

### Airbnb/Skat

Page 105

## SWEDEN

### Kungliga Tekniska Högskolan Sharing City Göteborg

Image credit: Göteborg Stad  
Page 106

## ICELAND

### Timbro Index

Image Credit: Timbro

### Market and media research

### VISTA Analyse

Page 107

## NORWAY

### Urban Sharing

### Den Norske Turistforening

Image Credit: Iryna Inshyna/  
Shutterstock  
Page 109

## FINLAND

### Sharetribe

### LifeLearn

Page 110

### Interview Photo

Dorte Fjalland

# Index 09 - 12

## Illustration

Kristian Andréason  
Page 111

## 08

## Illustration

Julia Hermansson, Sweden  
Page 115

## SWEDEN

Ellen MacArthur Foundation/  
Google  
Smart City Sweden  
Strategi för levande städer  
Page 119

## NORWAY

eSmart Systems  
Image Credit: Trond-Atle Bokerød  
Speculative Solar  
Blueye Pioneer  
Page 120

## DENMARK

Do you speak human?  
Image Credit: Adrià Goula  
Smart Water Networks  
Danmarks Tekniske Universitet  
Page 121

## ICELAND

TrackEHR  
Marorka  
Mussilla  
Page 123

## FINLAND

Global Skills Index 2019  
ZenRobotics  
Image Credit: ZenRobotics  
Konecranes  
Page 124

## Interview Photo

Nikolai Schirmer

## Illustration

Kristian Andréason  
Page 125

## 09

## Illustration

Hanna Sakara, Finland  
Page 129

## DENMARK

Økologisk Handlingsplan 2020  
Image credit: EQRoy/Shutterstock  
Partnerskab for offentlige grønne  
indkøb  
Page 133

## ICELAND

Græni ramminn  
Grænt bókhald  
Page 134

## SWEDEN

Politik för gestaltad livsmiljö  
Offentlig upphandling som strate-  
giskt verktyg för en god affär  
Cirkulära Göteborg  
Image Credit: Göteborgs Stad  
Page 135

## FINLAND

KEINO  
Innovatiivinen hankinta  
Page 137

## NORWAY

Direktoratet for forvaltning og  
IKT  
Innovative anskaffelser  
Image Credit: Nasjonalt program for  
leverandørutvikling  
Page 138

## Interview Photo

Janne Marjanen

## Illustration

Kristian Andréason  
Page 139

## 10

## Illustration

Daniel van der Noon, Denmark  
Page 143

## DENMARK

Dansk Nudging Netværk  
iNudgeyou  
Page 147

## SWEDEN

Beteendelabbet  
Nudging Sweden  
Doconomy  
Image Credit: Doconomy  
Page 148

## ICELAND

Vegamálun GÍH  
Image Credit: Agust Atlason  
Vakandi  
Blái herinn  
Page 149

## NORWAY

The Norwegian Nudging Network  
Æra  
CHOOOSE  
Page 151

## FINLAND

Think Sustainably  
Image Credit: Futurice N2 Albiino  
100 smart ways to live sustainably  
Page 152

## Interview Photo

Andreas Kock

## Illustration

Kristian Andréason  
Page 153

## 11

## Illustration

Arad Golan Coll, Sweden  
Page 157

## NORWAY

Alfa skor, New Movements  
Image Credit: Mark Grgurić  
Miljøfyrtårn  
Vestre Outdoor Furniture  
Page 161

## SWEDEN

Märkning mineraler och metaller  
RFID-taggar  
Worldfavor  
Page 162

## ICELAND

Ok  
Image Credit: NASA Earth  
Observatory/USGS  
Qlik Sense  
Grænt bókhald  
Page 163

## FINLAND

Lovia  
Goodio/Business with Impact  
Page 167

## DENMARK

Transparens mindske løngabet  
Kvadrat  
Image Credit: Kvadrat  
Page 168

## Interview Photo

Nicolas Turrenc

## Illustration

Kristian Andréason  
Page 169

## 12

## Illustration

Rán Flygenring, Iceland  
Page 173

## NORWAY

Natur og Ungdom/Klimasøksmål  
Arktis  
Image Credit: Jonne Sippol/  
Greenpeace, Erlend Tellnes/  
Greenpeace Norge  
Enovas energiutfordring  
DNV GL Fuel fighter  
Page 177

## ICELAND

## HEIMA

## Íslenska leiðin

Page 178

## SWEDEN

Fältbiologerna  
Optimist för havet

Image Credit: aaabbbccc/  
Shutterstock  
Page 179

## DENMARK

Turning Tables Danmark  
Image Credit: Marine Gastineau  
#UNCity4schools  
Page 181

## FINLAND

Vihreä lippu  
Lapsistrategia 2040  
Page 182

## Interview Photo

Antaris Vannar

## Illustration

Kristian Andréason  
Page 183



# Partners

## ArkDes

### ArkDes

ArkDes uppdrag är att öka kunskapen och driva debatt om 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 är en öppen mötesplats där samtalet om formens, arkitekturs och designens betydelse för människa och samhälle förs. Verksamheten inrymmer utställningar, seminarier, kafé och butik, men också satsningar på branschutveckling och samhällsorienterade projekt.

Formdesigncenter.com

### Form/Design Center

Form/Design Center is an open meeting place where the conversation on the significance of architecture and design for people and society is constantly ongoing. Its operations include exhibitions, seminars, a café and a shop, as well as initiatives relating to industry development and social projects.

Formdesigncenter.com

### 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

### Hönnunarmiðstöð

Hönnunarmiðstöð Íslands 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.

Icelanddesign.is

### Iceland Design Center

Iceland Design Center 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.

Icelanddesign.is

### Design Forum Finland

Design Forum Finlandin tavoitteena on edistää muotoilun käyttöä suomalaisissa yrityksissä, erityisesti johtamisen työkaluna ja yrityksen strategisella tasolla, ja tätä kautta kasvattaa yritysten kansainvälistä kilpailukykyä. Design Forum Finland on yleishyödyllinen toimija ja sillä on käytössään laaja verkosto muotoilun asiantuntijoita, jotta yritykset löytäisivät juuri tarpeisiinsa sopivan muotoilukumppanin.

Designforum.fi

### Design Forum Finland

Design Forum Finland promotes the use of design in Finnish companies, especially as a tool for leadership on the strategic level, thus enhancing the international competitiveness of companies. Design Forum Finland is a non-profit organisation, which uses its extensive network of design professionals to find the best design partners for companies.

Designforum.fi



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