

An aerial photograph of a winding asphalt road that curves through a vast, dense forest. The trees are mostly green, with some showing early autumn colors. The road is a two-lane highway with white dashed lines. The sky is bright and hazy, suggesting a clear day.

Summary of external analysis in Northern Sweden, Finland, and Norway

GRUDE Project

GRUDE 

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Background

GRUDE – Green Rural Economy

GRUDE – Green Rural Economy is an Interreg Nord program project that collects, refines, and shares knowledge of the green economy and resource efficiency in order to create sustainable Northern societies. With these actions, the project aims to save natural resources and creates new employment and growth by recognizing the special features of Northern communities' circular economy.

This external analysis was carried out during November-December 2020 by:

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Laura Vidje has 8 years of experience in circular economy, both as a municipal employee and as a consultant. She has carried out investigations into the circular economy for a number of municipalities and regions in Sweden and collaborated in various EU projects, with the OECD study in Umeå municipality, Circular Regions in Norway and supported business and business promoters in the transition to circular business models.

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Analysis Background

The purpose of the external analysis was to compile an introduction to the circular economy and relevant examples as a source of inspiration for the public sector in northern Sweden. In addition a survey was conducted to gather more information about levels of awareness and knowledge regarding the subject, and collect suggestions for which areas are of most interest, and how knowledge can best be spread. The report was also printed and distributed to relevant actors and municipalities.

The survey was later also conducted in northern Finland and Norway, and reports were compiled with regional examples in their respective languages.

This article is a short summary of all three surveys and reports.

Introduction

Circular economy is a vision of an economic system that benefits everyone within the planetary boundaries. It is a system that is restorative and regenerative by design. This is the opposite of a resource-intensive fossil-dependent linear economy where goods are produced, consumed and wasted.

The transition to a circular economy does not only imply changes aimed at reducing the negative effects of the linear economy (wear and tear). Rather, it represents a systematic shift which builds long-term resilience, generates business and economic opportunities and provides environmental and societal benefits.

Since the first Circular Economy Action Plan from 2015, the EU has now developed a new plan with the link to the EU Green Deal - A New Circular Economy Action Plan - For a cleaner and more competitive Europe¹.

There are also pioneers in the Nordic region with national strategies and action plans in place, such as Denmark², Finland³, Sweden⁴ and Norway⁵.

The question that was interesting for GRUDE to explore more is how far awareness and knowledge about the circular economy has reached people in the public sector in the northern most parts of Finland, Sweden, and Norway.

¹ https://ec.europa.eu/environment/circular-economy/pdf/new_circular_economy_action_plan.pdf

² https://circulareconomy.europa.eu/platform/sites/default/files/eng_mfvm_cirkulaer_oekonomi_as5_uk_final_webb.pdf

³ <https://www.sitra.fi/en/projects/leading-the-cycle-finnish-road-map-to-a-circular-economy-2016-2025/#latest>

⁴ https://www.regeringen.se/4a3baa/contentassets/619d1bb3588446deb6dac198f2fe4120/200814_ce_webb.pdf

⁵ <https://www.norway.no/en/saudi-arabia/norway-sa/news-events/norways-strategy-for-developing-a-green-circular-economy/>

Surveys

A survey was conducted online to find out the state of knowledge and requests for activities to increase knowledge about circular economy. The target group for the first survey was the public sector in Norrbotten region of Sweden, and the invitation to participate was sent out to several hundred people. The survey was later even conducted in northern Norway (Nordland, Troms & Finnmark) and northern Finland (Lapland), and was sent out to several hundred people in the public sector.

In total, the survey collected 47 answers in Sweden (SW)⁶, 41 in Finland (FI)⁷ and 27 in Norway (NO)⁸. The results of course reflect mostly views from the public sector, e.g. employees at municipalities, politicians, and also some business supporting organisations, and this is one area of impact to create a circular economy, but there are of course many more that need to contribute to the transition.

Regarding the open question "Which are the two most relevant challenges for your municipalities development?" most respondents in NO answered business development and poor finances were the two challenges. Furthermore, the respondents see challenges related to climate change, as well as labor and recruitment. In FI vitality and jobs got the most emphasis, followed by population decline, the economic situation of municipalities, and long distances as main challenges. It becomes very clear that population development and skills supply are the two issues that seemed relevant to most respondents in SW. This was followed by resource efficiency, transport sector, and jobs.

So in conclusion the challenges of population decline connected to both job creation, attracting skilled employees, and the economic situation in the municipalities were main challenges for all regions. There are of course complex, interdependent issues at hand, that look slightly different given e.g. tax systems in the different countries. But overall the challenges seem alike.

⁶ The majority represented municipalities, business administration other public sector organisations, and also business supporting organisations.

⁷ The majority represented municipality; some particular department or municipal federation, politicians, members of the city council or boards. Answers came from 20 out of 21 different municipalities in northern Finland (Lapland).

⁸ Many of the respondents are managers, have a staff function or administrative support. Furthermore, several belong to the technical, planning and building or agricultural department.

Everyone who responded the second question in SW answered that they had heard of the concept of "circular economy" before, especially through the news and social media.

In FI 7 % said they had not heard of it before, 93 % had heard of it, mainly due to work experience, media, studies and education, just as people in NO answered.

22 % of the respondents in NO stated that they had never heard about circular economy before.

It is only 6 people who answered this, but still rather surprising and an indicator that the subject might have been less discussed at work, or mentioned in media in northern Norway, than Sweden and Finland. Also it can be assumed that most people which did not get in contact with the circular economy before, might have opted to not answer the survey at all.

The next questions was about which words, or sentences, respondents associate with the concept of circular economy.

Many people in SW link the concept to words such as cycles, sustainable development, life cycle, reduced emissions and recycling, etc. One person said that it associates the following with the concept of circular economy: *"Creating business that does not drain on the earth's resources and protect the climate"*.

In NO most respondents connected strongly to the words sustainable and reuse. And the following was also mentioned: cycles, future, green development, sharing and services, effective use of resources, resource utilization. One person also wrote *"Sustainable use of resources and positive "green" development with a focus on environment"*.

In FI some of the answers were quite long and the topic had been addressed from many angles. The most common recurring themes in the responses were recycling and sorting, and the reuse of materials and products. Leasing, renting and sharing were also mentioned in a few responses. Resource efficiency, ecosystems, overall optimization, distribution of goods and the longest possible lifespan of products were reflected in the individual responses. Sustainable development was mentioned in two responses. One person wrote *"Economic-physical ecosystems where materials and energy are utilized between processes. Nature serves as a good example."*

The versatility and content of the answers showed that there is a fairly good and basic knowledge and understanding of the topic among the respondent, few explained in more detail and showed a very good and deeper understanding.

But its also interesting to take a look at was was not mentioned. The following concepts were not at all lifted among the responses to the question of what one thinks of when you hear the concept of circular

economy, e.g. design, product as a service, holistic view, industrial symbiosis, planetary boundaries, bio-economy, value chain, procurement, renewable energy, biological diversity, ecosystems etc.

Overall it seems predominant that circular economy was considered as a synonym for recycling, reuse and utilization of waste. The responses showed a clear weight on those associations with the final stages of material cycles. Unfortunately few connected the concept to new business models, symbiosis, and none to regeneration of ecosystems, keeping products at their highest value and the design phase. This gives an indication that the latter mentioned aspects are not yet considered an important part of a circular economy, and that there is a lack of awareness and knowledge. It is an important reminder to frame the circular economy concept so that it clearly incorporates the important design phase, and regeneration of ecosystems - where more work needs to be done⁹.

Of course it is a tricky issue with definitions and meaning behind buzzwords¹⁰, and given there is scientific paper that states that circular economy has over 114 definitions¹¹, it does not make the complex issue easier. Generally there are different words used to describe the same thing, and all in all it is not as relevant to use the right buzzword, but it is important for each and every actor to define what is meant by circular economy in their organisations and work - and make this clearly understandable to all stakeholders. Best would of course be to describe positive impacts, and measuring different parameters over time, to show the transition into a circular economy (e.g. measures for CO2 emissions, wellbeing, waste reduction etc.).

A recommendation is to follow the leading actor in the transition - the Ellen MacArthur foundation¹², who worked on a clear definition, and has many examples and resources available for both public, private, and educational sector.

*"Circular economy is a vision for an economy that is restorative and regenerative by design."*¹³

⁹ A recent study estimates that only 2-3% of the Earth's land surface should now be considered "ecologically intact".

<https://www.weforum.org/agenda/2021/04/study-shows-only-2-3-of-earth-s-land-is-ecologically-intact/>

¹⁰ If you want to deep-dive into the issues of definitions and goal conflicts, read the article by Swedish Research Institute

RISE: https://www.ri.se/sv/berattelser/ar-cirkulart-alltid-hallbart?utm_campaign=2021-material&utm_content=text&utm_medium=social&utm_source=linkedin&utm_term=verkligheten

¹¹ <https://www.sciencedirect.com/science/article/pii/S0921344917302835#tbl0010>

¹² <https://ellenmacarthurfoundation.org/>

¹³ <https://ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview>

Most of the people who responded to the survey estimated that their own knowledge of the circular economy was relatively high. In SW 15% deemed their own knowledge *very good*, whereas in FI it was 10% and in NO 5%. It's a visible trend in the answers that respondents deem their own knowledge higher, in Sweden the majority answered they had good to very good knowledge, in FI the majority is on good and average, and in NO the majority is on average and lower levels of knowledge.

There were also the same scale to estimate colleagues and municipal target groups knowledge, which was generally deemed lower, and showed a need for more activities to increase knowledge. In NO no one deemed the colleagues or target group to have *good* or *very good knowledge*, at all. For the target group the answers were *low knowledge* with 70% in NO, and 56% in SW, and 28% in FI. In FI the target group was deemed to have average knowledge, a lot higher than the other two countries' results. This might reflect also the potentially more widespread awareness in FI.

These results indicate that more information sharing and capacity building regarding circular economy is highly necessary in all three countries, especially for public sector employees, but also their target groups like citizens, businesses & business coaches etc.

Regarding different types of activities to increase knowledge, the respondents had to choose from a list of alternatives.

Most popular as an activity to learn more were online courses (NO 77%, SW 70%, FI 63%).

Digital courses are probably a favoured activity, given the ongoing corona pandemic and the digital transformation the meeting culture has experienced in 2020 and 2021. In addition, digital platforms are a good solution for travel-free meetings and help to connect people in the countryside with each other and with the larger contexts, locally, regionally, nationally, and internationally.

65% SW, 41% NO, 8% FI could imagine *regular information opportunities about circular economy topics* (not specified if those should be digital). Regular meetings provide benefits by also creating groups of people locally who learn together and create knowledge and trust together, which are important aspects in order to then be able to implement circular solutions, which often require collaboration across sector boundaries. Hence it is important to create meeting places for both public, private, and third sector to learn and mingle together, which could easily be facilitated by e.g. business development departments within municipalities.

In FI *creating a local network* was also the second most popular answer with 55%, which was interesting for 26% in SW.

Workshops with a focus on creativity also was a very relevant option for many respondents, 48% SW, 47% FI, 36% NO.

The option of *regional study visits* or *national study visits* also got a lot of interest in SW 45% in NO 32%. Since it is often easier to grasp and understand circular solutions by actually seeing them live, it is a good option to plan for study visits, e.g. with local networks to local actors that produce or create services with circular business models. That's also one way to create more awareness and local pride, and makes ideas being spread more easily.

Circular business models (product as a service, remanufacturing, sharing services)

Mapping of flows (energy, water, materials, residual products to find synergies)

Renewable energy supply

Transport & Logistics solutions (eg co-deliveries, reverse logistics, etc.),

Circular solutions for public procurement

Biodiversity & regeneration of natural systems

Cultural and social diversity

The overview above shows the options for the respondents when it comes to topics you want to learn more about. The question was multiple choice, where most also chose several options. The majority with 68.1% SW, 59% FI, 45% NO

opted for *circular business models*, followed by 57.4% SW, 50% NO, 43% FI for *mapping of flows*. Circular solutions for public procurement was also highly ranked with 60% NO, 56% FI, 43% SW.

The other topics such as renewable energy, transport and logistic solutions, biodiversity and social diversity also seemed to be of interest to between half and a third of respondents.

One rather surprising result was that 60% of respondents in NO choose *biodiversity and regeneration of natural systems*, as well as *circular solutions for public procurement*, making these subjects the most popular choices in NO.

Based on these results, there seems to be interest in all the above-mentioned subjects, which should be further looked into in future educational initiatives, and e.g. online meetings and study visits.

Those who responded the last question believed that everyone, incl. companies and entrepreneurs, municipalities and municipal employees have a need to increase knowledge about the circular economy. The business community, decision-makers, politicians are also mentioned as groups, as well as young people, students and pupils.

Many have realised the importance of this urgent issue of adapting society to be able to live within the planetary boundaries, both at the local and global level.

Examples

In the analysis of the surrounding world, inspiring examples have been compiled from e.g. other regions, and municipalities within and outside of Sweden, Norway and Finland, with the aim of finding out more about innovative solutions and experiences from implementing circular solutions, or promoting the transition to a circular economy in various ways. Several examples of municipal work are highlighted in the countries respective reports, e.g. with strategies and action plans for circular procurement, mapping of initiatives and flows, and also innovative circular business models, such as rental of solar cells, or lighting as a service, second-hand shopping malls and mushroom cultivation in a former mine. Three relevant examples are attached in the appendix.

Suggestions

Circular economy has great potential, though being a concept combining complex issues, therefore it is important to make the topic easy to understand and politically interesting and easily accessible to the public.

The public sector has a clear role to play through its social mission, and the Nordic regions even more so through the task of driving the regional development work. Strategies and actions plans in combination with tools such as procurement and funding are good tools for the public sector, to demand and support the development of circular solutions and thus stimulate the market to deliver these solutions locally. In addition, the public sector should invest more in dialogue, internally and externally with the business community and with academia and education, to e.g. give innovative solutions the opportunity to be tested. This collaboration is also something stated and requested by those who responded to the surveys.

It is crucial that the public sector cooperates, between sparsely populated municipalities and coastal cities, and creates a common vision and takes an active driving role. A clear and well-communicated direction creates conditions for the stakeholders' own long-term initiatives to implement circular thinking and solutions.

The public sector should take an active role in creating an attractive and sustainable region, where circular solutions contribute with positive effects for people, the environment and business. Another relevant activity is to talk about their ambitions outside the region, in national and international contexts, and to highlight actors and stakeholders who already today actively contribute to a circular adjustment in the regions.

The results of the surveys indicate that more information sharing and capacity building regarding circular economy is highly necessary in all three countries, especially for public sector employees, but also their target groups like citizens, businesses & business coaches etc. Specific topics to highlight further through online meetings, local networks, workshops and study visits are mentioned above. The surveys have also gotten more locally relevant input from respondents, e.g. highlighting food security and self sufficient as subjects to be worked with further.

A recommendation for circular procurement is that knowledge increase is not only needed in procurement departments, but is necessary for every employee with responsibility and opportunities for purchasing in the public sector. Only in that way is the mindset to be shifted from old behaviour of buying at lowest prices, to creating requirements including circular measures (CO2 emissions, local impact, wellbeing, ecosystems regeneration, waste preventions etc.) (e.g. Umeå municipalities work to include climate and circular measures in procurement¹⁴).

Municipalities can both create better conditions for themselves, for business, and also for citizens to adopt new consumption habits. Both through nudging¹⁵, and to make visible efforts for behaviour changes. For this aspect it might be interesting to follow the work of one of Swedens expert groups on shifting norms from linear to circular¹⁶.

For the business community municipalities can do a lot by promoting circular procurement, creating advisory initiatives for local companies and business coaches¹⁷, and creating financial support for circular solutions. Municipal business departments can also be a great catalyst to bring together different actors from private, public and third sector to learn together, collaborate and create local networks to accelerate innovation in business models for the circular economy.

A first step in that direction is to map existing organisations with circular solutions at the local or regional level, e.g. through the Circular Regions platform¹⁸, and at the same time collect information from them about barriers, enablers and effects of their circular work. With this data as a basis, it will be easier to see which instruments the public sector can use to promote existing circular solutions, create matchmaking, see what incentives are needed to create new circular business models, and how best to support the private and third sector.

¹⁴<https://www.umea.se/byggaboochmiljo/samhallsutvecklingochhallbarhet/klimatmiljoochhallbarhet/klimathansyniupphandling.4.1c16b00a1742340e02e941.html>

¹⁵ <https://beteendelabbet.se/Nudging/vad-aer-nudging/>

¹⁶ <https://delegationcirkularekonomi.se/aktuellt/nyhetsarkiv/2021-09-08-expertgrupp-tar-sig-an-normer-som-styr-linjara-system-och-linjart-tankande>

¹⁷ <https://www.mynewsdesk.com/se/northswedencleantech/pressreleases/utbildning-i-cirkulaera-ffaersmodeller-staerker-norra-sveriges-konkurrenskraft-2733334>

¹⁸ <https://circularregions.org/>

Showing the results and making organisations with circular solutions visible will attract local, regional, national, international attention, which can lead to increased talent attraction and thus contribute to influx and skills supply, two of the most important challenges highlighted by those who responded to the surveys.

The public sector should also map flows of materials, energy, water, waste, emissions, etc. in geographically limited areas or across sectors, to create a clear data base. It can show where there are the biggest challenges locally e.g. issues linked to carbon dioxide emissions, or unused waste streams that are incinerated today. In this way, one can take a closer look at different sectors and their consumption, and then in the next step look at potential and opportunities, both in sectors and across sector boundaries for finding synergies and closing cycles, such as reduce food waste in the food chain.

When it comes to municipal premises and properties, vehicles, machines, furniture, workshops, etc., the public sector can e.g. map all underutilized resources. There is a lot of value in underutilized resources, which can be developed in various beneficial ways, both of which save costs and create added value.

One example would be if the municipality invests in new electric cars to reduce emissions from its own transport needs, these same cars can be made available to businesses and public out of office hours, thereby making it easier for people to rent electric cars during evenings or over the weekend (e.g. Skellefteå Kraft carpool¹⁹). Thus the municipality becomes an enabler for fossil-free transport. The next step would be to invest in Maas - mobility as a service, and include logistics & reverse logistics to collaborate between private and public sector (e.g. älskade stad²⁰).

Solutions should promote access over ownership, through sharing, renting, leasing or procurement of functions, rather than products.

Another example can be municipal re-use center which can create meaningful employment and opportunity for work training, and increase social sustainability as well. In addition, such municipal activities can also facilitate upcycling and reusing, even through repair and innovation of waste (upcycling: eg rags become rag rugs). Municipal collection of "waste" needs to provide incentives for citizens to leave things they themselves do not benefit from to reuse-houses, instead of being thrown away. Various measures, such as decorating the municipality's own offices and premises with reused items, and reuse-shops can also improve access and upgrade the value and status of "reuse".

There are many successful measures that show that it is more attractive to both live and work in sustainable communities. The ongoing digital development also facilitates a better supply of skills, no matter where you are. The municipalities that invest in the transition to a circular economy will be more

¹⁹ <https://www.skekraft.se/om-oss/hallbarhet/en-100-procent-fornybar-elbilspool/ta-av-vara-bilar-bara/>

²⁰ <https://www.alskade stad.se/>

attractive both for current residents to stay, and for the people who move to northern Scandinavia to enjoy nature and the high quality of life in sustainable communities.

According to Johan Rockström²¹, Stockholm Resilience Center, and research on planetary boundaries, we must stop investing in fossil-dependent industry, invest in healthy and sustainable food production, safeguard carbon sinks, water flows and the remaining biodiversity. In addition, strong incentives and changes in law and rules can create major disruption for the countryside, e.g. cost of carbon dioxide emissions, stopping of fossil fuel subsidies, changed taxes on virgin material and labor, etc. which is being discussed more and more.

Overall, there is more inspiration and detailed information to acquire from e.g. the Swedish Procurement Authority²² and Sweden's new national strategy, Norway's new strategy²³, Finland's national road map²⁴ as well as the new Swedish national action plan for circular economy²⁵.

²¹ <https://sverigesradio.se/avsnitt/1417244>

²² <https://www.upphandlingsmyndigheten.se/kunskapsbank-for-offentliga-affarer/trendens/2018/mal-6--upphandling-som-verktyg-for-en-cirkular-ekonomi/fyra-strategier-for-cirkular-upphandling/>

²³ <https://www.regjeringen.no/contentassets/f6c799ac7c474e5b8f561d1e72d474da/t-1573n.pdf>

²⁴ <https://www.sitra.fi/en/articles/worlds-first-national-roadmap-set-out-starting-point-finland-circular-economy/>

²⁵ <https://www.regeringen.se/informationsmaterial/2021/01/cirkular-ekonomi---handlingsplan-for-omstallning-av-sverige/>

APPENDIX Examples

Sjy Seaweed - Norway



In Inner Kvarøy, an island in Lurøy municipality along the coast of Helgeland, we find Sjy Seaweed²⁶, a business aiming to contribute to sustainability by making vegan seafood from seaweed and kelp.

Seaweed and kelp can be produced without using land area, fresh water, fertiliser and chemicals, only living on sun light and the nutrients available in the sea water. As seaweed and kelp binds CO₂, it has received increasing interest due to the potentials in mitigating

climate change effects and marine pollution, and the ability to cleanse areas threatened with over-fertilisation from agriculture, industry, and aquaculture.

In addition to contributing to environmental sustainability, Sjy seaweed also aims to contribute to local growth with an expressed goal of contributing to creating local jobs, set out for the future. Kvarøy has merely about 75 people settled, but the strategic location and the surrounding resources has formed the basis of existence, both for people and businesses.

Also located on Kvarøy is Kvarøy Fiskeoppdrett, a salmon fish farm with over 20 employees, producing about 7.5 thousand tons of gutted salmon yearly. The co-location and co-operation with Kvarøy Fiskeoppdrett has been an asset to Sjy Seaweed, e.g. in accessing the American Whole foods-market. “We are very happy to have the fish farm nearby that we can make use of. It is circular economy in its purest form”, Founder Leonore Olsen said to NRK.

The industrial potential for seaweed and kelp is significant. A report from SINTEF estimates the production of seaweed and kelp to reach 20 million tons by 2050, at the value of 40 million NOK. However, seaweed and kelp are not yet included in the Norwegian seawood law, thus having yet to receive the status of “sea food”. This results in e.g., complications on declarations in customs, and

²⁶ <https://www.sjyseaweed.no/>

marketing of this new product and local produce, and Olsen has herself stated that this is “suffocating” the seaweed industry.

Aurora eMotion - Finland



[Aurora eMotion](https://auroraemotion.com/)²⁷ is a Finnish spinoff company and a service provider that arranges electric snowmobile safaris, first in the world. Development of the eSled, an electric snowmobile had started already 10 years ago in the Lapland University of Applied Sciences.

eSled safaris are a way to experience the wintry nature with silent electric motors. Secondly, driving of electric snowmobile is CO₂ emission free, as the company uses only green energy. One of the main principles when building

circular economy is to eliminate waste and pollution.

The Aurora eMotion concept implements also other circular economy aspects. The company does continuous development of both technology and operation. Company also wants to increase the environmental awareness for their guests. Local welfare is also taken into account, for example by doing close co-operation with local small entrepreneurs, using food and drink from local sources and using local, well-skilled labour force.

Company does not provide snowmobile resale for private customers. Instead, business relies on safari services, where the goods are not privately owned, they are rented together with the guiding service. On that manner the utilization rate of the vehicles stays on higher level.

²⁷ <https://auroraemotion.com/>

Brighteco - Bollnäs municipality - Sweden



Bollnäs municipality has made a groundbreaking decision by purchasing light as a service instead of buying lamps, the provider is Swedish company Brighteco²⁸.

On Tuesday, April 10, 2018, the innovative procurement was presented. This means that first and foremost preschools and schools in Bollnäs municipality get a new supplier of light. Light that is purchased as a function and adapted to their needs. The search for a good solution for

lighting gained momentum when Bollnäs municipality was to replace energy-intensive and aging fluorescent luminaires that are installed in schools today. Luminaires with energy-efficient LED lighting began to be installed but students and staff were not entirely happy with the light.

“The light in the premises is an important aspect for the children and staff in the school and preschool to feel good and

perform at the top. We think that users should be involved and decide what is good light and in and with this agreement, they can do it”, says Johan Larsson, project manager at Bollnäs municipality.

Bollnäs municipality is pioneering with the way to carry out functional procurement!

“I would like to say that Bollnäs municipality is the bravest municipality in Sweden that wants to invest in this type of service. This means that we can change how an organization thinks and how to make it easier to drive innovations in the public sector”, says Joel Smedberg, founder and owner Brighteco.

“The agreement, which means that we rent light as a service, means that we do not have to lock ourselves into a type of lighting in times when the development in LED lighting is fast and continues to develop. The supplier adapts and replaces the light based on the needs that exist. This is groundbreaking! In addition, we save both time and money and at the same time get the latest and based on the users' needs the light that suits them best,” says Johan Larsson, project manager at Bollnäs municipality.²⁹

²⁸ <https://www.brighteco.se>

²⁹ <https://www.bollnas.se/index.php/88-aktuellt/2525-nytt-ljus-med-manga-foerdelar>