

# Green Financing Report

Lyse AS – 30.04.2021



2020





Foto: Negative - Kristof Ryde

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# More than a Company

Lyse plays an essential role in the energy transition and digitalization of society in Norway. For over 100 years we have contributed to sustainable growth and societal development, by delivering energy and building critical infrastructure. Today we are one of the largest hydropower producers in the country and a leading telecommunications company with more than 700,000 customers. Our goal is to continue to grow over the next decade.

Our vision is to be more than a company for our community, shareholders, employees and partners. With this perspective we seek to grow by creating mutual value in our relationships, giving back to society and taking a responsibility for the future of new generations. That is why we challenge ourselves and others to make a difference for the environment.

In addition to setting a goal to be climate neutral in 2030, we see it as our responsibility to contribute to the climate-related and environmental efforts of our municipal owners and the Norwegian government. To gain a better understanding of the challenges and opportunities, Lyse has commissioned an analysis of the greenhouse gas sources in Rogaland. Based on this insight we advocate increased production of renewable energy, increased energy efficiency, and efforts to reduce carbon emissions from industry, transportation and agriculture. It is clear to us that more measures are needed to meet the ambitious goals set by the European Union, Norway, as well as local municipalities.

We have been active in the green finance market since 2017 and our second framework was issued in November 2020. Lyse will continue to utilize the green framework to finance exiting projects which will have a direct or indirect impact on the de-carbonization of society, while improving measurements and reporting, to ensure transparency for our investor and key stakeholders.

Eimund Nygaard, CEO Lyse Group



# About Lyse

Lyse is a Norwegian industrial group and multi-utility company with activities in energy, telecommunications and infrastructure. Owned by 14 municipalities and with historic roots in hydropower, Lyse has been an integrated part of the societal and industrial development of its home region Rogaland in South-Western Norway for several decades. Lyse has a strong focus on energy and technology, to increase sustainable growth and to develop new future-oriented solutions.

Green Bonds Allocated  
**1 750 000 000 NOK**

**Total Renewable Energy investments**  
**700 500 000 NOK**

66GWh of new annual renewable energy production  
20 790 tons CO2 reductions from new production



**Total Green Digital Solutions**  
**498 200 000 NOK**

12 581 new customers with high speed broadband access  
1 471 KM of new infrastructure



**Total Pollution Prevention and Control**  
**141 000 000 NOK**

60 GWh of climate neutral heating to new customers  
6000 M of new infrastructure  
11 100 tons CO2 reductions yearly



**Total Energy Efficiency investments**  
**410 300 000 NOK**

Upgrade from 50 kV to 132 kV grid  
7x decrease in grid loss



# Strategy for sustainable growth

Sustainable growth has been an integral and natural part of Lyse's mission due to the company's roots in energy, infrastructure and municipal ownership. Environmental matters have strategic and operational attention in all levels of the organization. The group strategy towards 2030 underlines the ambitions in this area. Lyse is a member of the UN Global Compact and has committed to becoming climate neutral in our own all our own activities within the next decade. The project portfolio will contribute to significant emission reductions in the region and beyond. At the same time, the company will continue to deliver critical infrastructure to facilitate the electrification and digitalization needed to reach a more sustainable society.

## Main Focus areas for sustainable growth

Lyse has published a sustainability report for 2020 as an integrated part of our annual reporting. In accordance with the framework used to make this report, the Global Reporting Initiative, material topics were chosen due to their relevance to our main stakeholders and to Lyse's ability to create value in the future. These can be divided into four groups; Lyse as a safe and fair employer, contribution to society, business ethics and anti-corruption and climate gas emissions and environmental impact. By focusing on these topics we contribute to 10 of the UN's 17 sustainable development goals. More information can be found on our webpage [www.lysekonsern.no](http://www.lysekonsern.no) as well as in the annual report.



# Standards and Guidelines

## ICMA Green Bond Principles & LMA Green Loan Principles

Lyse's Green Financing Framework is based on the 2018 version of the Green Bond Principles issued by International Capital Markets Association as well as the 2018 version of the Green Loan Principles issued by the Loan Market Association. These are both voluntary principles to follow, which we believe adds to the transparency and integrity of our Green Financing Framework towards our investors and other stakeholders. The green financing market is still in its relatively early stages of development. Lyse intends to be aligned with any future developments with market standards, and as such our Green Financing Framework may be updated to align with the new standards in the future.

## Nordic Public Sector Issuer's (NPSI) Position Paper on Green Bond Impact Reporting

This Green Financing Report for 2020 has, where possible and relevant, been prepared in alignment with the 2020 version of the NPSI Position Paper on Green Bond Impact Reporting.



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# Allocation & Impact Reporting Green Bonds

## Assumptions

The Split between Financing and Refinancing is based on year of project investment and issuance of bond, meaning investments made in the same year of bond issuance are classified as Financing, and investments made in years prior to bond issuance are classified as reinvestments. Many of Lyse's projects financed under the Green Financing Framework are multiyear projects, so the share of Financing and Refinancing are indicated for each project where applicable. Lookback period is 3 years, which means investments from 2018 and 2019 may also have been included in the 2020 allocations. It is shown where this has been the case.

When allocating funds to the specific investments, we have assumed a prorata allocation to each bond issued in 2020. In regard to the bond issued in 2017, (ISIN: NO0010790769), this was issued under the previous Green Bond framework which only allowed for investments in Renewable Energy and was already fully allocated to the Lysebotn 2 project which was finalized in 2018. No change has therefore been made to the allocation concerning this bond.

For our investments in the electrical grid we have not included any specific, quantitative measures for the impact reporting this year. This is still an area where we are developing and exploring what types of measures can be estimated with a high degree of accuracy and provide relevant

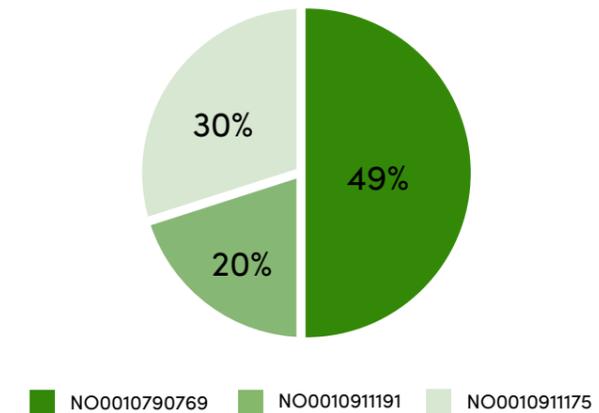
information to our investors. We have for the Energy Efficiency section therefore provided a bit more qualitative information about how the investments are enabling the electrification of our society. For our investments in fiber optics network we have not included any measures on CO2 emission reduction or other environmental impact measures this year. We will continue to focus on this going forward and introduce in future reporting when we have reliable data to report on.

Where we have included impact data, we have adjusted the impact numbers so that we only report the benefits from the share of the projects financed under the Green Bonds. Indicators showing CO2 emission reductions are all referring to avoided emissions and we have applied the combined emission factor from the Position Paper on Green Bonds Impact Reporting 2020 of 315gCO2/Kwh

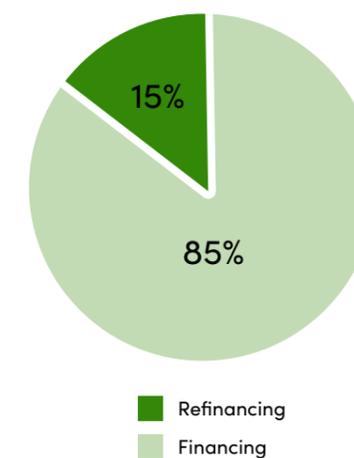
## Allocation & Impact Reporting

Green Bonds Issued				
ISIN	Outstanding Amount	Issue Date	Maturity Date	Allocated Amount
NO0010790769	500 000 000	18.04.2017	18.04.2023	500 000 000
NO0010911191	500 000 000	07.12.2020	07.12.2028	500 000 000
NO0010911175	750 000 000	07.12.2020	07.12.2027	750 000 000
<b>Total Green Bond Issuances</b>	<b>1 750 000 000</b>			<b>1 750 000 000</b>

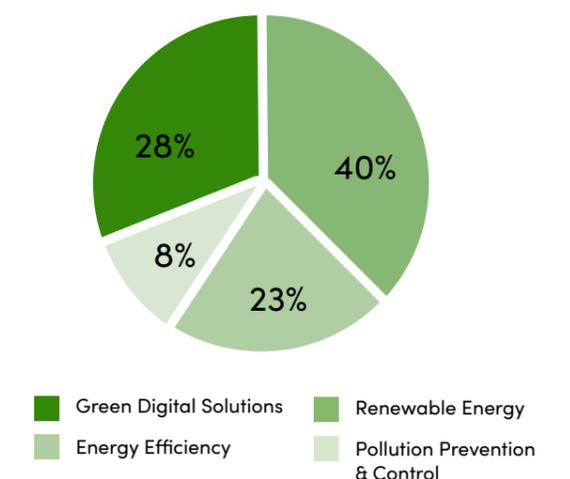
### CO2 reduction split by bond



### 2020 Allocation



### Total Green Bond Allocation by Category



## Renewable Energy

Lyse is the 3rd largest renewable energy producer in Norway with an annual production capacity of 9.5 TWh\* and an installed capacity of 2379 MW. The power plant portfolio consists of properties of varying age; therefore, rehabilitation and upgrades are important parts of the investment program in Lyse to ensure extended life of the powerplant and stability in performance.

In the current year allocation for new power generation projects, 32.6Mill NOK is allocated to the Rafoss powerplant construction. Rafoss is a small 10MW powerplant addition to an existing river hydrological resource. Rafoss will contribute 38 GWh in the Sira-Kvina power company, of which Lyse has a 41.1% share, as well as a new fish pass for salmon that will increase the possible river run for salmon with approximately 6 km.

The remaining allocation of 2020 investments are for rehabilitation and upgrades projects to existing powerplants and the Lyngsvatn dam, the purpose of which is ensuring the stable and secure operations of the assets and extending the lifetime of the power plant and dam.

For the Impact calculations, we are including the additional power generation and reduction of CO2 emissions, only where production capacity

has been increased. We have included total production numbers for these plants, to highlight the importance of their continued contribution to renewable energy production. No new production has been included.



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Project	Amount*	Year of Allocation	Financing/ refinancing	Renewable Production Gwh*	New Renewable Production Gwh*	CO2 (tons) Reduction from new Production***
<b>New Power Generation Projects</b>						
Lysebotn 2	500 000 000	2017	Financing	1 500	50	15 750
Rafoss Powerplant**	32 600 000	2020	Financing	16	16	5 040
<b>Rehabilitation &amp; Upgrade Projects</b>						
Kvilldal Powerplant	10 000 000	2020	Financing	562		
Hylen Powerplant	7 300 000	2020	Financing	117		
Saurdal Powerplant	10 400 000	2020	Financing	250		
Solhom Powerplant	44 200 000	2020	Financing	286		
Tonstad Powerplant	40 600 000	2020	Financing	1 562		
Lysebotn 2 Powerplant	11 500 000	2020	Financing	1 500		
Lyngsvatn Dam	43 900 000	2020	Financing			
<b>Total Renewable Energy Investment</b>	<b>700 500 000</b>					

\* For Powerplants with less than 100% ownership, Lyse's share of the total production and investment is included. Est. Annual Production.

\*\* New Powerplant in connection to existing hydrological resources. Exp. Completion 2021.

\*\*\* Emission factor for electricity: Combined Margin 315g CO2/kWh. Nordic public sector issuers: Position Paper on Green Bonds Impact Reporting, Februar 2020.

## Energy Efficiency

Investments in both the Regional and Local distribution network are included in the 2020 allocation. The investments in the grids are necessary to ensure improved efficiency in the grids and to allow for more renewable energy production to be connected to the grids. In some areas the grid has outlived its technical efficiency, so upgrades are essential to ensure continued, stable performance.

In 2020, multiple larger upgrades were done on the regional distribution network, both in order to facilitate for future increase in energy demand, but also to connect new producers of green energy to the grid. Investments were made in expanding and upgrading existing grid infrastructure, as well as building new substations. Renewed components in the grid show a longer estimated life expectancy of material.

These changes increased security of energy supply through connection with the transmission network, and increased the flexibility- and efficiency of the grid. This also meant the grid is now capable of handling the large effect coming from a new and upgraded hydro powerplant in Lysebotn II, as well as being prepared to facilitate for other renewable energy sources. Some of the upgrades are essential towards supplementing the grid throughout the construction period of upgrading the remaining parts of Jærnettet from 50 kV to 132 kV.

When upgrading the grid from 50 kV to 132 kV it is estimated that grid loss is reduced by approximately seven times, holding other factors equal. Not only will a change of transformer decrease the net loss on the grid, but a new transformer will also have a lower energy loss than the previous one. Another benefit of newer transformers is the ability to transform the same amount of voltage more quietly than older transformers, thus having less impact on the surrounding environment while in operation. An update in the grid paired with upgrade in the substations makes us capable of transferring and delivering electricity and renewable energy to homes and businesses more efficiently.

The distribution grid is short on capacity for handling the current and future increase in electricity consumption. To ensure a stable power supply, new and reinforced cables and power lines were built within the distribution network. Further investment has gone towards connecting businesses, increasing overall capacity in order to handle the current- and future demand from transportation sector, connecting solar panels, wind energy and hydropower, and upgrading the grid in order to reduce the loss. Amongst the expenditure was also joint trenching with other companies, in order to reduce the impact of digging twice in the same area.

Project	Amount	Year of Allocation	Financing/ refinancing
<i>Distribution Grid</i>			
	124 000 000	2020	Financing
<i>Regional Grid</i>			
Bjerkreim Substation	31 800 000	2020	Refinancing
Opstad Substation	88 000 000	2020	76% Fin/24% Refi
Jåttå Substation	35 000 000	2020	69% Fin/31% Refi
Tronsholen Substation	50 000 000	2020	70% Fin/30% Refi
Fagrafjell Substation	11 600 000	2020	Financing
Bjerkreim-Kartavoll Grid	15 900 000	2020	Financing
Kartavoll-Opstad Grid	54 000 000	2020	39% Fin/61% Refi
<b>Total Energy Efficiency Investment</b>	<b>410 300 000</b>		

## Pollution Prevention and Control

Lyse has in 2020 finalized the work to build the main infrastructure of district heating in the Stavanger and Sandnes region. This has been a multiyear project which will ensure climate neutral heating to large areas in the region going forward. The infrastructure in the municipalities of Stavanger and Sandnes was finalized in 2020 with a total investment of 208Mill NOK from 2018–2020.. The investment is partly funded by the state enterprise Enova through an energy and climate fund. This, combined with end-user contributions, leaves Lyse with a net investment of 141Mill NOK for the main district heating infrastructure in Sandnes and Stavanger.

The investment in district heating has resulted in a total of 6000 meters of infrastructure which supplies customers (public and commercial buildings, and private households) with climate neutral heat from waste and biogas incineration.

Establishing the infrastructure enables Lyse to phase out and/or perform fuel switching in local heating centrals that are based on natural gas. For example, in 2020 the local heating central in Stavanger (Urban sjøfront) was connected to the district heating network. The local heating central, which uses approximately 14 GWh biogas annually will now be shut down. In Sandnes, another local heating central, using approximately 10GWh, was also shut down as a result of this project.

The biogas, which is a local and limited resource, can now be used in decentralized heating centrals fueled on natural gas. The exchange of 24 GWh natural gas to biogas in decentralized heating centrals reduces CO2 emissions by 4 800 tons annually (emission factors according to Norwegian Environmental Protection Agency of 202gCO2/GWh for Natural Gas).

The district heating infrastructure to Stavanger will according to Lyse’s projections supply 43 GWh to new customers by 2050 (conversion of existing customers excluded). The accumulated energy consumption annualized is 32 GWh. For the district heating infrastructure to Sandnes the annualized energy consumption for projected new customers is 28 GWh.

The alternative heating option for new district heating customers is a combination of heat pumps and direct use of electricity. Use of electricity with an average COP-factor of three (some buildings will not have heat pumps) is assumed as alternative energy supply for the average customer. In other words, the 60 GWh of district heating projected supplied to new customers in Stavanger (32) and Sandnes (28) substitutes a projected electricity consumption of 20 GWh. This equals an emission reduction of 6300 tons of CO2e based on the benchmark of 315 gCO2e/kWh for electricity.

<i>Project</i>	<i>Amount</i>	<i>Year of Allocation</i>	<i>Financing/ refinancing</i>	<i>GWh replaced local heating centrals</i>	<i>GWh replaced alternative heating</i>	<i>CO2 (tons) Reduction*</i>
Stavanger & Sandnes District Heating Network	141 000 000	2020	51% Fin/49% Refi	24	20	11 100
<b>Total Pollution Prevention and Control</b>	<b>141 000 000</b>					

\* A factor of 202gCO2/KWh has been used for the local heating central as it is a direct replacement for Natural Gas; for alternative heating conversion a factor of 315gCO2/KWh has been used, as no specific local factor is available.



Foto: Richard K. Johnson

## Green Digital Solutions

Lyse's telecom business consists of our fully owned digital-TV and internet service provider Altibox AS, several fully or partially owned fiber infrastructure companies in Norway and a fully owned fiber asset company. Our business also includes long term partnership with other fiber infrastructure companies distributing Altibox' services. Together with our partners, Lyse holds a 47.3 % market share for fixed internet via fiber in Norway (B2C) as of 30 June 2020, making us the largest fiber network provider in Norway.

2020 has been a busy year for the Telecom segment in Lyse, where we have continued to expand our fiber optics network to new customers, enabling more high speed broadband based solutions to homes and businesses. The Altibox partnership as a whole increased the number of customers by 83 566 for the year, leading to a

total of 708 913 customers receiving Altibox services by year end. Of these customers, 126 000, a net increase of 13 243 in 2020, are owned by Lyse Fiber and Signal Fiber. These are the 2 wholly owned companies, to which funds raised under the Green Financing Framework have been allocated. In order to enable this customer growth, a total of 1 548 kilometers of fiber optics network was built.

2020 also saw the launch of the new fiber optics cable connecting Denmark (Hirtshals) and Norway (Larvik), and further on to Oslo. The cable was ready for service in November and the distance from Larvik to Hirtshals was 173km. This new infrastructure is an important part of the Altibox Carrier infrastructure and will further enable the establishment of datacenters to run on clean renewable energy. More details of this investment are found in the Case Study.

Project	Amount	Year of Allocation	Financing/ refinancing	New Customers 2020*	Km of new Fiber 2020*
Skagen Fiber, Oslo-Hirtshals	133 000 000	2020	Financing		173
New Fiber Optics Network	365 200 000	2020	Financing	12 581	1 471
<b>Total Green Digital Solutions</b>	<b>498 200 000</b>				

\* 95% of eligible green investments in Fiber Optics Network from 2020 has been included in the current allocation. Number of new customers and fiber laid reflects this share of total investments.

## Case Study

Skagenfiber, a fully owned subsidiary of Lyse AS, completed a new fiber optic cable in 2020. The fiber cable establishes the first direct connection between Norway and Denmark and is a part of Altibox Carrier large fiber network across Europe (Euroconnect-1). Skagenfiber represent the shortest logical route from Norway to the European continent with low latency and a high degree of physical security.

- This new cable will provide increased national data security and make Norway an even more attractive location for establishing datacenters, said Minister of Regional Development and Digitalization, Linda Hofstad Helleland.

The Skagenfiber West system is a 173 km cable with new landing stations in Hirtshals (Denmark) and Larvik (Norway). The cable has 48 passive fiber-pairs designed to transport over 40 Tbit/s per fiber pair, for a total capacity of 1920 Tbit/s.

The datacenter capacity in the world is continuously expanding in line with increased digitalization. According to the European Commission digital technologies may contribute to reduce global GHG emissions with 15 % by 2030. To realize the climate reduction and assure a green digitalization it is essential that the energy intensive datacenters are established with access to renewable energy. The new overseas cables will connect Norway to important

digital hubs in Europe and further enable the establishment of large datacenters in Norway. This will be important from a climate perspective, due to the high share of renewable energy in the Norwegian energy mix compared to the majority of alternative locations.

In addition to the cable itself being state of the art, the actual laying of the cable was also somewhat of frontier work. The normal process of laying cable under water is to first lay the cable, and then afterwards come out with a second boat and a remote-controlled submarine to ensure the cable ends up underground. In the Skagen Fiber project, they did a simultaneous lay and trench using only one boat. This was possible through new technology using a waterjet, which cuts a 30cm wide and 2m deep trench where the cables were laid, well protected from anchors and fishing equipment. This was the first time this technology was used in such deep waters.



# Contributions to UN Sustainable Development Goals (SDG's)

Lyse refers to the UN Sustainable Development Goals as an overarching framework to assess how our activities are connected to sustainability. For four of the SDG's, we have identified particularly positive impact from the investments under the Green Financing Framework. These four are **Goal 7**: Affordable and Clean Energy, **Goal 9**: Industry, Innovation and Infrastructure, **Goal 11**: Sustainable Cities and Communities and **Goal 13**: Climate Action.



The continued investments in new hydro power generation, district heating infrastructure, as well as maintenance investments in existing powerplants, ensures improved lifetime performance and continued production of affordable and renewable energy. Investments in district heating infrastructure also allows for the closure of local heating centrals based on natural gas, freeing up the limited resource of biogas, to be used in decentralized heating centrals.

Continued investments in the electrical grids is critical to ensure reliable and efficient distribution of power. The reliance on the grids will only increase as the electrification of society continues to develop. In sustainable and smart cities, where much of the transportation is being powered by electricity, uninterrupted services become key for a functioning society. Lyse has in 2020 made the necessary investments in both the district and regional grids to ensure we continue to have among the lowest outage time in the industry.



The investments Lyse is making in the fiber optic infrastructure is an important facilitator for continued innovation across businesses and geographies. We have seen this more than ever in 2020 during the Covid pandemic, where high quality, digital infrastructure has been a key for continued operations and innovations locally and globally when people were forced to work from home and communicate digitally. The investments in the new fiber optics cable between Denmark and Norway will also make Norway less vulnerable for outages in key connection points in and out of the country, in addition to facilitate the establishment of new industries such as datacenters. Digital technologies are integral to achieving the necessary reduction in global CO2 emissions, ensuring datacenters have access to renewable energy is an important criterion in achieving this.





# Reporting developments for 2021

This reporting for 2020 is the first reporting under the new green financing framework we updated in November of 2020. In this updated framework, we have expanded the categories of green investments to better capture the diverse utility company Lyse has become. New investment areas have been included for the first time under the framework, which has provided some challenges in capturing relevant and accurate impact data for some of the categories. We have therefore provided more qualitative descriptions in this report and will strive to improve the quantitative impact reporting for the reporting next year.

In terms of the investment's alignment to EU taxonomy, we have not completed any specific analysis of the investments included in this report. We did include in the framework our initial assessment of the Technical Screening Criteria at an overall category level. This assessment is still valid. We will for the 2021 report, on a best effort basis, provide additional information also in relation to the EU taxonomy.

Despite the bond issuances occurring in 2020, due to the timing of our issuances in December of 2020 and subsequent allocation only occurring in April of 2021, the allocation report has not been independently verified for 2020. As such, the allocations presented in the 2020 report will be verified in alignment with our Framework for the 2021 reporting.

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HEV-HO LETS GO Foto: Negative - Kristofor Ryde

