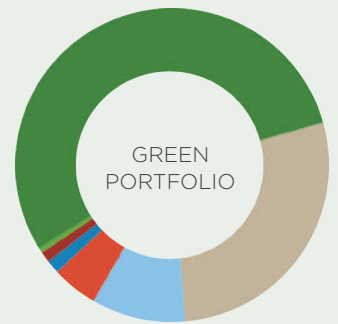
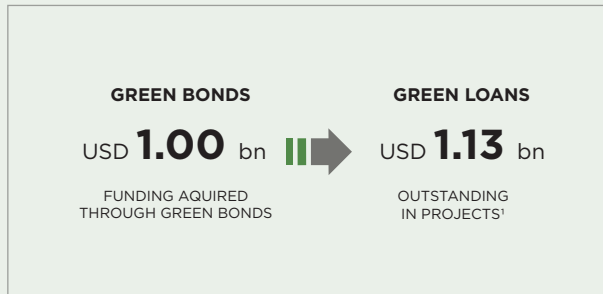


# ENVIRONMENTAL IMPACT REPORT 2016

Kommunalbanken

## IN SHORT



## IMPACT HIGHLIGHTS BASED ON KBN'S SHARE OF PROJECT FUNDING

**12 935.5**  
tonnes of CO<sub>2</sub>e  
reduced<sup>2</sup>  
annually

**10 438,6**  
tonnes of CO<sub>2</sub>e  
avoided<sup>3</sup> annually

GHG emissions  
avoided + reduced  
**23 374.1**  
tonnes of CO<sub>2</sub>e annually

**18.5**  
GWh renewable energy  
produced annually

**118 009**  
m<sup>2</sup> of  
sea floor  
restored

**57 140**  
tonnes added capacity of  
sustainable waste  
management

Efficiency measures  
implemented in  
**522 784**  
m<sup>2</sup> of existing buildings

**27.9**  
GWh energy reduced  
+ avoided in buildings  
annually<sup>4</sup>

**89 046**  
m<sup>2</sup> of new green  
buildings erected

Photo front page and page 5: Vemund Hagen

1. Exchange rate 1 USD= 8,6 NOK,

2. From projects within categories Energy Efficiency & Low-carbon Transportation

3. From projects within categories New Green buildings & Renewable energy

4. 18 893 473 kWh energy reduced from energy efficiency measures; 9 003 970 kWh energy avoided in New green buildings.

# DEAR READER

We are proud to present to you the first edition of  
KBN's environmental impact report.

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Our ambitions are reflected in our Green Bond Framework and the accompanying project selection criteria, both updated in 2016. The documents set a high standard for eligible projects, for KBN's internal governance of green bonds and green loans and the presentation of the impact from our green loans. Our eight categories of eligible green loan projects are presented on page 4. You may read more about our governance structures and governing documents on [page 6](#).

With the report we aim to provide insight into the environmental benefits of the projects funded through KBN's green bonds. The report compiles impact and benefits from 64 projects funded by KBN's green loans up to the end of 2016. The projects range from very small and local in impact to some of the larger ongoing Norwegian infrastructure projects. The amount disbursed to one single project ranges from NOK 4.7 million (546 500 USD) to NOK 5.27 billion (613 million USD). Total value of outstanding green loans was 9.71 billion NOK (1.13 billion USD) at year-end. The weighted average maturity of our Green Loans is 19.9 years. Average remaining maturity of our current Green Loan portfolio is 16.5 years.

Projects funded by KBN green loans represent steps – small or great – towards the low-emission, resource-efficient society Norway has committed to become within the next decades. Our objective is that our green loans funded projects of today is compatible with the low-carbon society envisioned for 2050. This objective is in line with Norway's nationally determined contribution to the Paris Agreement, committing us to reduce greenhouse gas emissions by 40 percent compared to 1990 levels by 2030<sup>5</sup>. It appears, however, that a changing climate is inevitable regardless of the efforts made today. Recognizing this, we emphasise the importance of projects aiming to improve climate resilience, protect biodiversity, or otherwise prepare human societies and our environment of the challenges ahead. The impact of these projects may not be possible to quantify but is of immense value nonetheless.

In 2013, KBN was one of the first European green bond issuers. Today, three issuances later, we are determined to continue working for a green bond market marked by ever greater transparency and integrity. We hope the report will be of use to international investors and Norwegian local government decision makers alike.

*Lars Strøm Prestvik*

**Lars Strøm Prestvik,**  
Chief Lending Officer,  
KBN Kommunalbanken Norway

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## KOMMUNALBANKEN NORWAY

Kommunalbanken Norway (KBN) finances important welfare services through providing credit to the local authorities in Norway. KBN's mandate is to provide the local government sector with stable and cost efficient long-term financing. KBN's lending to the local government sector is funded by issuing securities in the international capital markets, maintaining the highest possible credit rating of AAA/Aaa. Measured by total assets, KBN is Norway's third largest financial institution with loans to nearly all of the country's municipalities. KBN is a wholly owned state company. Our vision is to be a long-term partner for local welfare.

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5. Norway intends to fulfil this commitment through a collective delivery with the EU and its Member States.

# PROJECT CATEGORIES

Following KBN Green Bond Framework updated in June 2016, Green Loans may be granted to eight different categories of projects:



## RENEWABLE ENERGY

Investments in this category are intended to reap the energy potential of the sun, the wind, the ground, the sea, biomaterials and other renewable energy carriers, and thereby to replace energy produced from fossil fuels and other energy sources that produce greenhouse gases. Projects include solar farms, geothermal wells, wind farms, wave power plants, fossil-fuel-free district heating plants.



## ENERGY EFFICIENCY

Projects within this category reduce the energy requirements of existing buildings and phase out their use of fossil energy sources. Examples of projects include energy-conservation measures such as fitting additional insulation, replacing windows, installing hot-water heating, heat pumps, and central operational control systems. Renovating buildings to improve their energy efficiency. Replacing oil and gas boilers.



## NEW GREEN BUILDINGS

The category includes new, climate-smart and energy efficient buildings. Eligible projects may satisfy industry norms of 'energy-plus' or 'near-zero energy' buildings or receive the grading 'Excellent' or 'Outstanding' on the BREEAM-NOR classification system. Alternately, the building has a verifiable energy demand that is 20 percent lower than in a built-to-code reference project. In the assessment of a project's eligibility, the environmental profile of building materials is also taken into consideration.



## LOW-CARBON TRANSPORTATION

Transport solutions that produce minimal or zero emissions, with no fossil fuels used. Examples of projects are public transportation systems, pedestrian- and cycle paths, bicycle parks, charging points for electric vehicles, fueling stations for renewable fuels, purchase of non-fossil run vehicles for municipal vehicle fleet.



## WASTE MANAGEMENT

Investments in this category are intended to ensure sustainable, energy efficient and resource-saving waste management. Eligible projects include the construction of new or ambitious reconstruction of existing waste management facilities; biogas plants, waste collection systems that minimise transport requirements, garbage trucks that run on renewable fuels, and carbon capture plants.



## WATER AND WASTEWATER MANAGEMENT

The purpose of projects in this category is to construct water and wastewater systems that are dimensioned to accommodate population growth and higher precipitation levels, and that apply innovative technologies to make good use of the resources contained in wastewater. Examples of projects are significant upgrades to water and wastewater networks, water treatment plants, treatment of discharges to watercourses, construction of biogas plants, and investment in energy and heat recovery from water and wastewater networks.



## SUSTAINABLE LAND USE

This category covers a range of projects that intend to ensure sustainable use of land. This may include projects such as restoration of biodiversity, planting forests, cleaning up of POPs and other pollutants, developing land into recreational space, facilitating walking, cycling and public transportation solutions.



## CLIMATE CHANGE ADAPTATION

Investments in this category are intended to improve local adaptation to climate change. This includes facilities and installations to manage urban runoff, floods, landslides, avalanches, rising sea levels, and other challenges due to changed weather and climate conditions.

# CORE PRINCIPLES OF KBN IMPACT REPORTING



The reporting of environmental impact from projects financed by KBN's green bonds adhere to the following core principles:

1. KBN's impact calculations correspond to it's share of financing
2. We apply Norwegian codes & regulations as the baseline of our impact calculations.
3. We base our calculations on ex ante data
4. Our reporting covers scope 1&2 emissions and emission reductions
5. We report reduced and avoided emissions separately
6. We consider both quantifiable and non-quantifiable impact
7. We align our reporting with international Green Bond standards & initiatives
8. We continuously strive to improve our reporting and are grateful for any comments

The principles are explained in greater detail in Appendix A.

## MEASUREMENT APPROACHES

| PROJECT CATEGORY                       | QUANTIFIABLE, DIRECT RESULT                       | GREENHOUSE GAS EMISSIONS REDUCED/AVOIDED | CONVERSION FACTOR                                                     |
|----------------------------------------|---------------------------------------------------|------------------------------------------|-----------------------------------------------------------------------|
| <b>RENEWABLE ENERGY</b>                | kWh produced                                      | Avoided                                  | 1 kWh = 0,380 kg CO2e                                                 |
| <b>ENERGY EFFICIENCY</b>               | kWh reduced, CO2e reduced (direct emissions)      | Reduced                                  | 1 kWh = 0,380 kg CO2e<br>1 kWh heating oil = 0,247 kg CO2e            |
| <b>NEW GREEN BUILDINGS</b>             | kWh avoided                                       | Avoided                                  | 1 kWh = 0,380 kg CO2e                                                 |
| <b>LOW-CARBON TRANSPORTATION</b>       | Partly CO2 and other emissions reduced or avoided | Reduced                                  | 1 fossils car km = 0,193 kg CO2e<br>1 electric car km = 0,076 kg CO2e |
| <b>WASTE MANAGEMENT</b>                | Increase in capacity                              | N/A                                      | N/A                                                                   |
| <b>WATER AND WASTEWATER MANAGEMENT</b> | Increase in capacity                              | N/A                                      | N/A                                                                   |
| <b>SUSTAINABLE LAND USE</b>            | Area included                                     | N/A                                      | N/A                                                                   |
| <b>CLIMATE CHANGE ADAPTATION</b>       | N/A                                               | N/A                                      | N/A                                                                   |

This table summarises important features of the impact reported for each project category: which quantifiable impact(s) we consider, how we include this impact in aggregation, and which conversion factors we apply. For a more thorough discussion on assumptions and methodical choices applied in this report, please refer to the section Calculation methods and core assumptions of categories in Appendix B.



## KBN GREEN GOVERNANCE

### ALLOCATION OF GREEN FUNDS

KBN's green bonds are only as green as the projects to which we allocate the proceeds. Recognising this, we have put substantial effort into producing a set of detailed eligibility criteria for each project category<sup>6</sup> and an internal governance structure to ensure the process of assessing whether projects are eligible is fair and transparent.

Under the KBN Green Bond Framework<sup>7</sup> as updated in June 2016, customers are required to apply for green loans using a formal application form that can be downloaded from our website. There are separate forms for each project category, which are designed to collect the appropriate data for each project type. Applications are evaluated by the customer's relationship manager, who files an initial recommendation of approve or reject. Our team of designated environmental controllers then assesses the application to uphold or overrule the recommendation made by the relationship manager. The environmental controllers are sustainability professionals with relevant training and experience. All decisions on applications for green loans are made with reference to the KBN Green Bonds: Supplementary guidelines for project selection, documentation and reporting. Applications are assessed

in writing to facilitate transparency and retrospective scrutiny.

The KBN Green Bonds: Supplementary guidelines for project selection, documentation and reporting were first issued in June 2016 on the basis of the knowledge available at the time. The guidelines will be updated annually to accommodate changes in regulations as well as advances in available technology and knowledge.

### GOVERNING DOCUMENTS

The following documents that govern KBN's issuance of green bonds and its allocation of the proceeds are available on our website:

- KBN Green Bond Framework, updated June 2016
- KBN Green Bonds: Supplementary guidelines for project selection, documentation and reporting, updated May 2016

### KBN GREEN COMMITTEE

KBN has appointed a Green Committee, an advisory group of environmental experts from academia, state institutions, and the local government sector. The mandate of the Committee includes revising and updating KBN's Green Bond Framework and Selection Criteria; strategic considerations in KBN's green funding and lending program; and providing general input and support to KBN in matters related to green finance. The Committee will start its work in the second quarter of 2017.

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### CONTACT POINTS

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6. <http://www.kommunalbanken.no/media/231471/kbn-supplement-document-for-project-selection-documentation-and-reporting.pdf>

7. <http://www.kommunalbanken.no/media/231470/kbn-green-bond-framework.pdf>

*“Norway is committed to a target of an at least  
40% reduction of greenhouse gas emissions by  
2030 compared to 1990 levels»*

Norway's Nationally Determined Contribution to the Paris Agreement





## NEW GREEN BUILDINGS



Frogn helsebygg will be Norway's first nursing home constructed out of mass timber and is a good example of a wooden building being both healthy and environmentally friendly. Photo: Jostein Rønsen arkitektur/ Frogn kommune.

TOTAL DISBURSEMENTS

**3 046 189 343** NOK

OUTSTANDING LOANS

**2 708 622 604** NOK

ENERGY AVOIDED

**8 976 687** kWh

GREENHOUSE GAS EMISSIONS AVOIDED

**3 421.5** TONNES OF CO<sub>2</sub>e

Annual impact  
KBN SHARE

| DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                          | KBN FINANCING<br>(NOK)                   | TOTAL COST<br>(NOK)          | ESTIMATED ENERGY<br>AVOIDED ANNUALLY<br>(KWH)                | BUILDING<br>PERIOD | OTHER<br>RESULTS                                                                                                                                                                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|------------------------------|--------------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Swimming pool facility, Asker municipality</b>                                                                                                                                                                                                                                                                                                                                                    |                                          |                              |                                                              |                    |                                                                                                                                                                                                                                                                  |
| One of the most energy-efficient swimming pools in Norway, with innovative building techniques and technical solutions. 80% of the facility's energy consumption is provided by local renewable energy from geothermal boreholes, thermal solar panels and photovoltaic solar panels.                                                                                                                | 100% /<br>277 000 000<br>(2016)          | <b>Total:</b><br>277 000 000 | <b>Total:</b><br>2 431 390<br><b>KBN share:</b><br>2 431 390 | 2015-<br>2017      | Limited number of car parking places, good arrangements for cycle and public transport access. Low carbon concrete (class B) used in construction of the building.                                                                                               |
| <b>Kistefosdammen nursery, Asker municipality</b>                                                                                                                                                                                                                                                                                                                                                    |                                          |                              |                                                              |                    |                                                                                                                                                                                                                                                                  |
| The first 'plus-house' (FutureBuilt definition) building to be constructed by the public sector in Norway. 100% of energy requirement provided by local renewable energy from three geothermal boreholes and 300 m2 of high-efficiency photovoltaic solar panels integrated in the roof construction.                                                                                                | 100% /<br>77 600 000<br>(2016)           | <b>Total:</b><br>77 600 000  | <b>Total:</b><br>125 660<br><b>KBN share:</b><br>125 660     | 2016-<br>2017      | Climate gas emissions from energy consumption, building materials and transport reduced by 50% relative to a reference building satisfying the minimum building requirements. Extensive use of timber in construction of the building and its external cladding. |
| <b>Ullerud health centre - Frogn municipality</b>                                                                                                                                                                                                                                                                                                                                                    |                                          |                              |                                                              |                    |                                                                                                                                                                                                                                                                  |
| The largest healthcare building in Norway to be constructed in mass timber. The 12,000 m <sup>2</sup> building will accommodate 108 hospital beds, a training, mentoring and rehabilitation centre, a day centre for the elderly and a catering facility.                                                                                                                                            | 85% /<br>192 307 000<br>(2016)           | <b>Total:</b><br>226 000 000 | <b>Total:</b><br>1 224 000<br><b>KBN share:</b><br>1 041 521 | 2015-<br>2017      | The building uses 2,500 m <sup>3</sup> of timber. It is certified as 'VERY GOOD' by the BREEAM-NOR classification.                                                                                                                                               |
| <b>Åsly school - Rissa municipality</b>                                                                                                                                                                                                                                                                                                                                                              |                                          |                              |                                                              |                    |                                                                                                                                                                                                                                                                  |
| New school building constructed to the 'passive-house' standard.                                                                                                                                                                                                                                                                                                                                     | 87% /<br>205 442 000<br>(54 342 in 2016) | <b>Total:</b><br>235 000 000 | <b>Total:</b><br>360 720<br><b>KBN share:</b><br>315 349     | 2014-<br>2016      | The school building accommodates 420 pupils and also includes a culture hall and library.                                                                                                                                                                        |
| <b>Emergency services building - Rissa municipality</b>                                                                                                                                                                                                                                                                                                                                              |                                          |                              |                                                              |                    |                                                                                                                                                                                                                                                                  |
| Co- location of the fire and ambulance emergency services to a single energy-efficient building.                                                                                                                                                                                                                                                                                                     | 67% /<br>30 000 000                      | <b>Total:</b><br>45 000 000  | <b>Total:</b><br>103 200<br><b>KBN share:</b><br>68 800      | 2015-<br>2016      | The office area of the building is constructed to the 'passive-house' standard.                                                                                                                                                                                  |
| <b>Ødegården nursery, Oppgård municipality</b>                                                                                                                                                                                                                                                                                                                                                       |                                          |                              |                                                              |                    |                                                                                                                                                                                                                                                                  |
| Nursery building constructed to the 'passive-house' standard. Heating and cooling from ground source boreholes, distributed through water-borne heating and balance ventilation system. Six sections, accommodating 100 children.                                                                                                                                                                    | 97% /<br>46 200 000                      | <b>Total:</b><br>47 800 000  | <b>Total:</b><br>174 989<br><b>KBN share:</b><br>169 131     | 2013-<br>2014      | 'Green roof' covered with water collecting plants that provide insulation in the winter and a cooling effect in the summer as well as absorbing rainwater and therefore reducing discharge to the wastewater system.                                             |
| <b>Greverudåsen residences - Oppgård municipality</b>                                                                                                                                                                                                                                                                                                                                                |                                          |                              |                                                              |                    |                                                                                                                                                                                                                                                                  |
| Sheltered housing constructed to the 'passive-house' standard, heat provided by district heating.                                                                                                                                                                                                                                                                                                    | 52% /<br>16 396 000                      | <b>Total:</b><br>31 800 000  | <b>Total:</b><br>84 640<br><b>KBN share:</b><br>43 640       | 2011-<br>2014      | Residential accommodation for people with disabilities.                                                                                                                                                                                                          |
| <b>Augestad nursery - Oppgård municipality</b>                                                                                                                                                                                                                                                                                                                                                       |                                          |                              |                                                              |                    |                                                                                                                                                                                                                                                                  |
| Nursery building constructed to the 'passive-house' standard. Ground source heating distributed through underfloor heating.                                                                                                                                                                                                                                                                          | 100% /<br>26 000 000                     | <b>Total:</b><br>26 000 000  | <b>Total:</b><br>2 520<br><b>KBN share:</b><br>2 520         | 2011-<br>2014      | Delivered energy is known to be reduced by using ground source heating from boreholes, but measuring equipment is not yet in place to quantify the amount of energy generated locally.                                                                           |
| <b>City Hall site - Kristiansand municipality</b>                                                                                                                                                                                                                                                                                                                                                    |                                          |                              |                                                              |                    |                                                                                                                                                                                                                                                                  |
| New construction of 9,600 m2 of space and renovation of 5,600 m2 of space including historically protected buildings. Water-borne heating system, background level of heating provided by recycled heat from the municipality's IT data centre that is also located on the site. Air conditioning and cooling for the data centre uses remote cooling extracted from seawater in the adjacent fjord. | 85% /<br>459 505 000                     | <b>Total:</b><br>540 700 000 | <b>Total:</b><br>888 828<br><b>KBN share:</b><br>755 355     | 2011-<br>2014      | Climate gas emissions from energy consumption and building materials reduced by 50% relative to a reference building satisfying the minimum building requirements. Construction used low carbon concrete and recycled building materials.                        |



| DESCRIPTION                                                                                                                                                                                                                                                                                 | KBN FINANCING<br>(NOK) | TOTAL COST<br>(NOK)          | ESTIMATED ENERGY<br>AVOIDED ANNUALLY<br>(KWH)                | BUILDING<br>PERIOD | OTHER<br>RESULTS                                                                                                                                                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------------|--------------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Hellemyr - Multi-use sports hall - Kristiansand municipality</b>                                                                                                                                                                                                                         |                        |                              |                                                              |                    |                                                                                                                                                                                    |
| Sports hall with miniature shooting range and club room facilities for the local sports club. The building is constructed to the 'passive-house' standard, and its energy load is calculated to be less than 50% of the standard energy requirement stipulated in the building regulations. | 69% /<br>43 700 000    | <b>Total:</b><br>63 300 000  | <b>Total:</b><br>510 770<br><b>KBN share:</b><br>352 617     | 2014-<br>2015      | Construction of the building prioritised climate-friendly building materials, including roof trusses and supporting columns in timber.                                             |
| <b>Aquarama - Kristiansand municipality</b>                                                                                                                                                                                                                                                 |                        |                              |                                                              |                    |                                                                                                                                                                                    |
| Low-energy facility housing a waterpark, sports pool, fitness centre, sports hall and related facilities. Low-energy building with heat recycling from waste water and ventilation.                                                                                                         | 90% /<br>536 870 000   | <b>Total:</b><br>596 000 000 | <b>Total:</b><br>1 500 000<br><b>KBN share:</b><br>1 349 125 | 2010-<br>2013      | Central location in Kristiansand reduces the need for access by car.                                                                                                               |
| <b>Møllestua nursery - Kristiansand municipality</b>                                                                                                                                                                                                                                        |                        |                              |                                                              |                    |                                                                                                                                                                                    |
| 'Passive-house' nursery with local energy production from 300 m2 of photovoltaic solar panels and 26 m2 of thermal solar panels on the roof. In summer months, the panels provide all the building's energy requirements. Capacity for 100 children in six classes.                         | 57% /<br>25 389 000    | <b>Total:</b><br>44 270 000  | <b>Total:</b><br>123 578<br><b>KBN share:</b><br>70 872      | 2010-<br>2011      | Low carbon concrete in the foundations and floors. A light sculpture changes to show children whether the nursery is energy-positive or is taking power from the electricity grid. |
| <b>Torridal school - Kristiansand municipality</b>                                                                                                                                                                                                                                          |                        |                              |                                                              |                    |                                                                                                                                                                                    |
| School constructed to the 'passive-house' standard, capacity for 200 pupils.                                                                                                                                                                                                                | 21% /<br>15 000 000    | <b>Total:</b><br>69 900 000  | <b>Total:</b><br>105 560<br><b>KBN share:</b><br>22 652      | 2014-<br>2015      | Timber exterior cladding.                                                                                                                                                          |
| <b>Øvre Sletteheia nursery - Kristiansand municipality</b>                                                                                                                                                                                                                                  |                        |                              |                                                              |                    |                                                                                                                                                                                    |
| Nursery constructed as low-energy building with solar panels on part of the roof. Deep water source heating with water-to-water heat pump.                                                                                                                                                  | 49% /<br>18 898 000    | <b>Total:</b><br>38 200 000  | <b>Total:</b><br>57 346<br><b>KBN share:</b><br>28 370       | 2010-<br>2012      | The installation used in the building is made from climate-friendly cellulose.                                                                                                     |
| <b>Fagerholt school - Kristiansand municipality</b>                                                                                                                                                                                                                                         |                        |                              |                                                              |                    |                                                                                                                                                                                    |
| School constructed to the 'passive-house' standard. Capacity for 500 pupils.                                                                                                                                                                                                                | 12% /<br>16 700 000    | <b>Total:</b><br>138 000 000 | <b>Total:</b><br>331 067<br><b>KBN share:</b><br>40 064      | 2014-<br>2015      |                                                                                                                                                                                    |
| <b>Administration building - Romerike avfallsforedling IKS</b>                                                                                                                                                                                                                              |                        |                              |                                                              |                    |                                                                                                                                                                                    |
| Administration building constructed to the 'passive-house' standard for the new waste sorting facility and environmental park.                                                                                                                                                              | 70% /<br>21 700 000    | <b>Total:</b><br>31 000 000  | <b>Total:</b><br>84 630<br><b>KBN share:</b><br>59 241       | 2011-<br>2013      | Constructed in part with recycled building materials.                                                                                                                              |
| <b>Hommelvik care home - Malvik municipality</b>                                                                                                                                                                                                                                            |                        |                              |                                                              |                    |                                                                                                                                                                                    |
| Care home building constructed to the 'passive-house' standard. Ground source heating providing 202,400 kWh of energy annually.                                                                                                                                                             | 37% /<br>93 700 000    | <b>Total:</b><br>254 000 000 | <b>Total:</b><br>582 887<br><b>KBN share:</b><br>215 255     | 2013-<br>2015      | Water treatment plant for legionella bacteria that allows hot water temperature to be reduced by 10° C.                                                                            |
| <b>Bruket cultural centre - Malvik municipality</b>                                                                                                                                                                                                                                         |                        |                              |                                                              |                    |                                                                                                                                                                                    |
| A venue for concerts, events and rehearsal space. Constructed to the 'passive-house' standard, ground source heating providing 62,568 kWh of energy annually.                                                                                                                               | 23% /<br>12 000 000    | <b>Total:</b><br>53 000 000  | <b>Total:</b><br>159 454<br><b>KBN share:</b><br>36 103      | 2013-<br>2014      |                                                                                                                                                                                    |



| DESCRIPTION                                                                                                                                                                         | KBN FINANCING<br>(NOK)         | TOTAL COST<br>(NOK)          | ESTIMATED ENERGY<br>AVOIDED ANNUALLY<br>(KWH)            | BUILDING<br>PERIOD | OTHER<br>RESULTS                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|------------------------------|----------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------|
| <b>Sandfjæra nursery - Malvik municipality</b>                                                                                                                                      |                                |                              |                                                          |                    |                                                                                          |
| Energy-efficient nursery building with capacity for 160 infants.                                                                                                                    | 83% /<br>39 700 000            | <b>Total:</b><br>47 600 000  | <b>Total:</b><br>61 990<br><b>KBN share:</b><br>51 702   | 2015-<br>2016      |                                                                                          |
| <b>Alcoa environmental park - Farsund municipality</b>                                                                                                                              |                                |                              |                                                          |                    |                                                                                          |
| Multi-use sports hall and year-round artificial grass pitch. 97% of heating needs supplied by district heating from the nearby Alcoa aluminium factory. Energy-efficient building.  | 92% /<br>100 000 000<br>(2016) | <b>Total:</b><br>109 200 000 | <b>Total:</b><br>905 025<br><b>KBN share:</b><br>828 777 | 2013-<br>2014      | Makes use of a source of heating that would otherwise go to waste.                       |
| <b>Hokksund Junior School - Øvre Eiker municipality</b>                                                                                                                             |                                |                              |                                                          |                    |                                                                                          |
| Junior school constructed to the 'passive-house' standard with capacity for 405 pupils.                                                                                             | 66% /<br>160 000 000           | <b>Total:</b><br>241 200 000 | <b>Total:</b><br>211 700<br><b>KBN share:</b><br>140 431 | 2010-<br>2012      | Part timber construction. Central location reduces transport demand.                     |
| <b>Kirkenes junior and infant school - Sør-Varanger municipality</b>                                                                                                                |                                |                              |                                                          |                    |                                                                                          |
| The new school replaces a number of old buildings and reduces energy consumption significantly.                                                                                     | 97% /<br>358 000 000           | <b>Total:</b><br>370 000 000 | <b>Total:</b><br>372 000<br><b>KBN share:</b><br>359 935 | 2009-<br>2012      | Energy consumption of 105 kWh/m2 is extremely low for the conditions in northern Norway. |
| <b>Marienlyst school - Drammen municipality</b>                                                                                                                                     |                                |                              |                                                          |                    |                                                                                          |
| First school in Norway constructed to the 'passive-house' standard, with capacity for 560 pupils. Heating provided from a mini district heating system via heat exchangers.         | 97% /<br>248 019 167           | <b>Total:</b><br>254 500 000 | <b>Total:</b><br>445 326<br><b>KBN share:</b><br>433 986 | 2009-<br>2010      | Compact urban school centrally located in Drammen, reducing transport demand.            |
| <b>Fjell nursery - Drammen municipality</b>                                                                                                                                         |                                |                              |                                                          |                    |                                                                                          |
| Nursery constructed to the 'passive-house' standard, with capacity for 90 infants. Heated by low-temperature waterborne underfloor heating with ground source (borehole) heat pump. | 57% /<br>15 963 176            | <b>Total:</b><br>28 200 000  | <b>Total:</b><br>60 400<br><b>KBN share:</b><br>34 191   | 2009-<br>2010      | Constructed in mass timber.                                                              |



ENERGY EFFICIENCY



TOTAL DISBURSEMENTS

**128 705 000** NOK

OUTSTANDING LOANS

**120 322 848** NOK

ENERGY SAVING

**18 893 473** KWH

REDUCTION IN GREENHOUSE GAS EMISSIONS

**7 179.5** TONNES OF CO<sub>2</sub>e

Annual impact  
KBN SHARE

| DESCRIPTION | KBN FINANCING<br>(NOK) | TOTAL COST<br>(NOK) | BUILDING<br>PERIOD | ESTIMATED ANNUAL<br>ENERGY SAVING<br>(kWh) | HEATED SURFACE AREA<br>(M²) |
|-------------|------------------------|---------------------|--------------------|--------------------------------------------|-----------------------------|
|-------------|------------------------|---------------------|--------------------|--------------------------------------------|-----------------------------|

#### Asker ENØK (energy efficiency) measures - Asker municipality

The project includes a number of innovative solutions such as using surplus heat from ice production in a skating rink facility to heat swimming pool water. Phasing out of fossil fuel energy sources in a number of buildings. 30% reduction in energy consumption.

|                               |                             |            |                                                              |                                                        |
|-------------------------------|-----------------------------|------------|--------------------------------------------------------------|--------------------------------------------------------|
| 71% /<br>25 400 000<br>(2016) | <b>Total:</b><br>35 600 000 | 2012- 2016 | <b>Total:</b><br>5 500 000<br><b>KBN share:</b><br>3 924 157 | <b>Total:</b><br>50 000<br><b>KBN share:</b><br>35 674 |
|-------------------------------|-----------------------------|------------|--------------------------------------------------------------|--------------------------------------------------------|

#### Energy efficiency - Rendalen municipality

Reducing energy consumption in municipal buildings through an energy performance contract (EPC). Project involves carrying out 57 energy savings measures across 11 municipal buildings. 45% reduction in energy consumption.

|                              |                             |            |                                                            |                                                       |
|------------------------------|-----------------------------|------------|------------------------------------------------------------|-------------------------------------------------------|
| 44% /<br>5 545 000<br>(2016) | <b>Total:</b><br>12 477 165 | 2016- 2018 | <b>Total:</b><br>1 818 250<br><b>KBN share:</b><br>808 052 | <b>Total:</b><br>14 172<br><b>KBN share:</b><br>6 298 |
|------------------------------|-----------------------------|------------|------------------------------------------------------------|-------------------------------------------------------|

#### EPC-project - Spydeberg municipality

Reducing energy consumption through an energy performance contract (EPC). Involves nine buildings and a water treatment plant. Two oil burning heating plants to be phased out. 42% reduction in energy consumption.

|                               |                             |      |                                                              |                                                        |
|-------------------------------|-----------------------------|------|--------------------------------------------------------------|--------------------------------------------------------|
| 62% /<br>12 780 000<br>(2016) | <b>Total:</b><br>20 500 000 | 2016 | <b>Total:</b><br>2 324 758<br><b>KBN share:</b><br>1 449 288 | <b>Total:</b><br>34 700<br><b>KBN share:</b><br>21 632 |
|-------------------------------|-----------------------------|------|--------------------------------------------------------------|--------------------------------------------------------|

#### Street lighting - Bardu municipality

10% of bulbs used in the municipality's street lighting to be replaced with LED bulbs.

|                             |                          |            |                                                        |                                                  |
|-----------------------------|--------------------------|------------|--------------------------------------------------------|--------------------------------------------------|
| 100% /<br>480 000<br>(2016) | <b>Total:</b><br>480 000 | 2016- 2017 | <b>Total:</b><br>13 200<br><b>KBN share:</b><br>13 200 | <b>Total:</b><br>N/A<br><b>KBN share:</b><br>N/A |
|-----------------------------|--------------------------|------------|--------------------------------------------------------|--------------------------------------------------|

#### Jevnaker EPC-project - Jevnaker municipality

Reducing energy consumption through an energy performance contract (EPC). 27% reduction in energy consumption

|                                             |                             |           |                                                              |                                                        |
|---------------------------------------------|-----------------------------|-----------|--------------------------------------------------------------|--------------------------------------------------------|
| 100% /<br>21 000 000<br>(8 000 000 in 2016) | <b>Total:</b><br>21 000 000 | 2014-2016 | <b>Total:</b><br>2 007 704<br><b>KBN share:</b><br>2 007 704 | <b>Total:</b><br>32 857<br><b>KBN share:</b><br>32 857 |
|---------------------------------------------|-----------------------------|-----------|--------------------------------------------------------------|--------------------------------------------------------|

#### Central operational control system - Oppegård municipality

Energy efficient project to link the municipality's buildings to a central operational control system.

|                    |                            |           |                                                          |                                                        |
|--------------------|----------------------------|-----------|----------------------------------------------------------|--------------------------------------------------------|
| 91% /<br>4 000 000 | <b>Total:</b><br>4 400 000 | 2014-2014 | <b>Total:</b><br>192 810<br><b>KBN share:</b><br>175 282 | <b>Total:</b><br>23 731<br><b>KBN share:</b><br>21 574 |
|--------------------|----------------------------|-----------|----------------------------------------------------------|--------------------------------------------------------|

#### EPC contract - Rissa municipality

Improving energy efficiency in five buildings through an energy performance contract (EPC). 39% reduction in energy consumption

|                     |                            |           |                                                              |                                                        |
|---------------------|----------------------------|-----------|--------------------------------------------------------------|--------------------------------------------------------|
| 100% /<br>5 000 000 | <b>Total:</b><br>5 000 000 | 2014-2015 | <b>Total:</b><br>1 553 817<br><b>KBN share:</b><br>1 553 817 | <b>Total:</b><br>17 324<br><b>KBN share:</b><br>17 324 |
|---------------------|----------------------------|-----------|--------------------------------------------------------------|--------------------------------------------------------|

#### Improving energy efficiency - Kristiansand municipality

Improved energy efficiency by phasing out fossil fuel heating in municipal buildings. Use of heating oil reduced by 98% (4,208,144 kWh). This alone reduces climate emissions by 1,052 tonnes of CO2-equivalents. 35% reduction in energy consumption.

|                     |                             |        |                                                               |                                                          |
|---------------------|-----------------------------|--------|---------------------------------------------------------------|----------------------------------------------------------|
| 56% /<br>54 500 000 | <b>Total:</b><br>97 300 000 | 2007 - | <b>Total:</b><br>16 000 000<br><b>KBN share:</b><br>8 961 973 | <b>Total:</b><br>350 000<br><b>KBN share:</b><br>196 043 |
|---------------------|-----------------------------|--------|---------------------------------------------------------------|----------------------------------------------------------|



RENEWABLE ENERGY



TOTAL DISBURSEMENTS

**112 255 000** NOK

OUTSTANDING LOANS

**102 161 247** NOK

ENERGY PRODUCTION

**18 466 222** KWH

AVOIDED GREENHOUSE GAS EMISSIONS

**7 017.1** TONNES OF CO<sub>2</sub>e

Annual impact  
KBN SHARE

| DESCRIPTION | KBN FINANCING<br>(NOK) | TOTAL COST<br>(NOK) | ESTIMATED ANNUAL<br>ENERGY PRODUCTION<br>(kWh) | BUILDING<br>PERIOD | OTHER<br>RESULTS |
|-------------|------------------------|---------------------|------------------------------------------------|--------------------|------------------|
|-------------|------------------------|---------------------|------------------------------------------------|--------------------|------------------|

#### Sandbakken recycling facility - Hvaler municipality

|                                                                                                                                                                                     |                               |                             |                                                          |               |                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------------|----------------------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Recycling facility that generates its own electric power from 1,200 m <sup>2</sup> of solar panels and four mini wind turbines. Surplus power is stored in batteries for later use. | 58% /<br>14 055 000<br>(2016) | <b>Total:</b><br>24 200 000 | <b>Total:</b><br>193 000<br><b>KBN share:</b><br>112 092 | 2015-<br>2016 | Electric-powered waste collection vehicle to be purchased in 2017 to collect waste for recycling from the facility's 2,100 subscribers. |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------------|----------------------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------|

#### Orkdal waste transfer station - Hamos forvaltning IKS

|                                                                                                   |                              |                             |                                                        |               |                                                                                                                                                                                      |
|---------------------------------------------------------------------------------------------------|------------------------------|-----------------------------|--------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 200 m <sup>2</sup> solar panel installation on the external cladding of a waste transfer station. | 44% /<br>7 500 000<br>(2016) | <b>Total:</b><br>17 000 000 | <b>Total:</b><br>30 000<br><b>KBN share:</b><br>13 235 | 2016-<br>2017 | The waste transfer station will rely solely on renewable locally produced energy. The station will be converted in due course to use only electric powered waste handling machinery. |
|---------------------------------------------------------------------------------------------------|------------------------------|-----------------------------|--------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### Frøya recycling facility - Hamos forvaltning IKS

|                                                                                                                              |                              |                             |                                                        |               |                                                                                                                         |
|------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------------------|--------------------------------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------|
| 600 m <sup>2</sup> of solar panels on the walls and roof of a recycling facility (recycling hall and associated facilities). | 14% /<br>3 000 000<br>(2016) | <b>Total:</b><br>22 000 000 | <b>Total:</b><br>85 000<br><b>KBN share:</b><br>11 591 | 2016-<br>2018 | Hamos has initiated collaboration with SINTEF Technology and Society to investigate energy storage using thermal wells. |
|------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------------------|--------------------------------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------|

#### Biogas plant at Grødalaland - IVAR IKS

|                                                                                                                                                                                                                                                                                                                                              |                               |                              |                                                                |               |                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|------------------------------|----------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Biogas plant at Grødalaland in Hå municipality. Collection, pre-treatment and dewatering facility for sludge, thermal hydrolysis, settlement tanks (2 x 4,000 m <sup>3</sup> ), gas upgrade facility and administration building. 8 MW biofuel facility to produce steam heat for the biogas plant using dewatered residue and waste timber. | 15% /<br>83 000 000<br>(2016) | <b>Total:</b><br>546 000 000 | <b>Total:</b><br>89 000 000<br><b>KBN share:</b><br>13 529 304 | 2016-<br>2018 | Biogas production will be fed into the regional gas network. The project is not yet complete. Further NOK 284 million green loan for the project approved in 2017. |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|------------------------------|----------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### Eid Fjordvarme

|                                                                                                                                                                                  |                     |                            |                                                              |      |                                                                                                                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------------------|--------------------------------------------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Extension of seawater heating system ("fjord-based heating") in Nordfjordeid. The installation heats water for the water-based heating system through a seawater heat exchanger. | 100% /<br>4 700 000 | <b>Total:</b><br>4 700 000 | <b>Total:</b><br>4 800 000<br><b>KBN share:</b><br>4 800 000 | 2016 | The new installation has a maximum heating duty of 2 MW, and extends the capacity of the seawater system in Nordfjordeid by 50 %. The system can also produce free cooling. |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------------------|--------------------------------------------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



LOW-CARBON TRANSPORTATION



Bybanen, an electric light rail service is representing an efficient and environmentally friendly public transport service in Bergen.

|                                             |                                   |
|---------------------------------------------|-----------------------------------|
| TOTAL DISBURSEMENTS                         | 5 308 758 000 NOK                 |
| OUTSTANDING LOANS                           | 5 307 084 120 NOK                 |
| GREENHOUSE GAS EMISSIONS REDUCED OR AVOIDED | 5 756 TONNES OF CO <sub>2</sub> e |

Annual impact  
KBN SHARE

| DESCRIPTION | KBN FINANCING<br>(NOK) | TOTAL COST<br>(NOK) | TOTAL<br>IMPACT | BUILDING<br>PERIOD | OTHER<br>RESULTS |
|-------------|------------------------|---------------------|-----------------|--------------------|------------------|
|-------------|------------------------|---------------------|-----------------|--------------------|------------------|

#### Electric vehicle charging points - Hvaler municipality

|                                                                                                                                                                                                                                   |                            |                            |                                                                               |               |                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------|-------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Improvements to infrastructure for charging of electric cars and plug-in hybrid cars. This part of the project comprises 14 charging points at the town hall and two fast charging points at other locations in the municipality. | 48% /<br>499 000<br>(2016) | <b>Total:</b><br>1 050 000 | <b>Total estimated<br/>number of people:</b><br>30<br><b>KBN share:</b><br>14 | 2016-<br>2017 | Making arrangements for the municipality and private owners to use electric vehicles forms part of the municipality's target to be climate-neutral by 2030. |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------|-------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### Footpath and cycle track - Oppegård municipality

|                                                                                                          |                    |                            |                                                               |               |  |
|----------------------------------------------------------------------------------------------------------|--------------------|----------------------------|---------------------------------------------------------------|---------------|--|
| 530m of footpaths and cycle tracks, cycle parking, improved cycle tracks, purchase of electric bicycles. | 98% /<br>8 509 000 | <b>Total:</b><br>8 700 000 | <b>Improved conditions<br/>for bikers and<br/>pedestrians</b> | 2013-<br>2014 |  |
|----------------------------------------------------------------------------------------------------------|--------------------|----------------------------|---------------------------------------------------------------|---------------|--|

#### Bergen Light Rail - Bergen bomselskap

|                                                                                                                                                                                          |                         |                                   |                                                                                                                                                             |               |                                                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------|
| Electric light rail service, representing an efficient and environmentally friendly public transport service in Bergen. Bergen light rail recorded 9,987,000 passenger journeys in 2015. | 100% /<br>5 270 000 000 | <b>Total:</b><br>5 270<br>000 000 | <b>Total estimated<br/>reduction in green-<br/>house gas annually:</b><br>5 753 tonnes CO <sub>2</sub><br><b>KBN share:</b><br>5 753 tonnes CO <sub>2</sub> | 2008-<br>2017 | Annual reduction in local air pollution: 23,891 kg SO <sub>x</sub> , 22,619 kg NO <sub>x</sub> and 5,851 kg PM <sub>2.5</sub> . |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------|

#### Electric-powered vehicles for the home care service - Oppegård municipality

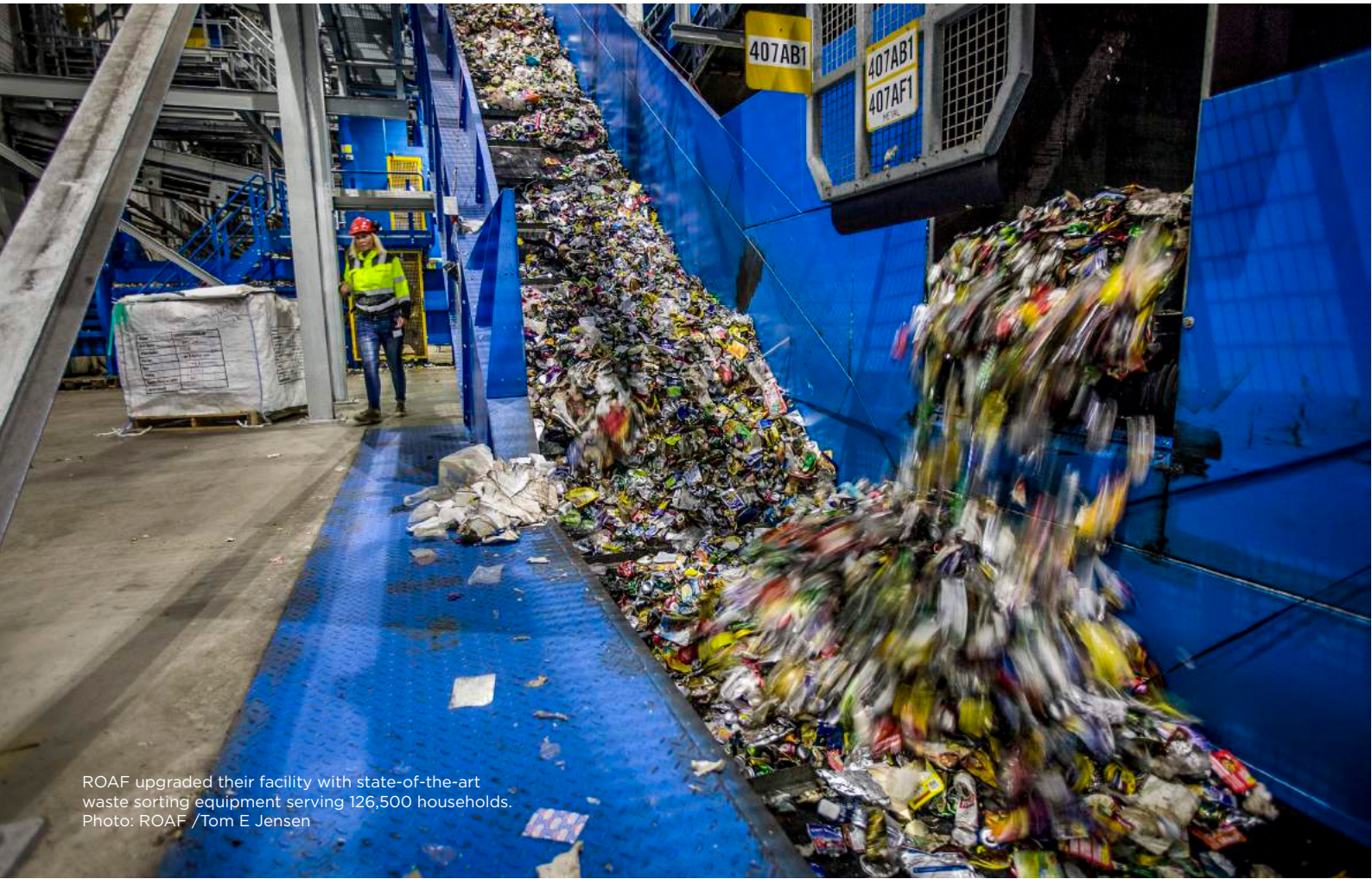
|                                                                                           |                     |                            |                                                                                                                                 |      |                                                                                                                                                                       |
|-------------------------------------------------------------------------------------------|---------------------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 29 vehicles used by the municipality's home care service replaced with electric vehicles. | 100% /<br>7 300 000 | <b>Total:</b><br>7 300 000 | <b>Total estimated<br/>number of car-km<br/>reduced because of<br/>the investment:</b><br>29 000<br><b>KBN share:</b><br>29 000 | 2014 | 29,000 fossil fuel driven car kilometres replaced with electric vehicles, resulting in a reduction in emissions of 3,364 kg of CO <sub>2</sub> -equivalents annually. |
|-------------------------------------------------------------------------------------------|---------------------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### Mountain lift to train station - Holmestrand municipality

|                                                                                                                                                                         |                               |                             |                                                                                     |               |                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------------|-------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------|
| 70 m lift from plateau residential area down to Holmestrand train station. Objective is to reduce car use and increase use of the train as well as cycling and walking. | 35% /<br>22 450 000<br>(2016) | <b>Total:</b><br>64 500 000 | <b>Total estimated<br/>number of people:</b><br>3 044<br><b>KBN share:</b><br>1 060 | 2015-<br>2016 | 3,044 people live within a 20 minute cycle journey from the lift. |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------------|-------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------|



WASTE MANAGEMENT



ROAF upgraded their facility with state-of-the-art waste sorting equipment serving 126,500 households. Photo: ROAF /Tom E Jensen

|                     |                 |
|---------------------|-----------------|
| TOTAL DISBURSEMENTS | 508 328 290 NOK |
| OUTSTANDING LOANS   | 473 512 856 NOK |
| ADDED CAPACITY      | 57 140 TONNES   |

Impact  
KBN SHARE

| DESCRIPTION                                                                                                                                                                                                                                                                                                                                            | KBN FINANCING<br>(NOK)        | TOTAL COST<br>(NOK)          | INCREASE IN<br>CAPACITY<br>(TONNES)                    | BUILDING<br>PERIOD | OTHER<br>RESULTS                                                                                                                                                                                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|------------------------------|--------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Pre-treatment facility for organic waste - IVAR IKS</b>                                                                                                                                                                                                                                                                                             |                               |                              |                                                        |                    |                                                                                                                                                                                                                                                                                                |
| Facility that prepares organic waste for biogas production.                                                                                                                                                                                                                                                                                            | 14% /<br>31 000 000           | <b>Total:</b><br>220 000 000 | <b>Total:</b><br>20 175<br><b>KBN share:</b><br>2 842  | 2011-<br>2017      | Replaces the previous composting facility, 67% increase in capacity for treating organic waste, making it possible to treat new sources of waste such as waste from fish production that would otherwise not be put to use.                                                                    |
| <b>Forus waste sorting facility - IVAR IKS</b>                                                                                                                                                                                                                                                                                                         |                               |                              |                                                        |                    |                                                                                                                                                                                                                                                                                                |
| New large waste sorting facility. 20 sorting machines with infrared detection to ensure a very high recycling rate of 75%.                                                                                                                                                                                                                             | 13% /<br>82 200 000           | <b>Total:</b><br>620 000 000 | <b>Total:</b><br>26 000<br><b>KBN share:</b><br>3 447  | 2016-<br>2019      | The sorting facility will improve the recovery of plastics from 7% to 100%. Separated plastic waste will now be extruded into granules within the Forus facility whereas plastic waste was previously sent to Germany for processing.                                                          |
| <b>Waste collection - SIRKULA IKS</b>                                                                                                                                                                                                                                                                                                                  |                               |                              |                                                        |                    |                                                                                                                                                                                                                                                                                                |
| Equipment for waste collection from 42,000 customers in Hedmark county.                                                                                                                                                                                                                                                                                | 96% /<br>6 978 926<br>(2016)  | <b>Total:</b><br>7 275 000   | N/A                                                    | 2010-<br>2015      | The project is fully financed with green lending from KBN, but due to a change in the legal entity that is the borrower as part of a change in corporate structure in 2015, the loans were converted to a new project number and the amounts already lent were deleted from the lending lists. |
| <b>Heggvin waste management facility - SIRKULA IKS</b>                                                                                                                                                                                                                                                                                                 |                               |                              |                                                        |                    |                                                                                                                                                                                                                                                                                                |
| Upgrading of the Heggvin waste management facility: including new facility for environmentally-friendly treatment of sand sludge, ash, EPS plastics and hazardous waste. The upgrading will make the facility more reliable with greater capacity and better sorting capability so that the proportion of residual waste going to landfill is reduced. | 78% /<br>56 597 769<br>(2016) | <b>Total:</b><br>72 553 000  | N/A                                                    | 2010-<br>2015      | A biogas facility has been established for the landfill in order to make use of the gases given off by the landfill waste and reduce discharges to the atmosphere.                                                                                                                             |
| <b>Recycling facilities - SIRKULA IKS</b>                                                                                                                                                                                                                                                                                                              |                               |                              |                                                        |                    |                                                                                                                                                                                                                                                                                                |
| Upgrading of five recycling facilities serving 42,000 subscribers.                                                                                                                                                                                                                                                                                     | 82% /<br>15 830 924<br>(2016) | <b>Total:</b><br>19 393 000  | N/A                                                    | 2010-<br>2015      |                                                                                                                                                                                                                                                                                                |
| <b>Gålåsholmen - SIRKULA IKS</b>                                                                                                                                                                                                                                                                                                                       |                               |                              |                                                        |                    |                                                                                                                                                                                                                                                                                                |
| Facility for garden waste. If garden waste is disposed of in the countryside there is considerable risk of spread of non-native plant types. The facility will be extended to include a high-tech recycling facility and resale outlet.                                                                                                                | 94% /<br>17 720 671<br>(2016) | <b>Total:</b><br>18 800 000  | <b>Total:</b><br>20 000<br><b>KBN share:</b><br>18 851 | 2013-<br>2015      | Sirkula produces and sells growing medium made from garden waste that can be used to replace environmentally hostile peat-based growing medium. 2,000 tonnes of growing medium produced in 2016.                                                                                               |
| <b>New recycling facilities - Søre Sunnmøre Reinholdverk</b>                                                                                                                                                                                                                                                                                           |                               |                              |                                                        |                    |                                                                                                                                                                                                                                                                                                |
| Three new recycling facilities, new administration building and renovation of waste sorting facility. Solar panels on the roof of the administration building, making it virtually energy neutral. Annual energy consumption for the facilities as a whole reduced by 30,000 kWh.                                                                      | 58% /<br>64 000 000           | <b>Total:</b><br>109 500 000 | N/A                                                    | 2015-<br>2018      | Wet organic waste was previously incinerated together with residual waste, but is now separated and made available for biogas production.                                                                                                                                                      |
| <b>New waste sorting facility - Romerike avfallsforedling (ROAF)</b>                                                                                                                                                                                                                                                                                   |                               |                              |                                                        |                    |                                                                                                                                                                                                                                                                                                |
| New large facility with state-of-the-art waste sorting equipment serving 126,500 households. This is the first facility in the world to use fully automatic sorting of plastic from residual waste.                                                                                                                                                    | 100%<br>234 000 000           | <b>Total:</b><br>234 000 000 | <b>Total:</b><br>30 000<br><b>KBN share:</b><br>30 000 | 2012-<br>2014      | Sorting machinery can separately sort five types of plastic. Laser optical sorting to divert bagged food waste to biogas production.                                                                                                                                                           |



## WATER AND WASTEWATER MANAGEMENT



Due to population growth, IVAR IKS has upgraded their facility with climate-friendly solutions.  
Photo: KBN/Torunn Brånå

TOTAL DISBURSEMENTS

**1 025 195 000** NOK

OUTSTANDING LOANS

**931 216 552** NOK

ADDED CAPACITY

**219 051** p.e

Impact  
KBN SHARE

| DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                    | KBN FINANCING<br>(NOK)                        | TOTAL COST<br>(NOK)     | INCREASE IN<br>CAPACITY<br>(PE) <sup>8</sup> | BUILDING<br>PERIOD | OTHER<br>RESULTS                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------|----------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tønsberg wastewater treatment plant</b>                                                                                                                                                                                                                                                                                                                                     |                                               |                         |                                              |                    |                                                                                                                                                                                                                                                                                                                      |
| Treatment plant for waste water from five municipalities.                                                                                                                                                                                                                                                                                                                      | 92% /<br>115 000 000<br>(5 000 000 in 2016)   | Total:<br>125 000 000   | Total:<br>100 000<br>KBN share:<br>92 000    | 2014-<br>2017      | Treatment efficiency in terms of BOD (biological oxygen demand) improved from 45% to 90%, discharges reduced by 1,000 tonnes per annum. Treatment efficiency in terms of COD (chemical oxygen demand) improved from 35% to 85%, discharges reduced by 2,500 tonnes per annum.                                        |
| <b>Water pipeline Nordli to Finnkroken - Bardu municipality</b>                                                                                                                                                                                                                                                                                                                |                                               |                         |                                              |                    |                                                                                                                                                                                                                                                                                                                      |
| Pipe line to connect water plants to secure the water supply for Bardu and Målselv municipalities. Makes use of the difference in height to drastically reduce the energy used to pump water relative to the previous connection.                                                                                                                                              | 100% /<br>16 000 000<br>(2016)                | Total:<br>16 000 000    | Total:<br>4 500<br>KBN share:<br>4 500       | 2015-<br>2016      | Reduction in pumping station energy consumption: 75,000 kWh                                                                                                                                                                                                                                                          |
| <b>Water and wastewater management improvements 2013-2015 - Oppegård municipality</b>                                                                                                                                                                                                                                                                                          |                                               |                         |                                              |                    |                                                                                                                                                                                                                                                                                                                      |
| Refurbishment of wastewater system and improvements to water supply network. Upgrading of water supply facility, including installation of UV treatment.                                                                                                                                                                                                                       | 100% /<br>92 295 000                          | Total:<br>92 295 000    |                                              | 2013-<br>2015      | Refurbishment of 3,114 m of wastewater pipe and 3,258 m of water supply pipe.                                                                                                                                                                                                                                        |
| <b>Water supply- IVAR IKS</b>                                                                                                                                                                                                                                                                                                                                                  |                                               |                         |                                              |                    |                                                                                                                                                                                                                                                                                                                      |
| New dual water supply to the island communities in the Rennesøy and Finnøy municipalities from a 20 km undersea pipeline.                                                                                                                                                                                                                                                      | 100% /<br>122 000 000                         | Total:<br>122 000 000   |                                              | 2012-<br>2014      | This pipeline provides the vulnerable island communities with a dual water supply, and this is particularly important in terms of ensuring a backup supply.                                                                                                                                                          |
| <b>Central wastewater treatment facility, Nord-Jæren - IVAR IKS</b>                                                                                                                                                                                                                                                                                                            |                                               |                         |                                              |                    |                                                                                                                                                                                                                                                                                                                      |
| Expansion of the Nord-Jæren central treatment facility required due to strong population growth. Includes a separate biogas plant, as well as a fertiliser factory that produces fertiliser pellets from the biological residue. The remainder of the overall cost is financed by a normal loan from KBN.                                                                      | 20% /<br>104 200 000                          | Total:<br>520 000 000   | Total:<br>160 000<br>KBN share:<br>32 061    | 2012-<br>2016      | This project replaces the previous chemical treatment plant with biological treatment. This improves the treatment of dissolved organic material as well as ensuring higher production from the biogas facility.                                                                                                     |
| <b>Expansion of the Grødaland treatment plant - IVAR IKS</b>                                                                                                                                                                                                                                                                                                                   |                                               |                         |                                              |                    |                                                                                                                                                                                                                                                                                                                      |
| Expansion of the treatment plant with a new large flotation stage in order to handle a high level of wastewater from industrial users.                                                                                                                                                                                                                                         | 79% /<br>27 700 000                           | Total:<br>35 000 000    | Total:<br>80 000<br>KBN share:<br>63 314     | 2011-<br>2012      | The treatment plant is designed to facilitate biogas production from the residual sludge waste.                                                                                                                                                                                                                      |
| <b>Water treatment - IVAR IKS</b>                                                                                                                                                                                                                                                                                                                                              |                                               |                         |                                              |                    |                                                                                                                                                                                                                                                                                                                      |
| Upgrading of the Langevatn facility, which is the main water treatment facility for the Stavanger region. The facility is dimensioned for anticipated population growth of 100,000 residents by 2050.                                                                                                                                                                          | 9% /<br>93 500 000 <sup>10</sup>              | Total:<br>1 100 000 000 | Total:<br>100 000<br>KBN share:<br>8 500     | 2012-<br>2018      | More comprehensive treatment processes, including ozone treatment and bio filtration that are necessary to ensure satisfactory water quality and hygiene in response to anticipated warmer and wetter climatic conditions in the future.                                                                             |
| <b>Upgrading of the Nærbø wastewater treatment facility - IVAR IKS</b>                                                                                                                                                                                                                                                                                                         |                                               |                         |                                              |                    |                                                                                                                                                                                                                                                                                                                      |
| Upgrading of the Nærbø wastewater treatment facility in response to increasing treatment volumes caused by increases in population and industrial activity.                                                                                                                                                                                                                    | 100% /<br>14 500 000                          | Total:<br>14 500 000    | Total:<br>5 900<br>KBN share:<br>5 900       | 2011-<br>2012      |                                                                                                                                                                                                                                                                                                                      |
| <b>Underwater pipeline Furnesfjorden - HIAS IKS</b>                                                                                                                                                                                                                                                                                                                            |                                               |                         |                                              |                    |                                                                                                                                                                                                                                                                                                                      |
| 25 km underwater pipeline that will double the capacity for transfer of wastewater through Norway's largest inshore lake (Mjøsa). This became necessary due to the high level of population growth and increased precipitation in the region. The pipeline is laid at a depth of 30 to 70 m, and is the most extensive underwater pipeline project in Norway.                  | 67% /<br>114 000 000<br>(2016)                | Total:<br>170 000 000   | Total:<br>7 000<br>KBN share:<br>4 694       | 2015-<br>2018      | The new pipeline will avoid the risk of leaks and the consequent pollution and eutrophication of Mjøsa, which has a vulnerable ecosystem and provides drinking water for 80,000 people. The project is due for completion in 2018, with NOK 55.7 million of remaining investment to be carried out in 2017 and 2018. |
| <b>Waste water treatment facility and waste transport - HIAS IKS</b>                                                                                                                                                                                                                                                                                                           |                                               |                         |                                              |                    |                                                                                                                                                                                                                                                                                                                      |
| Upgrading of the main HIAS wastewater treatment facility in order to accommodate population growth and increased industrial activity in the area. Introduction of a fully biological treatment process that separates phosphorus and other fertiliser materials that cannot be separated by the current chemical treatment system.                                             | 79% /<br>124 000 000<br>(44 000 000 in 2016)  | Total:<br>157 058 000   |                                              | 2011-<br>2016      | The project also includes an upgrading facility for biogas from sludge waste, as well as new and renovated pipework to the waste treatment facility in order to avoid the risk of leaks and consequent pollution of the inshore lake Mjøsa.                                                                          |
| <b>Water supply and treatment - HIAS IKS</b>                                                                                                                                                                                                                                                                                                                                   |                                               |                         |                                              |                    |                                                                                                                                                                                                                                                                                                                      |
| Upgrading of water extraction, water supply and water treatment to ensure good water quality and adequate capacity in a region with high levels of population growth and changing precipitation patterns.                                                                                                                                                                      | 100% /<br>193 420 000<br>(27 069 573 in 2016) | Total:<br>193 420 000   |                                              | 2010-<br>2015      | Steps have been taken to ensure security of supply for the region, including dual water supply, a zone system for water pressure and emergency backup electric power supply for all pumping stations.                                                                                                                |
| <b>New water treatment facility - HIAS IKS</b>                                                                                                                                                                                                                                                                                                                                 |                                               |                         |                                              |                    |                                                                                                                                                                                                                                                                                                                      |
| A new water treatment facility is needed for the Hamar area due to high levels of population growth and because the quality of water available for extraction from the inshore lake Mjøsa is being adversely affected by climate change. The water treatment process in the new facility will include chemical treatment with direct filtering, UV treatment and chlorination. | 2% /<br>8 580 000 <sup>9</sup>                | Total:<br>350 000 000   | Total:<br>36 000<br>KBN share:<br>8 082      | 2015-<br>2021      | The facility will be constructed with particular emphasis on efficient energy use, including preparation for using solar panels. HIAS IKS has set a target for the facility to be climate neutral by 2020.                                                                                                           |

8. p.e = Population equivalent 9. Green Loan funding is approved for the entire project. Remaining funding is to be obtained in 2018-2019 10. Remaining funding obtained through ordinary KBN Loans.



## CLIMATE CHANGE ADAPTATION



"Mannen" - a mountainside with high avalanche risk is now monitored closely. Photo: Vidar Ruud / NTB scanpix

| DESCRIPTION | KBN FINANCING<br>(NOK) | TOTAL COST<br>(NOK) | BUILDING<br>PERIOD | OTHER<br>RESULTS |
|-------------|------------------------|---------------------|--------------------|------------------|
|-------------|------------------------|---------------------|--------------------|------------------|

#### Avalanche risk monitoring - Rauma municipality

|                                                                                                |                     |                              |               |                                                         |
|------------------------------------------------------------------------------------------------|---------------------|------------------------------|---------------|---------------------------------------------------------|
| Monitoring and avalanche warning system for 'Mannen', a mountainside with high avalanche risk. | 15% /<br>31 917 394 | <b>Total:</b><br>220 000 000 | 2011-<br>2017 | Risk of rock avalanche up to 3 million m <sup>3</sup> . |
|------------------------------------------------------------------------------------------------|---------------------|------------------------------|---------------|---------------------------------------------------------|

TOTAL DISBURSEMENTS

**31 917 394** NOK

OUTSTANDING LOANS

**23 700 080** NOK



## SUSTAINABLE LAND USE



Tromsø Havn, where a major project to rehabilitate polluted sea floor has resulted in a reduction in 75% persistent organic pollutants. Photo: Bjørn Jørgensen / Samfoto

| DESCRIPTION | KBN FINANCING<br>(NOK) | TOTAL COST<br>(NOK) | AREA<br>IMPROVED | BUILDING<br>PERIOD | OTHER<br>RESULTS |
|-------------|------------------------|---------------------|------------------|--------------------|------------------|
|-------------|------------------------|---------------------|------------------|--------------------|------------------|

### 'Clean Tromsøysund' project - Tromsø Havn KF

Major project to rehabilitate polluted sea floor in Tromsøysund. 95,000 m<sup>3</sup> of contaminated seafloor sediment has been dredged up and sealed into steel cylinders that will be used in the construction of an expanded quay facility.

38% /  
48 686 470

**Total:**  
129 104 000

**Total:**  
310 550 m<sup>2</sup>  
**KBN share:**  
118 009 m<sup>2</sup>

2009-  
2012

Extracted 653 kg PAHs and 3.8 kg PCBs. 75% reduction in persistent organic pollutants. Project will create unpolluted living conditions for fish and other species in the ocean, and a better local environment for the human population.

TOTAL DISBURSEMENTS

**48 686 470 NOK**

OUTSTANDING LOANS

**45 730 960 NOK**



# IVAR IKS

-- Biogas plant in Grødaland

## IVAR INTERMUNICIPAL COMPANY: GRØDALAND BIOGAS PLANT

|                                                          |                            |
|----------------------------------------------------------|----------------------------|
| DISBURSED IN 2016                                        | <b>83 200 000</b> NOK      |
| TOTAL COST                                               | <b>546 000 000</b> NOK     |
| PROPORTION OF TOTAL FINANCING REPRESENTED BY GREEN LOANS | <b>15,2</b> % <sup>*</sup> |
| ENERGY PRODUCTION                                        | <b>13.53 GWh</b>           |

equivalent to 5,195 tonnes of CO<sub>2</sub>e if the same amount of energy was produced as electricity.

IVAR IKS, a water, wastewater and waste disposal company in the Stavanger region, sees itself as a provider of three things: clean water, energy and nutrients for the soil. It sends clean water back to the fjord. It sells its energy in the form of biogas and district heating, and delivers its nutrient output as fertilizer pellets produced in its own fertilizer factory.

The biogas plant, which will be completed in 2017, will at full production produce approximately 65 gigawatt hours from biogas annually. Biogas production requires steam heating, and instead of using delivered energy to produce this heat, IVAR is building a separate biomass plant in which dewatered residue from biogas production and shredded waste timber can be burnt to produce heat for both the biogas plant and for a district heating system for the surrounding industrial estate. The biomass plant's output will be around 8 megawatts, and will produce heat of around 39 gigawatt hours a year, of which 15 gigawatt hours will be used for the biogas plant. Only the delivered energy, which is to say the district heating output, is included in the calculation of the annual energy production.

The biogas plant has been designed to ensure maximal recovery of the nutrients nitrogen, phosphorus and potassium, which are important fertilizers. IVAR has built its own fertilizer factory that compresses the dry residue from biogas production into fertilizer pellets that are clean and simple to transport over long distances – the factory even has customers as far away as Vietnam!

IVAR is involved in the RECOVER research project along with several leading research and consulting organisations in Norway. This project is investigating how the resources found in wastewater, such as energy, heat and nutrients, can best be recovered in Nordic conditions.

The biogas plant is not yet complete. The project was granted a green loan of NOK 284 million in 2017.

<sup>\*</sup> KBN's share of the climate impact is calculated on the basis of the amount of green lending provided at the end of 2016. It will increase to 59.63 GWh and an annual greenhouse gas saving of 23,017 tonnes once a loan agreed for 2017 is disbursed.



Photo: KBN / Torunn Brånå



# ASKER MUNICIPALITY

-- Buildings that pave the way

## KISTEFOSSDAMMEN NURSURY

TOTAL AMOUNT OF GREEN LENDING DISBURSED

**77 600 000** NOK

GREEN LOAN APPROVED IN 2016

**77 600 000** NOK

PROPORTION OF TOTAL FINANCING REPRESENTED BY GREEN LOANS

**100** %

CLIMATE IMPACT

Annual greenhouse gas saving of **48.5**  
tonnes of CO2 equivalents

## HOLMEN SWIMMING POOL

GREEN LOAN APPROVED IN 2016

**277 000 000** NOK

TOTAL AMOUNT OF GREEN LENDING DISBURSED

**277 000 000** NOK

PROPORTION OF TOTAL FINANCING REPRESENTED BY GREEN LOANS

**100** %

CLIMATE IMPACT

Annual greenhouse gas saving of **697**  
tonnes of CO2 equivalents

Asker Municipality, which is adjacent to Oslo and has 60,000 residents, has high environmental ambitions. The municipality has set itself a target of being climate-neutral by 2030, and by 2020 it intends to have reduced its delivered energy, which is to say energy that does not come from local sources, by 30% relative to the level in 2007.

These targets commit Asker to thinking about the energy consumption, energy supply and environmental impact of all the projects in which it invests. A new swimming pool in Holmen and a new nursery in Kistefosdammen, both of which were financed using green loans from KBN in 2016, are good examples of this.

### NURSERY THAT CREATES ITS OWN POWER

Kistefosdammen Nursery is likely to become the first public sector plus-house building in Norway, which is to say that it will produce more power over the course of a year than it uses. The distinctive structure is energy-efficient and requires approximately half as much energy as the requirement in the applicable building regulations. 300m<sup>2</sup> of solar cells on the roof and geothermal boreholes will more than cover the building's modest energy requirements over the course of a year. Timber and other environmentally friendly materials were prioritised when constructing the building so as to reduce the emissions from the building materials as well. When the nursery is complete in March 2017, the hope is that parents will be as climate-smart

as the building, and will make the most of the high-quality bicycle parking facilities and the fact that the nursery is only a short distance to the train station when delivering and collecting their children.

### ENERGY-EFFICIENT SWIMMING POOL COMPLEX

When Asker Municipality started planning a new swimming pool complex in Holmen, the planning team discovered that there were few good examples of environmentally friendly solutions for swimming pool complexes, which generally use a large amount of energy. There was not even a separate passive-house standard for buildings housing swimming pools. The municipality's team therefore had to be innovative. This led to a design featuring 15 geothermal boreholes and around 1,000m<sup>2</sup> of solar thermal collectors to heat the building and the water. In addition, the pool's engineers chose to put 650m<sup>2</sup> of photovoltaic solar panels on the roof of the building and on its south-facing side, which will provide around 12% of the building's electricity consumption. The country's most energy-efficient swimming pool complex is a high-quality facility with an 8-lane main pool measuring 25m by 21m, an exercise pool, a sports hall, a social area and a café, as well as a play area on the roof. Low-carbon concrete is being used in its construction, which will help reduce the emissions caused by the building materials. The pool will be ready for use in April 2017.



Photo: Paul S. Amundsen



# BERGEN LIGHT RAIL

-- Low-carbon transportation in Bergen



## BERGEN LIGHT RAIL

|                                                          |                                                                        |
|----------------------------------------------------------|------------------------------------------------------------------------|
| TOTAL AMOUNT OF GREEN LENDING PROVIDED 2010-2016         | <b>5 270 000 000 NOK</b>                                               |
| PROPORTION OF TOTAL FINANCING REPRESENTED BY GREEN LOANS | <b>100 %</b>                                                           |
| CLIMATE IMPACT                                           | Annual avoided GHG emissions of <b>5 753</b> tonnes of CO2 equivalents |

|                  |                    | EMISSIONS FROM CONSTRUCTION | EMISSIONS SAVINGS DURING OPERATION | NET GAIN OVER 60 YEARS | NET GAIN PER YEAR |
|------------------|--------------------|-----------------------------|------------------------------------|------------------------|-------------------|
| OTHER POLLUTANTS | <b>SOx (kg)</b>    | 95 524                      | 1 433 461                          | 1 137 937              | 18 966            |
|                  | <b>NOx (kg)</b>    | 747 096                     | 1 357 192                          | 610 096                | 10 168            |
|                  | <b>PM 2,5 (kg)</b> | 48 469                      | 351 106                            | 302 637                | 5044              |
|                  | <b>NM VOC (kg)</b> | 290 137                     | 1 239 149                          | 949 012                | 15 817            |

Since 2010 KBN has provided green loans to finance the three construction phases of the Bergen Light Rail project. The total amount lent of NOK 5.270 billion in the period up to 2016 makes the Bergen Light Rail the largest single project financed by our green loans.

With 9,987,000 passenger journeys in 2015, the Bergen Light Rail has become the environmentally friendly backbone of the public transport offer in Bergen. The service replaces bus routes and is causing more people to choose public transport: despite population growth in the Bergen region, the volume of car traffic to and from the city centre has decreased, which can largely be attributed to the Bergen Light Rail.

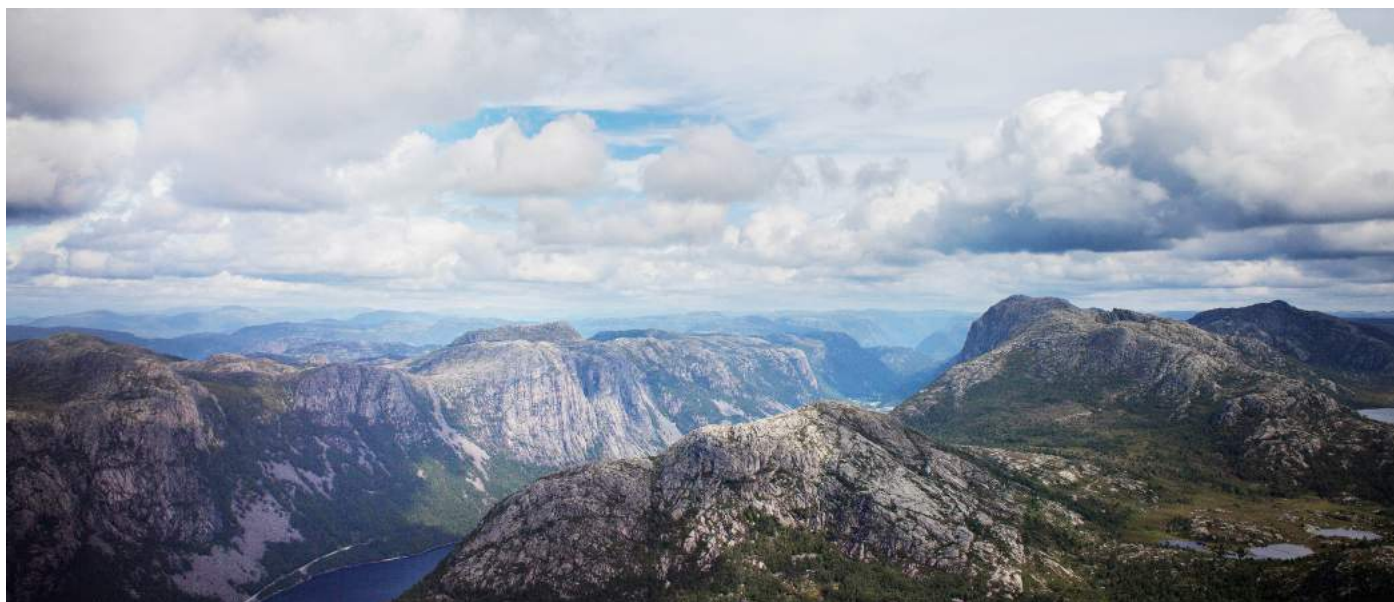
With the assistance of Asplan Viak, we have carried out a simplified environmental assessment of the project from a life-cycle perspective, comparing it with a scenario in which it had not been built. This assessment shows that although constructing the Bergen Light Rail generated emissions, these were quickly overtaken by emissions savings once it entered operations. The electric train system generates far lower atmospheric emissions than buses: as the table shows, the Bergen Light Rail delivers a net climate gain of 5,753 tonnes of CO2 equivalents per year

after factoring in the emissions produced during the construction phase.

In addition, the light rail service is having a significant positive effect on air quality locally in Bergen. Bergen has on several occasions each winter in recent years been ranked as one of the most polluted cities in Europe due to two factors: too high emissions of NOx and PM2-10, which are principally due to heavy traffic, and an atmospheric inversion that leads to emissions not dissipating from the valley in which Bergen is situated. Calculations show a net annual gain equivalent to 23,891 kg of SOx, 22,619 kg of NOx and 5,851 kg of PM2.5. The impact is even greater for Bergen as a city because of the Bergen Light Rail's contribution to reducing traffic volumes in the area affected by inversion conditions.

Bergen Light Rail has become a positive driver for urban development in the city. Construction of commercial and residential buildings is now being concentrated around the service's route, which means that the Bergen Light Rail is becoming the preferred

*Calculations of the environmental gain delivered by the Bergen Light Rail are based on a simplified life-cycle analysis of emissions from constructing and operating it for 60 years relative to an alternative scenario, and were carried out in 2016 by Asplan Viak for KBN. In the alternative scenario, other means of transportation that are primarily fossil-fuel powered are used, with these becoming increasingly electrified over the life of the Bergen Light Rail in line with Norway's national emissions targets. This perspective therefore means that the environmental benefit from the Bergen Light Rail will be greatest at the start of its life, and will then decline as alternative means of transport produce less emissions. We have, in accordance with Asplan Viak's recommendation, chosen to spread the environmental gains accumulated during the 60 years equally over this period, which means that the environmental gain delivered by the Bergen Light Rail in 2016 is in reality higher than stated here. We also note that when modelling the climate impact of the Bergen Light Rail, we assumed that producing 1 kWh of electricity produced 386 g of CO2 emissions, although Bergen Light Rail purchases guarantees of origin for the electricity it uses. More information on the basis for the calculations is available upon request; we will be happy to send you the report and the model.*



## MEASURING ENVIRONMENTAL IMPACT

from public investments in Norway

### ABOUT THE TERM 'IMPACT'

KBN's green loans finance buildings and infrastructure for transport, water, wastewater and waste management in Norwegian municipalities and county authorities. These are investments in physical assets that by necessity use resources such as energy, water and building materials, and generate emissions during the construction phase. Compared with a scenario in which the investment was never made, many of the investments we finance will still have a net positive climate footprint.

We choose to assume as the basis for our calculations what we think is the most probable alternative scenario to each green investment: that a comparable investment would be made without any ambition to find an environmentally friendly solution. For example, if a municipality chooses to build a retirement home that produces energy locally through the use of photovoltaic cells, we need to assume that this is because the municipality needs a retirement home. On this basis we calculate a project's impact relative to a reference scenario in which the project satisfies the minimum requirements in the national or regional guidelines. The basic criterion for investments to be financed at KBN's green interest rate is that the solution that is selected must be significantly more ambitious than is required of the municipality or county authority by the relevant national guidelines.

### NORWEGIAN GUIDELINES AS A BASELINE FOR CALCULATING A PROJECT'S IMPACT

KBN uses the minimum requirements in Norwegian guidelines as the baseline for assessing the environmental impact of an investment because Norwegian municipalities and county authorities naturally cannot choose solutions that do not meet these minimum requirements. However, we would like to emphasise that the Norwegian guidelines are relatively strict from an international perspective, and that the projects in our green portfolio below are of a very high quality in terms of the level of technology and innovation they employ.

The following information on buildings for service providers offers examples of this: according to Statistics Norway<sup>11</sup>, buildings of this type in Norway consumed 229 kWh per square metre of heated floor space in 2011 (newer figures are not available), which is significantly lower than in European countries that have a comparable climate (with the exception of Denmark at 196 kWh/m<sup>2</sup>/year), including Sweden (304 kWh/m<sup>2</sup>/year), Finland (299 kWh/m<sup>2</sup>/year), Estonia (443 kWh/m<sup>2</sup>/year), the Netherlands (326 kWh/m<sup>2</sup>/year) and Belgium (554 kWh/m<sup>2</sup>/year)<sup>12</sup>.

We can assume that this is related to Norway's building regulations, which are strict and apply to all new buildings in Norway. The applicable building regulations (the Regulations on technical requirements for building works, TEK10, which contain stricter requirements from 2017) state that office buildings can consume a maximum of 115 kWh/m<sup>2</sup>/year, for example. The energy mix that is used in Norwegian buildings is also far cleaner than in many other countries, with electricity (84%) and district heating (12%) the dominant energy carriers<sup>13</sup>. Fossil energy carriers represented 2.5% of the energy consumed by buildings in 2015, but the proportion represented by such sources is falling sharply as we approach 2020 and the Norwegian Parliament's complete ban on the use of fossil oil as an energy carrier in buildings.

In other terms, even where solutions do not exceed the Norwegian guidelines by a large margin and therefore have a moderate beneficial environmental impact according to our calculation models, they are important projects from an international perspective because they contribute to the creation of a market for solutions that are at the forefront internationally.

### LIMITATIONS OF THE LOCAL GOVERNMENT ACT

KBN's clients are regulated by the Local Government Act, which imposes limitations as to which investments a municipality or county may fund through debt. Commercial activities such as the generation of electricity for sale may not be funded through municipal loans. Because of this, KBN's Green Loans portfolio does not include projects such as hydropower plants and wind farms.

11. <https://www.ssb.no/energi-og-industri/artikler-og-publikasjoner/energi-bruk-i-bygninger-for-tjenesteytende-virksomhet-2011>

12. <http://www.entranze.enerdata.eu/#/total-unit-consumption-per-m2-in-non-residential-at-normal-climate.html>

13. <https://www.enova.no/innsikt/rapporter/byggstatistikk-2015/sammen-drag/1150/0/>

KBN's Green Loans incentivise Norwegian municipalities to invest in a greener future. With Ødegården kindergarden, Oppegård municipality has brought innovative building technology to its youngest citizens. Photo: KBN / Torunn Brånå



# KBN GREEN BONDS

## BOND RATINGS

|                                                                                   |                                                                                   |            |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------|
|  |  | COMPOSITE  |
| <b>AAA</b>                                                                        | <b>Aaa</b>                                                                        | <b>AAA</b> |

## OUTSTANDING GREEN BONDS

| ISSUE DATE   | AMOUNT ISSUED   | MATURITY     | COUPON    | ISIN         |
|--------------|-----------------|--------------|-----------|--------------|
| 26 OCT, 2016 | USD 500 MILLION | 26 OCT, 2020 | 1.375 000 | XS1508672828 |
| 02 NOV, 2015 | USD 500 MILLION | 26 OCT 2020  | 2.125 000 | XS1188118100 |

KBN's first green bond issuance, a 3y USD 500 million bond issued in 2013, matured in 2016. KBN has raised green funding since 2010; the first years were aimed at Japanese households in the Uridashi market.

## THIRD PARTY EVALUATION



The Center for International Climate Research (CICERO), the leading provider of independent, science-based evaluations of the frameworks of green bond issuers, has assessed the environmental robustness of the June 2016 version of KBN's Green Bond Framework. We are proud to have received the rating "dark green", which is the highest possible rating from CICERO. This rating indicates the majority of projects financed through KBN's green bonds are "projects and solutions that realise the long-term vision of a low-carbon and climate-resilient future already today"<sup>14</sup>



### DARK GREEN

Projects and solutions that already realise the long-term vision of a low-carbon and climate-resilient future. Typically, this will entail zero-emission solutions and governance structures that integrate environmental concerns into all activities. Example projects include renewable energy projects such as solar or wind.

### MEDIUM GREEN

Projects and solutions that represent steps towards the long term vision, but are not quite there yet. Example projects include sustainable buildings with good (but not excellent) energy efficiency ratings.

### LIGHT GREEN

Projects and solutions that are environmentally friendly but are not by themselves a part of the long term vision. Example projects include energy efficiency improvements in fossil-based industry that result in short-term reductions of greenhouse gas emissions, and diesel-fueled buses.

### BROWN

Projects that are in opposition to the long-term vision of a low-carbon and climate-resilient future.

14. <http://www.cicero.uio.no/en/posts/news/cicero-grades-climate-friendly-bonds-with-shades-of-green>



## INVESTOR QUOTES

*"As an investor in the KBN Green Bond we are very pleased with this convincing report - transparent with very specific and detailed information, at the same time easy to understand. Especially the use of indicators like GHG reduction, energy savings and renewable energy generation helps to understand the impact achieved with green bonds. We hope that other issuers are inspired to follow."*

Doris Kramer, Head of Investment Strategies and Sustainability at KfW

*"We welcome KBN's very comprehensive report. Priority sectors such as renewable energy, energy efficiency and green transport are disclosed as receiving disbursements. We also greatly appreciate very specific data such as energy savings, KBN's share of the project and GHG emissions reduced. Additionally, the examples of specific projects are of particular value, as in the final analysis it is the impact on the real economy which makes the important difference."*

Chris Wigley, Senior Portfolio Manager at Mirova

*"Kommunalbanken continues to be a leading issuer of green bonds in Europe. We welcome the improvements made to its green bond framework which made it more transparent for investors to better understand the projects with which the bond proceeds are financing. We invested in the 2016 issued green bond."*

Yo Takatsuki, Associate Director, Governance and Sustainable Investment at BMO Global Asset Management

## CORE PRINCIPLES OF KBN'S IMPACT REPORTING

### KBN'S IMPACT CALCULATIONS CORRESPOND TO ITS SHARE OF FINANCING

When a project financed by a green loan has a quantifiable impact on the climate or environment, we calculate KBN's share of the impact on the basis of the proportion of the overall cost that is financed by KBN when the loan is granted. If a project is financed using a combination of a green loan and an ordinary loan from KBN, we only calculate KBN's share of the impact for the proportion of the project that is financed by the green loan. We calculate the environmental impact of investments ex ante, which is to say on the basis of estimates.

An investment remains in KBN's aggregated impact report for the entire lifetime of the loan that was used to finance it. In other terms, the environmental impact of a project is removed from the total when the loan is paid back in its entirety or is for other reasons removed from KBN's portfolio of green lending portfolio.

### WE APPLY NORWEGIAN CODES & REGULATIONS AS THE BASELINE OF OUR IMPACT CALCULATIONS

Time is an important parameter when calculating the environmental impact of a project. Advanced life cycle models take into account that materials and structures deteriorate with age, and that the impact of an investment will therefore decrease at a certain rate. KBN does not have the resources to carry out such analysis in relation to each individual project we finance, and we similarly do not currently expect our customers to carry out such accounting for all investments. This report therefore documents the estimated annual environmental impact of KBN's green investments.

Where an emissions factor for electricity is involved in calculating a project's environmental impact, the impact calculation will be updated when we update the value of the emissions factor.

The environmental impact of new buildings is assessed as the difference between the estimated energy consumption of the building as built and the applicable building regulations. These regulations are updated at regular intervals. We think, however, that it is correct for the reference scenario for such buildings not to be updated in line with changes to the regulations, as it is a project's relative performance compared to the building regulations at the time the project was carried out that we assess.

### WE BASE CALCULATIONS ON EX ANTE DATA

The environmental impact of KBN's green loans is computed using ex ante data on the project's estimated impact on the assumption that it will be used as designed. We do not currently collect ex post data about projects once they are in use. This is in line with the seventh principle of the IFI's impact reporting harmonization initiative<sup>16</sup>.

### OUR REPORTING COVERS SCOPE 1&2 EMISSIONS AND EMISSION REDUCTIONS

The Greenhouse Gas Protocol divides the emissions generated by projects into three categories or scopes<sup>15</sup>:

- Scope 1: Direct greenhouse gas emissions from sources that are owned or controlled by the company, such as combustion at facilities or fuel consumed by company vehicles;
- Scope 2: Indirect greenhouse gas emissions from the generation of electricity purchased by the company;
- Scope 3: Other indirect greenhouse gas emissions, such as from the production of materials, goods and services etc. consumed by the company. Scope 3 is an optional reporting category.

When calculating the environmental impact of a project, we have based our calculations on direct emissions and emissions savings (scope 1) and on indirect emissions and emissions savings (scope 2). Emissions and emissions savings that fall under scope 3 have not been included in this version of KBN's impact report.

An exception to this is the light rail service in Bergen (NOK 5.27 billion), for which we have had an independent simplified environmental impact assessment carried out, which also took emissions generated during the construction phase into account. Some scope 3 emissions are thus included due to this project.

### WE REPORT REDUCED AND AVOIDED EMISSIONS SEPARATELY

Some of the projects we finance help reduce existing greenhouse gas emissions directly or indirectly, while other projects lead to emissions being either directly or indirectly avoided that would otherwise have been emitted in a reference scenario ("emissions savings"). We aggregate emissions reductions and savings separately, as we understand that it can be useful to see the difference between these two types of environmental impact.

It is to be noted that a large proportion of indirect emissions reductions and savings come from reducing and avoiding energy consumption, principally electricity. We use the same conversion factor for converting electricity into greenhouse gas emissions regardless of whether electricity is being used or electricity consumption reduced or avoided. More information is available in the "Emissions factor for electricity" section.

The table on [page 5](#) provides a summary of the conversion factors used by KBN.

### WE CONSIDER BOTH QUANTIFIABLE AND NON-QUANTIFIABLE IMPACTS

KBN can provide green financing for investment in projects in eight different categories. Not all the projects that we finance through a green loan have an easily quantifiable impact on the environment or climate in the form of a direct or indirect reduction or saving in emissions.

For example, we finance major innovative upgrades to water and wastewater infrastructure, which are important in terms of adapting to climate change and from a public health perspective. It is, however, both difficult and imprecise to ascribe an

environmental impact in the form of a reduction or saving in greenhouse gas emissions to projects of this sort. We therefore differentiate the portion of our lending portfolio that delivers quantifiable emissions reductions from the portion of our portfolio that does not. Projects in the Energy efficiency, Green new builds and Renewable energy categories as well as some projects in the Low-carbon transport category have quantifiable emissions savings or reductions. These projects represent approximately 85% of the projects in our portfolio in NOK terms.

Projects in the Waste management, Water and wastewater management, Sustainable land use and Climate change adaptation categories as well as some projects (typically footpath and cycle path projects) in the Low-carbon transport category are simply described with no quantified environmental impact provided. Where an investment creates new capacity or increases existing capacity at a plant or facility, this is quantified to the extent possible. However, it is more important to note the quality of these projects, although this can unfortunately not be quantified and aggregated in the same way.

#### **WE ALIGN OUR REPORTING WITH INTERNATIONAL GREEN BOND STANDARDS & INITIATIVES**

KBN's issuance of green bonds, its allocation of the proceeds, and its reporting on the environmental impact of the projects it finances comply, to the best of our knowledge, with the following international initiatives:

- ICMA Green Bond Principles
- The Climate Bonds Initiative's Climate Bonds Taxonomy
- The IFI's "Working Towards a Harmonized Framework for Impact Reporting" and "IFI Approach to GHG Accounting for Renewable Energy Projects"
- A joint Nordic issuer discussion on impact reporting; see below

#### **WE CONTINUOUSLY STRIVE TO IMPROVE OUR REPORTING AND ARE GRATEFUL FOR ANY COMMENTS**

Reporting the environmental impact of proceeds from green bonds is a novel and fast-moving field. Although we work to be at the forefront of developments in this area, we recognise the benefits of cooperating with other organisations in the field.

KBN forms part of a group of Nordic public sector issuers of green bonds<sup>17</sup> that in 2016 initiated discussions regarding a common approach to green bond impact reporting. This initiative stems from the belief that a common Nordic position on the issues involved may be beneficial to other green bond issuers as well as to the investor community. The issuers also believe that sharing experiences and know-how will benefit them all as individual issuers. The purpose of our work is to develop a transparent, harmonized and relevant approach to reporting the impact from green bonds. The group's ambition is to develop a practical guide for Nordic green bond issuers, which it aims to publish in the second half of 2017. The outcome of this work may have an effect on how we report impact in the future.

We welcome any feedback, comments or suggestions on our work on green bonds and impact reporting. Please get in touch should you have any thoughts on the KBN Green Bond Environmental Impact Report 2016 or on any future reports.

15. [www.ghgprotocol.org/files/ghgp/public/ghg-protocol-revised.pdf](http://www.ghgprotocol.org/files/ghgp/public/ghg-protocol-revised.pdf) - page 25

16. "Green Bonds: Working Towards a Harmonized Framework for Impact Reporting", December 2015, signed: African Development Bank (AfDB), Agence Française de Développement (AFD), Asian Development Bank (ADB), European Bank for Reconstruction and Development (EBRD), European Investment Bank (EIB), Inter-American Development Bank (IDB), International Bank for Reconstruction and Development (IBRD), International Finance Corporation (IFC), Kreditanstalt für Wiederaufbau (KfW), Nederlandse Financierings-Maatschappij voor Ontwikkelingslanden (FMO), and Nordic Investment Bank (NIB).

17. Participants (FI=Finland, NO=Norway, SE=Sweden): City of Göteborg (SE), Kommunalbanken (NO), Kommuninvest (SE), Municipality Finance (FI), Municipality of Borås (SE), Municipality of Norrköping (SE), Municipality of Örebro (SE), Stockholm County Council, SLL (SE), Swedish Export Credit Corporation, SEK (SE)

# CALCULATION METHODS AND CORE ASSUMPTIONS OF CATEGORIES



## NEW GREEN BUILDINGS

New green buildings are incorporated in terms of their energy efficiency relative to a reference building constructed in accordance with the applicable energy consumption limit in the building regulations (currently TEK10, the Regulations on technical requirements for building works).

Many of the new environmentally friendly buildings that we finance use locally produced renewable energy, such as energy from photovoltaic solar cells or ground source heating from boreholes. We count this energy as emission-free, as we currently only include emissions from sources covered by scopes 1 and 2 of the Greenhouse Gas Protocol. We therefore calculate the difference between delivered energy and the relevant energy consumption limit in the building regulations as the basis for the environmental impact.

### Formula

$$\left( \begin{array}{c} \text{Energy consumption limit} \\ \text{in the building} \\ \text{codes per m}^2 \text{ of} \\ \text{heated floor space} \end{array} - \begin{array}{c} \text{Estimated} \\ \text{consumption of} \\ \text{delivered energy} \\ \text{per m}^2 \text{ of heated} \\ \text{floor space} \end{array} \right) \times \text{m}^2 \text{ of heated floor space}$$

When we aggregate the environmental impact for the Green new builds category, we convert the energy avoided into a greenhouse gas emissions avoided using the emissions factor we apply for electricity production. This is because we do not have detailed data on what energy carriers would have been used and to what extent for each reference scenario. According to Enova, 84% of energy consumption in Norwegian buildings was from electricity in 2015<sup>18</sup>.

New buildings financed by a green loan from KBN tend to have other climate-smart qualities in addition to only using a small amount of energy, such as being built using low-carbon building materials. The impact of these qualities is not aggregated, but a short description is provided for each project.

### Assumptions

Producing 1 kWh of electricity that is delivered to the electricity network in Europe is assumed to generate 0.380 kg of CO<sub>2</sub> equivalents (weighted average of mainland EU + Norway, combined margin, based on the IFI's harmonised grid factor database). See Appendix C.



## ENERGY EFFICIENCY

Energy efficiency is calculated as the improvement of energy use, compared to a baseline of actual energy consumption data.

### Formula

$$\text{ENERGY SAVED} = \begin{array}{c} \text{Energy consumption} \\ \text{before measures} \end{array} - \begin{array}{c} \text{Estimated energy} \\ \text{consumption after} \\ \text{measures} \end{array}$$

### Assumptions

An energy saving of 1 kWh is assumed to represent an emissions reduction equivalent to the emissions from producing 1 kWh of electricity delivered to the electricity network in Europe, i.e. 0.380 kg of CO<sub>2</sub> equivalents (weighted average of mainland EU + Norway, combined margin, based on the IFI's harmonised grid factor database). See Appendix C.

1 kWh of energy from heating oil is assumed to generate emissions of 0.247 kg of CO<sub>2</sub> equivalents (source: AEA: UK Greenhouse Gas Inventory for 2010).

Local renewable energy sources have zero emissions within scopes 1 and 2.



## WATER AND WASTEWATER MANAGEMENT

### Formula

$$\text{INCREASE IN CAPACITY} = \begin{array}{c} \text{Capacity before} \\ \text{measures} \end{array} - \begin{array}{c} \text{capacity after} \\ \text{financed measures} \end{array}$$

### Assumptions

1 population equivalent (PE) of water/wastewater: 250 litres per 24 hours where the customer has not provided its own figure for what constitutes a PE.



## LOW-CARBON TRANSPORTATION

### Formula

$$\text{GHG EMISSIONS REDUCED} = \left( \text{Consumption per km using a conventional alternative, e.g. a fossil fuel car or diesel bus} \times \text{relevant emission factor} \times \text{annual distance travelled} \right) - \left( \text{Consumption per km using chosen alternative} \times \text{emissions factor} \times \text{annual distance travelled} \right)$$

### Assumptions

Electricity from the electricity network: 0.380 kg of CO<sub>2</sub>-equivalent emissions per kWh produced (weighted average of mainland EU + Norway, combined margin, based on the IFT's harmonised grid factor database). See Appendix C.

Electric cars: 0.199 kWh of energy per km = 0.076 kg per km at 0.380 kg of CO<sub>2</sub>e/kWh (reference: (GLO) E13.2).

Petrol and diesel: 0.193 kg of CO<sub>2</sub> equivalents per km can be used if consumption in litres is not known (reference: The Norwegian Institute of Transport Economics, Greenhouse Gas Protocol).



## WASTE MANAGEMENT

### Formula

$$\text{INCREASE IN CAPACITY} = \text{Capacity before measures} - \text{capacity after financed measures}$$

### Assumptions

No general assumptions



## RENEWABLE ENERGY

The environmental impact of producing renewable energy that generates no emissions (under scopes 1 and 2) is accounted for as an emissions reduction relative to an alternative way of producing the same amount of energy. We use the emissions factor for electricity delivered to the grid to calculate emissions reductions.

### Formula

$$\text{GHG EMISSIONS AVOIDED} = \text{Number of kWh of energy produced per year} \times \text{the emissions factor for electricity}$$

There are many ways of calculating the emissions from alternative ways of producing energy. The renewable energy produced at facilities that we finance may replace electricity, heating oil, conventional diesel, district heating produced using renewable or fossil energy carriers etc. In view of this, using the emissions factor for electricity for the calculation represents a conservative estimate. We think, however, that over a project's lifetime, electricity will become the main alternative source of energy to locally produced energy, and that using electricity is consequently the best option.

### Assumptions

Producing 1 kWh of electricity that is delivered to the electricity network in Europe is assumed to generate 0.380 kg of CO<sub>2</sub> equivalents (weighted average of mainland EU + Norway, combined margin, based on the IFT's harmonised grid factor database). See Appendix C.



## SUSTAINABLE LAND USE



## CLIMATE CHANGE ADAPTATION

No general assumptions are made for Climate change adaptation and sustainable land use.

## APPENDIX C

# CALCULATING EMISSIONS FROM ELECTRICITY

Electricity is an important input in many of the projects that are financed through KBN's green loans, while saving electricity is one of the main ambitions of other projects in our portfolio. The electrification of heating systems, transportation systems and other important functions in our societies is an inevitable part of the transition to a low-carbon world. However, generating electricity also produces emissions and these are naturally taken into account when the environmental impact of projects is assessed. The question is therefore what emissions factors should we apply when calculating the emissions that are produced or avoided?

For the purposes of reporting emissions savings and reductions in relation to electricity consumption, we apply a European mix emission factor of 380 grams of CO<sub>2</sub> equivalents per kilowatt-hour of electricity generated. The factor is a weighted average of the combined margins<sup>19</sup> of 26 EU member states in mainland Europe and Norway, and is based on the IFI's harmonised database of grid factors<sup>20</sup>. Other parties to the Joint Nordic issuer discussion on impact reporting apply the same system boundary and calculation methodology.

We decided to apply a Europe-based grid factor because the Norwegian electricity market is highly integrated with the Nordic and European markets, with new connections constantly being established. The regional electricity market is the cornerstone of the Nordic energy system today and may serve as the 'battery'

for mainland Europe in the future when variable renewable energy makes up a large share of energy production. At present, however, the European energy system of which we are part uses considerable amounts of fossil energy sources. Including this in the equation leaves us with quite a high grid factor (relative to calculations of an isolated, Norwegian grid factor) that makes some of the projects in our portfolio look more environmentally appealing than when multiplied by a national factor, while for other projects the effect is the opposite.

The IFI grid factor database will be updated regularly in order to capture any development in real emissions from electricity generation. We aim to update our grid factor accordingly, meaning that the grid factor we apply in our 2017 impact report is likely to be lower than this year's. The updated grid factor will be applied to all projects in our portfolio, regardless of the year of disbursement.

KBN recognises that there is no single answer to the question of grid factors. Hence, we report all electricity savings figures in both kilowatt-hours and tonnes of CO<sub>2</sub> so that the reader may apply an alternative preferred factor. We would also like to emphasise that reducing the amount of electricity a project consumes not only involves reducing emissions; freeing capacity in the grid for new electrification projects is a target in its own right.

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19. 50/50 weighing of built margins and operating margins.

20. Available from the IFIs upon request.

21. See [Appendix A](#).

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