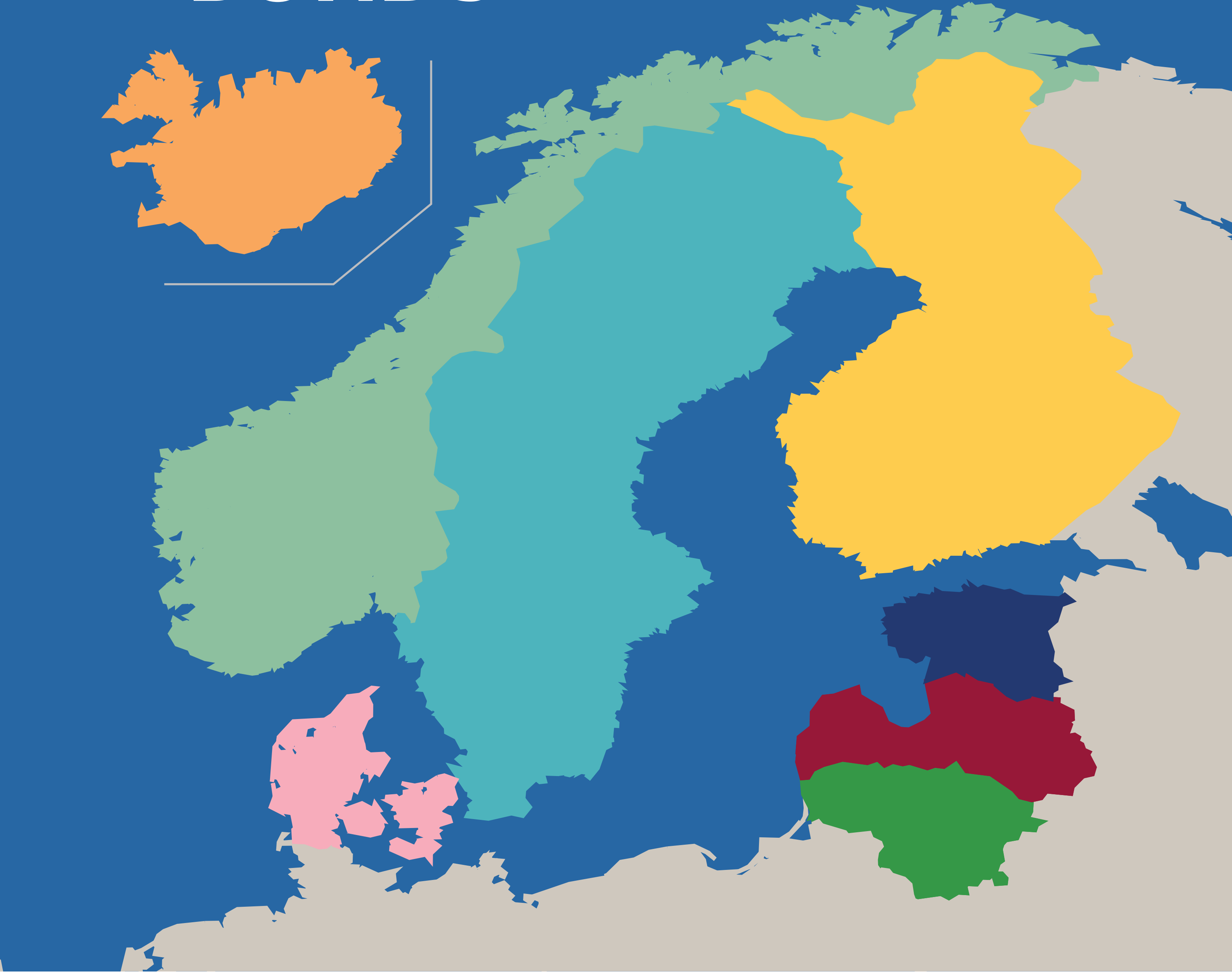
NORDIC AND BALTIC PUBLIC SECTOR GREEN BONDS



Climate Bonds Initiative

Foreign & Commonwealth Office

Prepared by the Climate Bonds Initiative

Commissioned by the FCO

CONTENTS

Sustainable cities are crucial for a 2˚C world

Cities, regarded by many as major contributors to climate change and other environmental challenges, are now becoming laboratories where the most innovative ideas for sustainable living are being tested. [...] The City of Copenhagen aspires to be the world's first capital city to become completely carbon neutral by 2025. San Francisco plans to move to zero waste by 2020. Oslo will ban private vehicles in the city centre by 2019 in an effort to reduce greenhouse gas emissions.

EAT Forum

CITIES ARE HOME TO THE MAJORITY OF HUMANKIND AND MORE THAN EVER A BEACON OF HOPE WHEN IT COMES TO CLIMATE CHANGE

Michael Bloomberg,
UN Special Envoy for Cities and Climate Change

Copenhagen was awarded the European Green Capital label in 2014. It has regularly demonstrated its climate ambition through eco-friendly solutions and initiatives, and plans to be carbon neutral by 2025. Strong on low carbon transport, the greater Copenhagen area will add 11 new routes to its already existing 28 Cycle Super Highways by the end of 2018.

Swedish cities have led by example in the transition to a low-carbon economy. Eight local governments have issued green bonds.

- Malmö's Augustenborg eco-city was launched in 1998 and won the UN World Habitat Award in 2010 for its 10,000 rain-absorbing green roofs and still serves today as laboratory and testbed for sustainable urban development.
- Växjö was the first city in the world to set the goal of becoming fossil-fuel free by 2030.
- Stockholm was the first city to receive the award European Green Capital in 2010.
- Gothenburg is the most sustainable meeting destination in the world, according to the Destination Sustainability Index 2017, which ranks 40 events cities by performance.

Oslo will implement a car ban by 2019, making it more difficult for cars to park in the city centre as parking spaces are gradually eliminated. It also plans to power all public transport solely by renewable energy by 2020.

Oslo's approach to conserving its natural areas and restoring its waterway network is one of the many reasons why it won the European Green Capital Award for 2019. It has has entered C40's Reinventing Cities competition, a global initiative set up to drive carbon neutral and resilient urban regeneration. Collaboration between business and cities will be an opportunity to transform underutilized spaces into new sustainability beacons.

Lahti in Finland is a pioneer in clean technology development. Second only to Denmark, Finland placed second in the Global Cleantech Innovation Index 2017 and first in emerging cleantech innovation.

In 2016-2017, the ELLI project, financed by the European Regional Development Fund, explored ways to improve energy efficiency in residential areas. In 2009, climate-smart Helsinki started an energy-efficient cloud computing project: excess heat from computer servers would be captured and channelled into the district heating network.

This report considers current and potential green bond issuance in eight Northern-European markets: Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway and Sweden. The specific focus is on local government (cities, municipalities, counties and regions), municipally owned companies (MOCs) and state-owned enterprises (SOEs), as well as the role of Local Government Funding Agencies (LGFAs).

This study of the Nordic-Baltic Public Sector Green Bond Market was commissioned by the United Kingdom's Foreign & Commonwealth Office.

London as an international sustainable financial hub

London is often ranked as a top financial centre.[1] Building on the creation of the City of London's Green Finance Initiative[2] in 2016, a new group led by investors and leading figures from the City of London, the Green Finance Taskforce[3], has been recently set up to draw up measures to accelerate the growth of green finance in the UK. Members of the Taskforce include the chief executive of the London Stock Exchange, a senior adviser to the Bank of England, representatives from Barclays, HSBC and Aviva, and representatives from the public sector and academia.

Mark Carney, Governor of the Bank of England, has worked on steering the financial sector in a greener direction. His seminal speech *Breaking the tragedy of the horizon*[4] given at Lloyds of London in September 2015 highlighted the importance of taking action on climate change now and publicized a key takeaway from a study into financial system risk undertaken by the UK's Prudential Regulation Authority: *The impact of climate change on the UK insurance sector*[5]. In 2017, the Bank of England identified climate change risks as integral to financial system supervision in *The Bank of England's response to climate change*[6].

Key facts about the UK as a financial centre

Source: Key facts about the UK as a financial centre,[7] TheCityUK

Leading the development of green finance, the London Stock Exchange published new ESG guidance which incorporates the reporting recommendations of the Financial Stability Board's Task Force on Climate-Related Financial Disclosure in February 2017. However, it has been offering transparency to investors and issuers in the green bond market since it launched its dedicated green bond segment in 2015. There are currently 52 green bonds listed on the segment. The inaugural green bond from Finnish grid operator Fingrid, launched in November 2017, brings the total number of bonds from Nordic issuers which are quoted on the LSE green bond segment to 28!

The UK's Green Investment Bank played an important role as an investor by deploying GBP3.4bn via more than 100 green infrastructure projects[8] and 7 funds across renewables, waste/biomass and energy efficiency through March 2017.

The UK insurance industry is also mobilising more green capital: Aviva, for example, has pledged to increase its holdings of green bonds. The UK Pension Regulator now requires pension trustees to take material environmental issues into account in making investment decisions.

TheCityUK has highlighted the possibility of combining innovative areas, such as FinTech and green finance as an opportunity for the UK to offer a new level of global leadership in green finance.[9]

Report Highlights

- **Strong regional focus on climate action,** including early adoption of green bonds.

- **Local government enjoys high levels of fiscal autonomy** and can issue bonds to fund the delivery of public services and improve the asset base they manage. The use of bond programs is rising, albeit mostly domestically as funding requirements at city or even municipal level can be low or infrequent. Green bond issuance to date has come from eight local governments in Sweden and the City of Oslo. While many issuers list domestically, Stockholms Läns Landsting and the cities of Gothenburg and Malmö (all Sweden) are repeat issuers on the London Stock Exchange (LSE).

- **Local government funding agencies (LGFAs) enjoy a dominant position as lender to the public sector.** Most are repeat issuers. Their outstanding green bonds are generally benchmark size, and are listed on the London and/or the Luxembourg stock exchanges. However, green bonds represent only a small portion of their total issuance. We have high expectations for further green bond issuance from LGFAs – both locally and internationally – as they channel local government funding requirements to meet their countries' environmental and climate priorities.

- **Mortgage bonds dominate issuance** in Denmark (78% of all outstanding bonds), Norway (41%) and Sweden (28%). Given the role of LGFAs and specialised state banks (e.g. Sweden's SBAB and its covered bond subsidiary SCBC) in funding municipal housing companies, there is a clear opportunity to combine funding for housing and other real estate and green bond issuance. Deals of this nature are likely to be of benchmark size and suitable for international listing.

- **Export credit agencies** Finnvera (Finland) and Eksportkreditt Norge (Norway) could be green bond issuer candidates with potential for an international listing. The same applies to development financing agencies Finnfund, Norfund, the Rainforest Fund. Sweden Export Credit has provided a regional green bond example.

- **Iceland** is the odd one out among Northern European countries with no green bond issuance to date. However, there is potential for existing bond issuers such as the housing fund, national power company (e.g. related to its geothermal power plants) and Municipality Credit Iceland (an LGFA) to issue green bonds. Reykjavik is another candidate given its ambitious climate investment agenda.

- **The Baltics** have smaller markets but benefit from being within the Eurozone. They have all recorded at least one green bond, mostly from public sector issuers. For example, Estonian Railways and the country's grid company could be potential issuers based on sector. Ad hoc issuance is considered most likely given the relatively small market size in each country.

- **Sweden** is expected to issue its first **sovereign green bond** in 2018. Its neighbours may well decide to do the same, given that all of them have ambitious climate plans through 2030. Sovereign green bond issuance could be particularly suitable for smaller countries such as Iceland, Estonia, Latvia and Lithuania as it would allow them to raise funding for a wide variety of investment projects on their climate agenda.

- **Stock exchanges** play a vital role in providing market access. Dedicated green bond lists have been crucial in showcasing green bonds. In January 2015, Oslo Børs became the first stock exchange in the world with a separate green bonds list. Nasdaq Stockholm and the London Stock Exchange followed within six months. In addition, Nasdaq First North Bond Market, an alternative marketplace which offers issuers more flexible admission requirements than Regulated Markets, is well suited for smaller issuers, private placements and retail bonds. This enhances market access. The launch of further green bond segments in the region is considered highly likely.

28 Nordic green bonds quoted on LSE

Issuer	EUR	SEK	USD	Total
City of Gothenburg		7		7
City of Malmö		2		2
Municipality Finance			2	2
Nordic Investment Bank	3	6		9
SBAB Bank AB		2		2
Stockholm Läns Landsting		5		5
Fingrid	1			1
Grand Total	**4**	**22**	**2**	**28**

Source: London Stock Exchange Green Bond List

A unique feature of Sweden, Norway, Finland and Denmark is the existence of well-established financial institutions set up with a specific mandate to finance municipalities, cities, counties, MOCs and SOEs. KommuneKredit holds a 98% market share in the public finance sector in Denmark. The market share of KBN Kommunalbanken (Norway), Kommuninvest (Sweden) and Municipality Finance (Finland) ranges from 45% to 60% in their respective countries. All of them have listed bonds internationally – usually on the London and/or Luxembourg stock exchanges.

Large municipalities or other parts of local/regional government are natural potential green bond issuers, particularly if they have already accessed the bond market. Another opportunity is for smaller entities to pool their resources and we suggest a potential structure that could enable this.

Green bond issuance from municipality owned companies (MOCs) and state owned enterprises (SOEs) in Sweden, Norway and Lithuania is primarily linked to the energy sector and housing. Green bonds – and bond issuance in general – are more likely to emerge when there are big investment requirements such as in city regeneration or infrastructure, particularly rail companies investing in more efficient rolling stock and network extension, as well as public transport and district heating. Property-rich businesses such as municipal housing and specialiased property (e.g. schools, care homes, public buildings) can also benefit from bond issuance to fund new energy efficient construction and/or to undertake energy-efficiency renovations.

Sectors which are under-represented in public sector green bonds are water and wastewater treatment, waste management and FSC compliant forestry and paper production (with the notable exception of Sweden and SOE Sveaskog). They all represent growth opportunities.

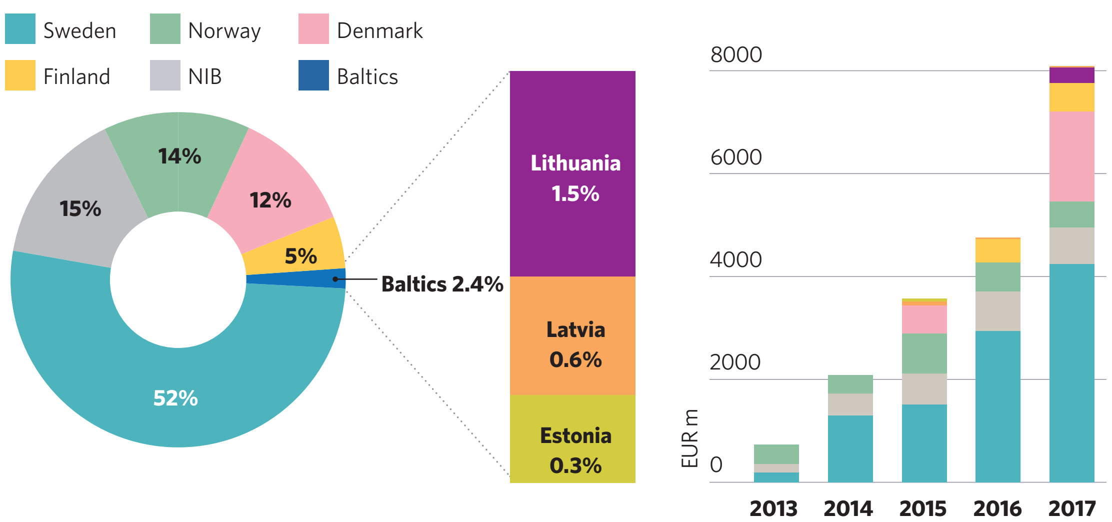
In the course of our research we identified municipalities, MOCs and SOEs who are already bond issuers and could become green bond issuers, as well as large MOCs and SOEs in sectors conducive to green bond issuance who may have the assets/projects to enter the market directly as a green bond issuer.

Overview of the green bond market in Northern Europe

Nordic green bond issuance has recorded many global and European firsts. With their 2010 debut green bond, state-owned municipality financing bank KBN Kommunalbanken and the Nordic Investment Bank became two of the pioneers in green bond issuance. The City of Gothenburg made history in 2013 when it became the first city issuer globally and has become a posterchild issuer for C40 cities engaged in sustainable urban development.

Sweden is the sixth largest source of global green bond issuance after the USA, China, France, Germany and the Netherlands. Norway, Denmark and Finland[10] are in the Top 20. Issuance from the Baltics is lower, and Iceland has yet to record its first green bond. Overall, the Nordic-Baltic region accounts for 6.8% of global issuance and 18.9% of European issuance through the end of 2017.

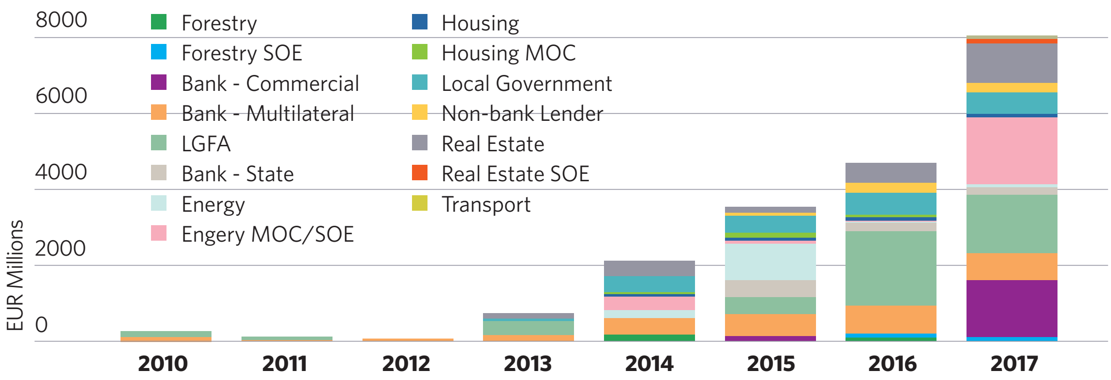
Green bond tide rising:
All three Baltic countries have placed themselves on the green bond map



Largest issuer - Nordic Investment Bank. NIB has issued EUR3bn in green bonds to date. The supranational is jointly owned by Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway and Sweden. Over the period 2011-2017, NIB has funded private and public sector entities in Sweden (52%), Finland (20%), Norway (19%), Denmark (3%), Lithuania (2%) and Poland (3%). Loans for energy efficiency improvements and green buildings account for 30% of allocations, with another 29% going to renewable energy and 24% to wastewater treatment. Public transport and waste management make up the remaining 17%. More broadly, i.e. including both green bond allocations and other financing, NIB has EUR4bn public sector loans outstanding.[11]

Steady growth across Nordic-Baltic region. Green bond issuance continues rising across the region. 2017 volume was 70% higher than 2016 levels and 11 times the 2013 total. Sweden retains its top spot with 52% of total regional issuance**,** but the last three years have marked the entry of issuers from Latvia, Estonia, Denmark, Finland and Lithuania.

Diverse universe of issuer business sectors



17 new issuers in 2017

	Sweden	Norway	Denmark	Finland	Latvia	Lithuania
New issuers	9	3	2	1	1	1
Sectors	3 banks 3 property 2 municipal* 1 transport	2 energy* 1 property	1 LGFA 1 energy	1 energy	1 state investment fund	1energy
Issue volume	EUR 2.3 bn	EUR 256m	EUR 1.75bn	EUR 100m	EUR 20m	EUR 300m

* Additional deal pending inclusion - see Appendix, Pending table and related notes for more information

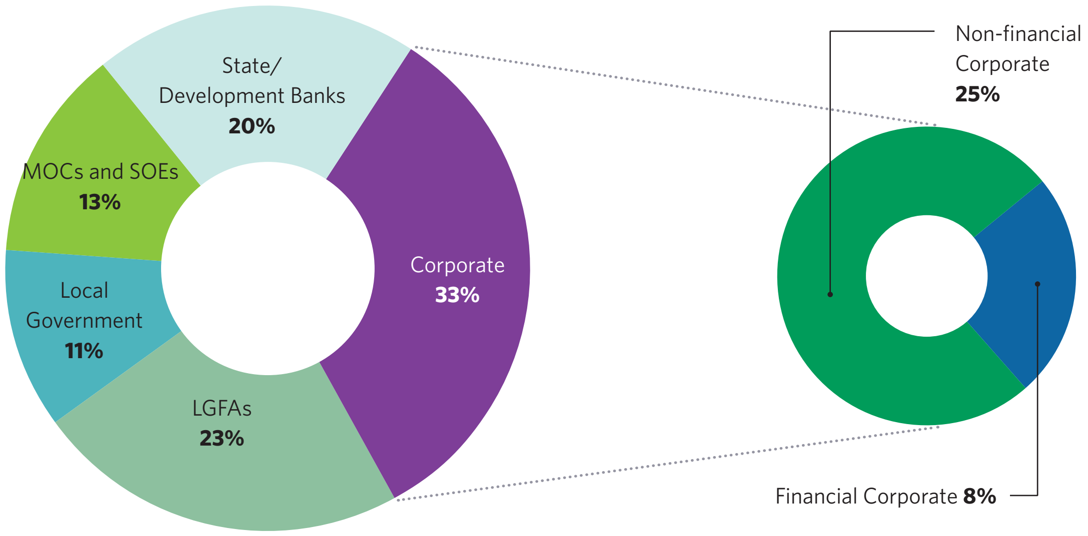
New green bond issuers in 2017. Denmark pulled ahead in the country rankings in 2017 thanks to renewable energy company Ørsted (previously DONG Energy) and its EUR 1.25bn deal from November. Overall, there were 17 new green bond issuers last year. This brings the issuer grand total to 57, of which one each from Estonia and Lithuania, two each from Finland and Latvia, four from Denmark, 11 from Norway and 35 from Sweden.

As the market has grown, so has the range of issuer sectors. Local government funding agencies and state financial institutions account for a third of the EUR16.7bn total issuance through 2017, excluding NIB. Clean energy and electricity grid issuers represent a fifth. Other big sectors are property and municipal housing (18%) and local government (12.5%).

Green bond deal size. Banks have typically issued benchmark deals of EUR or USD 500m+, as have a couple of corporates. The 20 bonds of USD500m or more total EUR9.7bn, almost half the issued volume. The largest deal is Ørsted's, issued in two tranches of EUR500m and EUR750m.

The average deal size for the other 163 bonds is EUR61m. It is EUR96m for local government, MOCs and SOEs but if Ørsted is excluded, EUR74m. Deals of this size are typically better suited to domestic listing. However, green bond issues from sub-sovereigns have successfully listed on the LSE.

Government related entities account for two-thirds of green bond issuance



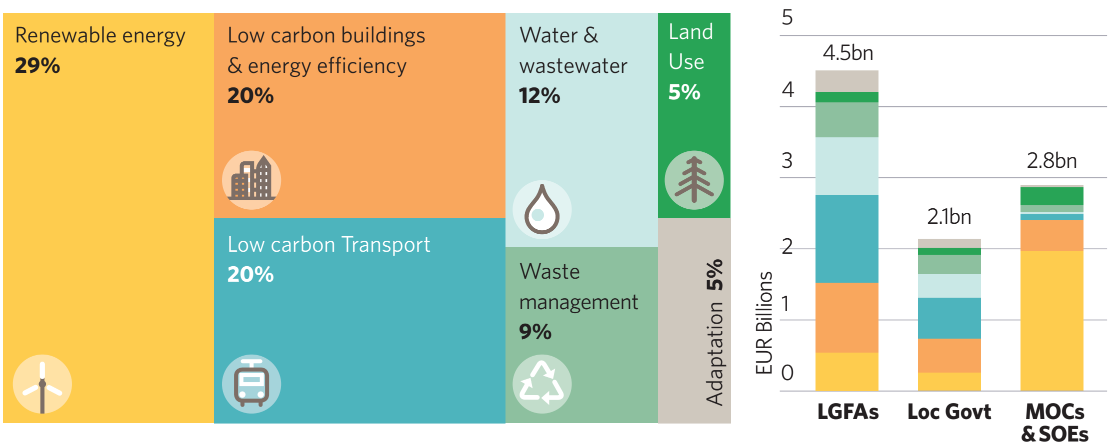
Public sector issuers. There are 27 public sector issuers in the Nordics-Baltics which fall into one of the following categories:

- Local government – municipalities, cities, counties, regions;
- MOCs and SOEs – companies which are majority owned by municipalities and/or the state, i.e. municipally owned companies (MOCs) and state-owned enterprises (SOEs);[12] and
- LGFAs – three of these specialised financing institutions are municipality-owned, one is state-owned; all have a specific mandate to finance the public sector.

The 71 bonds they have issued total EUR 9.4bn and account for 48% of Nordic-Baltic green bond issuance. A full list of government-related issuers from the Nordics and Baltics is provided in the Appendix. This list includes issuers which fall into one of the three categories above plus state financial institutions and development banks.

Use of proceeds. Green bond issuance from local government, MOCs, SOEs and LGFAs is being channelled primarily towards renewable energy, low carbon transport and low carbon buildings. Nordic-Baltic local governments and LGFAs have fairly similar distributions overall, which drive the public sector use-of-proceeds profile. However, two thirds of MOC and SOE green bond issuers use bonds to fund renewable energy, with property companies a distant second.

Bond proceeds are most commonly allocated to Renewable Energy



Exemplary record for external reviews. Nordic and Baltic countries are at the top of the charts for external reviews. They were early adopters and almost 99% of outstanding bonds benefit from a second party opinion (SPO).

In our study *Post Issuance Reporting in the Green Bond Market*,[13] we highlighted best practice. LGFA Kommuninvest has best practice tracking of proceeds allocation, for instance, while City of Gothenburg got a mention for tagging mitigation, adaptation or general environment projects in its reporting.

Trend setter in promoting impact reporting. A key Nordic contribution to the development of the green bond market is the publication of *The Position Paper on Green Bond Impact Reporting*,[14] developed and to be implemented by municipalities and financial institutions across the region.[15] Not only is the scale of cooperation impressive, but also the speed of putting together the guidance, suggesting a high degree of alignment of views around climate topics.

The Nordic Model is key to understanding regional financing needs

The Nordic countries are unique in many ways. The Nordic Model[16] – as it has evolved in Denmark, Finland and Sweden – is based on decentralisation and cooperation between regions and municipalities to deliver an extremely wide range of services to the people they serve. A lot of fiscal responsibility rests with local and regional governments, including taxation powers and the ability to raise debt. Many services including health care, education, housing, energy generation and heating are managed by local governments but may be delivered indirectly through MOCs.

In Norway there is greater state involvement, because the government retains local taxation powers. In general, SOEs play a more significant role in Norway and Finland where state ownership is higher.

This puts a lot of assets and financing decisions in the hands of municipalities. The sector plays a key role in the fight against climate change: its investments are often large-scale and have a wide environmental impact. For instance, Standard & Poor's noted that because of high investment stemming from government-mandated projects in Norway, it expects local and regional government to borrow for ongoing investment primarily in infrastructure, road maintenance, education, kindergartens, elderly care, and water and sewage infrastructure.[17]

Moody's overarching comment for local governements reads "Credit quality boosted by support expectations and inherent strenghts".[18] A summary of the key credit positives it sees in these sub-sovereigns is provided in the box below.

There is also a history of regional cooperation. For example, Nordic Sustainable Cities[19] is one of six flagship projects under the Nordic Solutions to Global Challenges initiative, which is coordinated by the Nordic Council of Ministers. A more regional example is 6Aika, a case of six Finnish cities joining forces to promote innovation and smart solutions to improve cities.[20]

Another aspect is the ever-tightening requirements imposed on asset owners. For instance, Norway introduced new regulations for impact assessments within the Planning & Building Act in June 2017.[21] The new building code's energy efficiency requirements for new builds and renovations are significantly tighter across all property types relative to the 2010 code.

These features make Nordic municipalities, cities, regions and the companies they own very desirable borrowers. The strong credit quality has facilitated direct access to the local bond markets, and in some cases to international bonds markets, for municipal issuers. While market dynamics vary country by country there are issuers that have accessed the bond market but have not issued green bonds yet, which represents untapped potential.

NORDIC LOCAL GOVERNMENTS

Credit quality boosted by support expectations and inherent strengths[18]

Credit rating agency **Moody's** has identified the following key features of Nordic Local Governments:

- Local governments' role in delivering a wide range of public services means their expenditure accounts for ca 40-60% of total public spending, and in some cases surpasses central government spending. Their importance as key providers of public services also makes them systemically important. As a result, they are some of the most regulated and supervised in Europe.
- Nordic local governments benefit from high degree of fiscal autonomy. A high proportion of their revenues stem from own source taxation in Sweden, Denmark and Finland, and this autonomy is constitutionally protected. (In Norway, local taxes are under state control.)
- A combination of solid economic fundamentals, good financial performance and access to capital markets supports strong standalone credit quality. There is no history of local government default as central governments have always provided timely support to local governments facing distress in a system where local governments cannot be declared bankrupt under local laws.
- Strong equalisation systems, designed to even out revenue disparities between municipalities so they can offer similar levels of public service, improve the Nordic local government sector's debt-servicing capacity and reinforce local government stability.
- Debt levels are low to moderate. Local governments in Norway and Sweden have higher direct debt levels than their Danish and Finnish peers, reflecting higher investments to support a growing population (e.g. City of Gothenburg, rated Aaa). Investments to keep pace with population growth will largely be funded by new debt, ensuring continued growth in local government debt, especially in cities experiencing net migration.
- Nordic governments have some refinancing risk as they have short-dated debt in comparison with other countries, particularly in Sweden.

LGFAs play a pivotal role in the local debt market

The pooled funding model for the public sector is prevalent in Denmark, Finland, Norway and Sweden. It offers a solution to entities with funding requirements that may not be big enough to justify standalone bond issuance or who lack the bond expertise or in-house resources.

Business profile. Local government funding agencies (LGFAs) in the region are well-established financial institutions set up with a specific mandate to finance municipalities, cities, counties, MOCs and SOEs. In Denmark, KommuneKredit accounts for almost all public sector lending. In Finland, MuniFin accounts for about 60%. Sweden's and Norway's LGFAs fall in the 45-50% range.

They report borrower mix differently but broadly speaking municipal housing and energy MOCs represent a substantial share of lending volume. Lending to local government is more prevalent in Norway; elsewhere MOCs represent a more significant share of borrowing. In part, this is due to Norwegian energy MOCs being direct bond issuers (see Norway section).

Municipality Credit Iceland has a relatively small loan book of ISK70.5bn (EUR560m), according to its 2016 Annual Accounts. 84% was lent to municipalities and the rest to MOCs. MCI lends principally for projects in education (kindergartens, primary and lower secondary schools, sport facilities), geothermal heating, followed by financing of capital investment projects for roads, sewerage, harbours, recreation, solid waste and wastewater treatment and disposal.

Ownership. Typically LGFAs are municipality-owned and/or guaranteed. Municipalities are not required to join, but most have. In Denmark and in Iceland, all municipalities are members. As in credit unions and cooperative banks: the owners and the borrowers are the same entities.

LGFAs enjoy dominant position as lender to local government

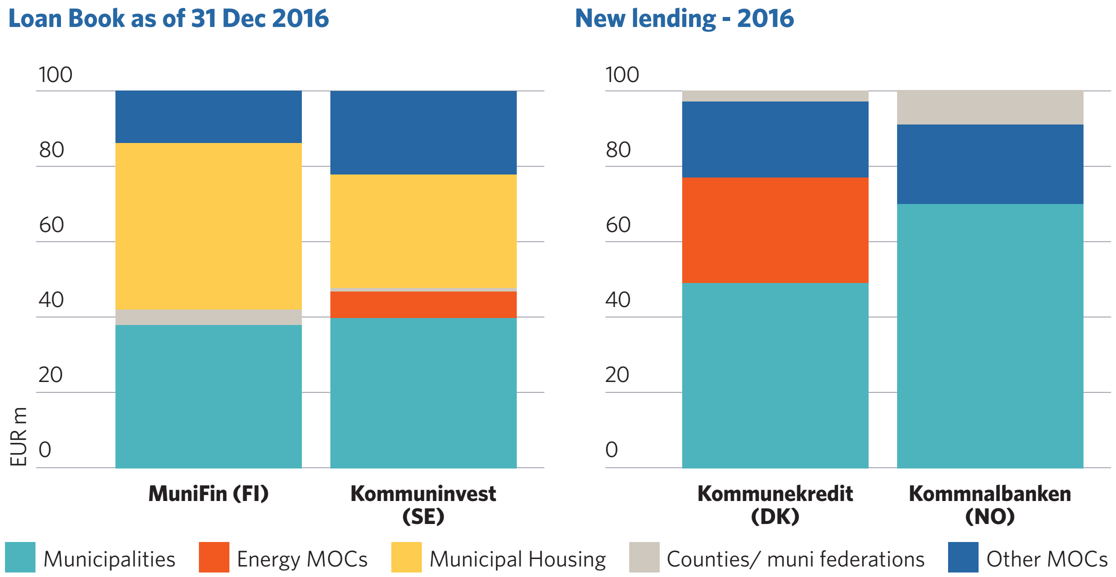
	Municipality Finance	Kommune-Kredit	Kommuninvest	Kommunal banken	Municipality Credit
Country	Finland	Denmark	Sweden	Norway	Iceland
Established	1989 / 1993	1899	1986	1926	1967
Owner	51% municipal 31% Keva[22] 18% state	Member municipalities	Member municipalities	100% state	Member municipalities
Guarantee structure	Municipalities on a joint basis via Municipal Guarantee Board	Joint and several liability from local and regional governments	Joint and several liability from local and regional governments	100% state-owned since 2009. Letter of support from owner	Municipalities and State Treasury for MOC & SOE loans
S&P / MDY rating*	AA+ / Aa1	AAA / Aaa	AAA / Aaa	AAA / Aaa	NR / NR
Market share**	About 60%	98% (prev. 95%)	48% (prev. 46%)	45% (prev. 50%)	25% in 2012[23]

Source: S&P Ratings Direct, Municipality Finance PLC, December 2016; * Most recent credit reports from Moody's and S&P; ** Company annual accounts 2016, except for MuniFin (S&P report) and MCI (corporate website)

KEY ADVANTAGES OF LOCAL GOVERNMENT FUNDING AGENCIES

- **Aggregation:** Financial Institutions can raise financing in big, international bond issues and are able to provide financing to a wide range of small projects across their borrower base that would otherwise be too small or too niche for bespoke bond issuance
- **Resources and expertise:** Pooling resources across municipalities (or at state level) allows these financial institutions to develop and hire appropriate expertise to assess project quality for lending, to administer the extended loans and to raise finance in a variety of bond markets and currencies to best match demand and their funding requirements
- **Sovereign level credit ratings:** Given the ownership, guarantees and strong credit standing of municipalities under the Nordic Model, they benefit from very high credit ratings
- **Better debt pricing:** The ability to raise benchmark bond issues at sovereign-level credit ratings gives them access to more competitive bond pricing and the pricing benefit is passed on to borrowers as the borrowers are also the owners

Borrower mix for LGFAs



Source: Company annual accounts 2016 * Borrower mix not available for Municipality Credit Iceland

LGFAs AS BOND ISSUERS

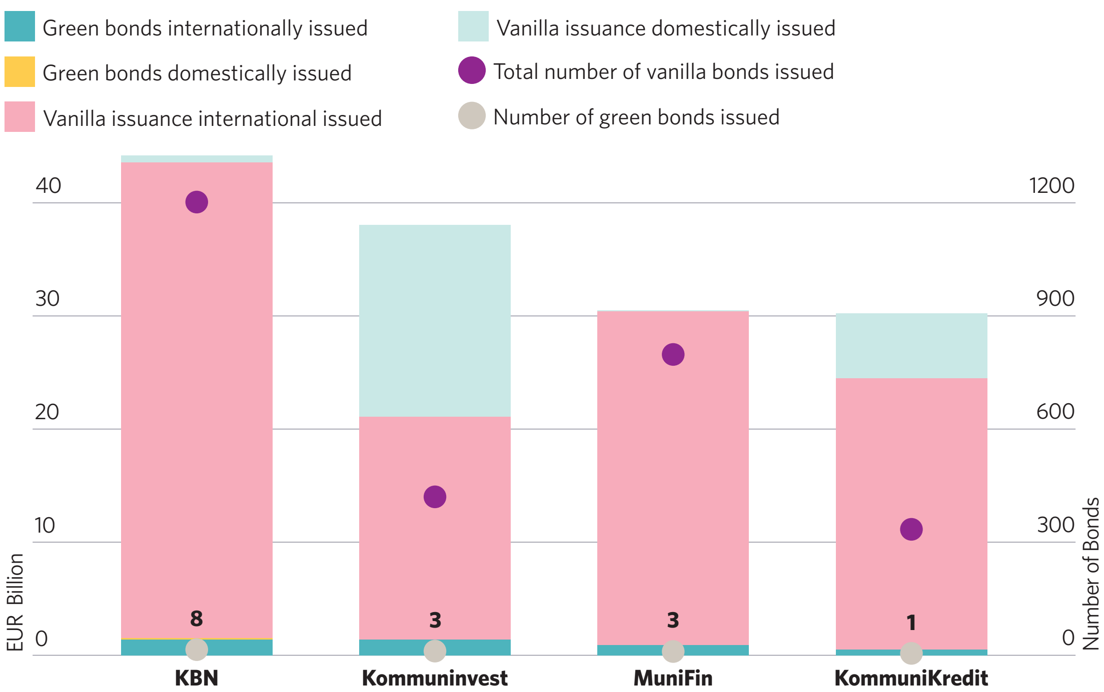
Being large lenders in their local markets, the LGFAs are all repeat vanilla bond issuers. Three of them – KBN, Kommuninvest and MuniFin – are also repeat green bond issuers. KBN started issuing green bonds in 2010. The other three came to market with their debut green bonds in 2016/2017.

In addition to the four big LGFAs, there are two smaller ones, both domestic bond issuers and well positioned to tap the green bond market to support their public sector lending:

- **Norwegian financial group KLP,** which is municipality owned, is a vanilla bond issuer primarily through KLP Kommunekreditt AS and its mortgage subsidiary KLP Boligkreditt AS (5). KLP Kommunekreditt's 10 outstanding bonds have a face value of EUR1.8bn and all are issued in NOK. KLP Boligkreditt has five bonds outstanding. Both entities are rated Aaa by Moody's and could be potential green bond issuers, including in the covered bond market.

- **Iceland's MCI** is by **far the smallest LGFA issuer.** Its five outstanding bonds total EUR300m. It could be a green bond issuer given the types of projects it funds, e.g. geothermal heating, water utilities, waste management, public buildings (assuming sufficiently energy efficient).

Kommuninvest has the highest share of green bonds within the municipal lending sector



Source – bond issuance: Thomson Reuters, as of 8 January 2018

Source – Green Bonds: Climate Bonds Initiative

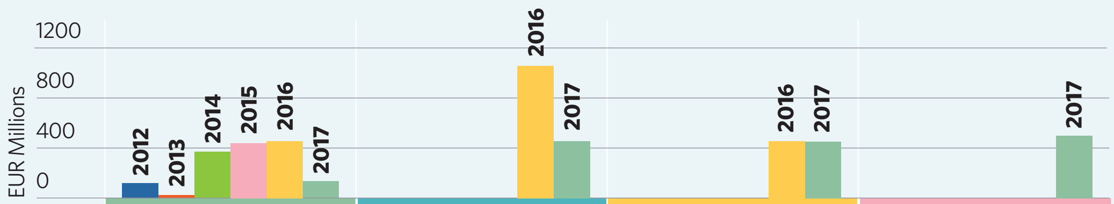
Most LGFA issuance is in the Eurobond market: MuniFin ca. 72%, KommuneKredit 65%, KBN 60% and Kommuninvest 43%. These bonds are in a variety of currencies. Except for KLP and MCI which only issue domestically, local market issuance is negligible for KBN and MuniFin (<1%). It is 28% for KommuneKredit and 34% for Kommuninvest. USD-denominated issuance exceeds local currency and EUR deals, and USD bonds are issued in both the Eurobond and US markets.

Finland's first green bond was launched by MuniFin in September 2016 on the London Stock Exchange, raising USD500m and being oversubscribed within hours. Projects funded by the bonds include public transport solutions, such as the extension of the Helsinki metro, and significant infrastructure projects, such as school buildings and a wastewater treatment plant. The deal was well received by investors.

LGFAs AS GREEN BOND ISSUERS

KBN Kommunalbanken, Kommuninvest, MuniFin and KommuneKredit are at the forefront of green bond issuance not just due to volume but also in terms of defining the features of appropriate investment projects and developing best practice. We include all 20 labelled green bonds from them in our database.

Green bonds issued by municipal lenders

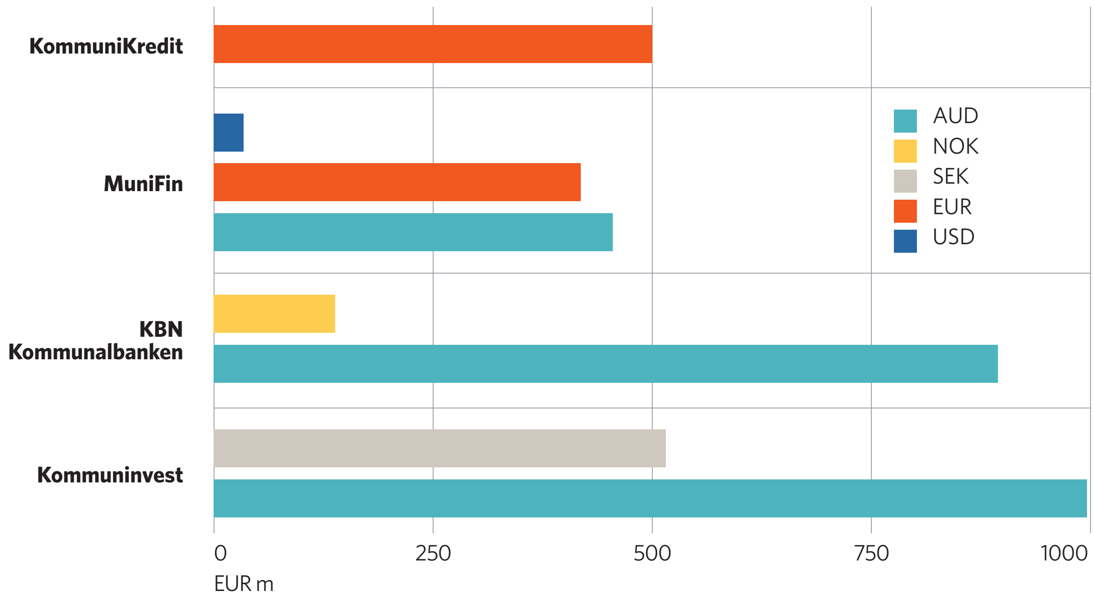


	KBN Kommunalbanken **Norway**	Kommuninvest **Sweden**	MuniFin **Finland**	KommuneKredit **Denmark**
Outstanding green bonds				
EURm issued	1034	1511	907	500
Number	4	3	3	1
Green bond share of total bonds outstanding[24]	1.6%	3.3%	2.4%	2%

In line with overall bond currency trends, over 82% of green bonds have been issued in USD (59%) and EUR (23%). The third most common currency is SEK (13%) associated solely with Kommuninvest deals.

KBN's outstanding bonds are only in USD or NOK, but it has historically also issued in AUD, ZAR, BRL, NZD, INR. MuniFin, on the other hand, recently expanded its currency range when it privately placed an AUD 50m green bond with Japanese insurer Fukoku Life.

Denomination of municipal lenders' outstanding green bonds



Green bonds represent only a small portion of LGFAs' total issuance. We have high expectations for further green bond issuance from them – both locally and internationally – as they channel public sector funding requirements to meet their countries' environmental and climate priorities.

Country Analysis

Sweden

1. Climate plans/initiatives

Sweden's strong climate plans and its active bond market offer a wide variety of projects and investment initiatives suitable for green bond financing.

2. Large/repeat issuers

While eight Swedish local governments have already come to both domestic and international markets to issue a green bond, this study has identified a high number of other potential green bond issuer candidates.

The largest issuer is Kommuninvest but the importance of property green bonds is underscored by the fact that the next largest is real estate company Vasakronan.

3. Opportunities for green bond issuance

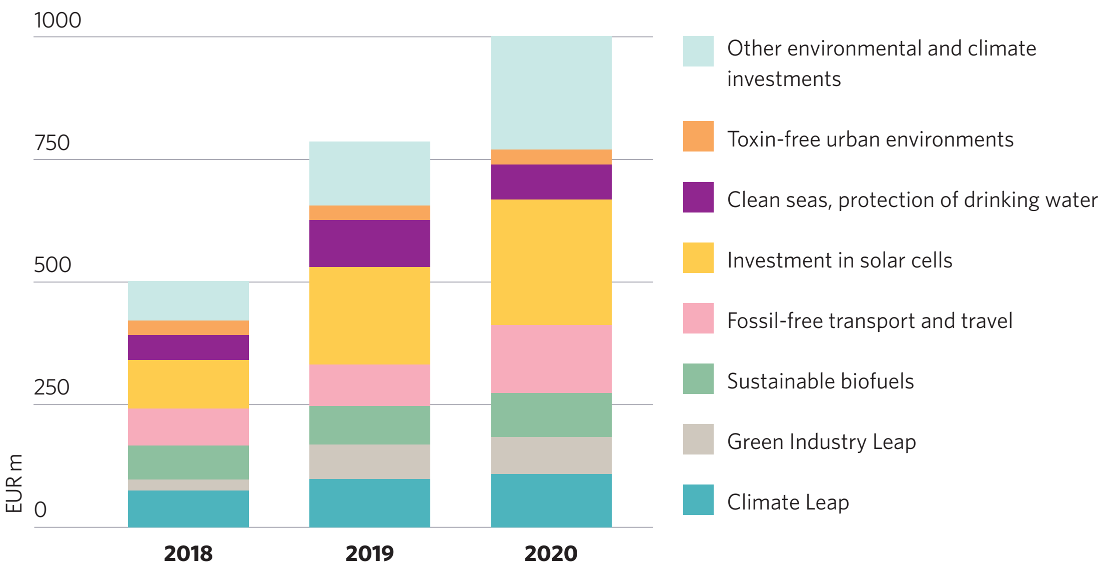
A sector to watch is housing. Out of 306 municipal housing companies, only three have issued green bonds: Stångåstaden AB (rank 8 in size), Uppsalahem AB (rank 10) and Fastighets AB Förvaltaren (rank 24). Deals are expected to come from repeat and new issuers.

A sovereign issue could well boost the country green bond ranking globally.

In 2009 the Swedish Association of Local Authorities and Regions (SALAR) issued a position paper[25] outlining their priorities for energy and climate policy. These include safe and competitive energy supplies, a sustainable transport system, increased renewable energy generation, energy efficiency and conservation, spatial planning and urban development aligned to climate change mitigation and adaptation as well as energy, environmental and climate requirements in public procurement.

Sweden's recently adopted Climate Act enters into force on 1 January 2018. The objective is to reduce net greenhouse gas to zero by 2045, and achieve negative emissions thereafter. As a result of existing measures, Sweden is on track to achieve its 2020 climate target through domestic measures alone.

Budget 2018: Reforms and financing under "Sweden will be a fossil-free welfare nation"



Source: Reforms and financing in the Budget Bill for 2018

- **Sweden's energy goal is to achieve 50% improvement in energy efficiency by 2030 and 100% renewable electricity by 2040.**[26] The 2018 Budget Statement allocates SEK 3bn (EUR 300m) over 2018-2020 to support greater investment in solar cells.[27] Energy efficiency will get a boost from making it easier for households to select hourly metering of electricity.

- **The Climate Leap programme has already provided SEK2bn (EUR200m) for regional and local initiatives** put forward by cities, municipalities, schools, companies, etc to reduce greenhouse gas emissions. This has resulted in more than 1,000 local climate investments including infrastructure for charging electric cars and renewable fuels such as biogas. SEK4.4bn (EUR440m) are allocated to further local government support for the 2018-2020 period.

- **Fossil-free Sweden brings together companies, municipalities and organisations** that will help make Sweden one of the world's first fossil-free welfare nations. This includes collaboration between public actors, the business world, universities and other higher education institutions.

- **Climate initiatives include a target 70% reduction in emissions from transport by 2030.**[28] To facilitate the shift from fossil fuels to clean energy Sweden is introducing a system of bonuses and penalties for low- versus high-emission vehicles, as well as an aviation tax. It is targeting 50% use of biofuel by 2030 and has already invested in electric vehicle infrastructure.

- **Green Industry Leap** is new initiative to fund feasibility and planning studies and provide investment support to industry as it transitions to zero net GHG emissions and the budget allocates SEK300m (EUR30m) per year from 2018 through 2040.

There are a number of energy initiatives which will directly benefit local government:[29]

- **Municipal energy and climate advisory services are available throughout the country** and give households and businesses the opportunity to contribute to solving the challenge of climate change. Government funding of SEK485m (EUR49m) is to be made available for 2018-2020.

- **SEK290m for local and regional capacity building for energy and climate adaptation,** including sustainable transport solutions and information campaigns for children and young people.

- **New support for municipalities to facilitate the establishment of wind power facilities** to the tune of SEK70m per year.

Overall, there is a wide variety of projects and investment initiatives suitable for green bond financing but a level of aggregation and/or working with large municipalities is desirable to create funding volumes suitable for bond issuance, particularly in international markets.

THE SWEDISH BOND LANDSCAPE

Swedish financial institutions and corporates use the bond market actively to raise debt.

Housing credit institutions accounted for 28% of outstanding bonds as October 2017, according to official statistics.

However, local government bonds made up just 2% of outstanding bonds, and over 80% of them were denominated in SEK. Notably, government-backed entities are included in corporate issuance, so public sector issuance is actually higher, as explained further below.

Sweden – Bonds outstanding

	Outstanding (EURm)	Outstanding Issued in SEK
Government of Sweden	110,963	72%
Banks and other FIs	228,175	30%
Housing credit institutions	180,962	77%
Local government	14,962	82%
Corporations and other	111,070	44%
TOTAL	**646,133**	**54%**

Source: Statistikdatabasen Sweden, CBI analysis

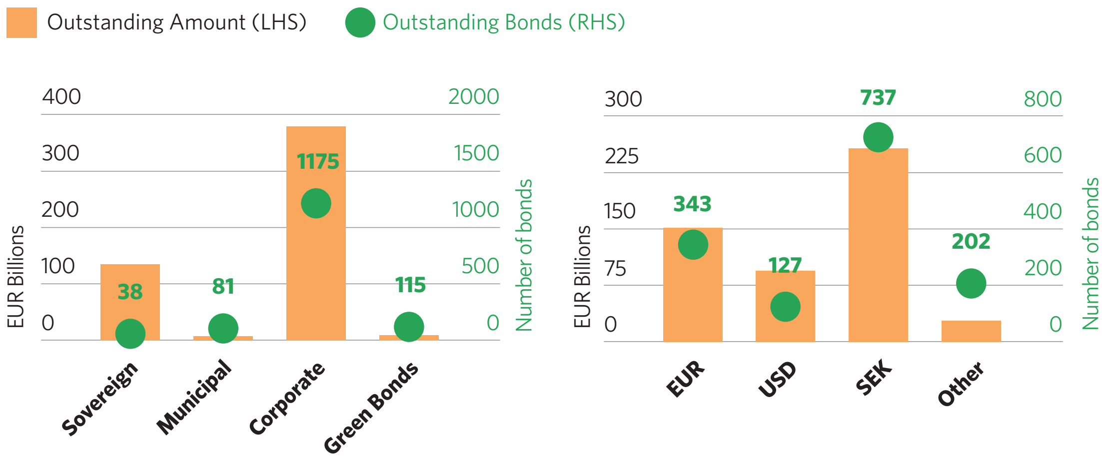
Note: Data as of 30 October 2017. Exchange reate: 0.10 EURSEK

Sweden has the largest green bond market among Northern European countries. Even so, green bond issuance represents only a small proportion of outstanding bonds:

- **Municipal bonds**: There were 106 outstanding bonds as of year-end 2017 at EUR9.1bn total outstanding amount. Climate Bonds Initiative tracks 25 municipal green bonds with a total of EUR1.9bn outstanding, or 24% of bonds and 21% of amount outstanding. There is also one city green bond of SEK 800m (EUR80m), pending inclusion subject to obtaining additional information on use of proceeds.

- **Corporate bonds**: Green bonds represent a much smaller portion of corporate issuance at approximately 7% of bonds and 2% of amount outstanding.

Sweden – Outstanding bonds



Source: http://cbonds.com/countries/sweden-bond, as of 2 January 2018 * Municipal and Corporate adjusted for Green Bond issuance (source: Climate Bonds Initiative)

DIRECT MUNICIPAL ISSUANCE

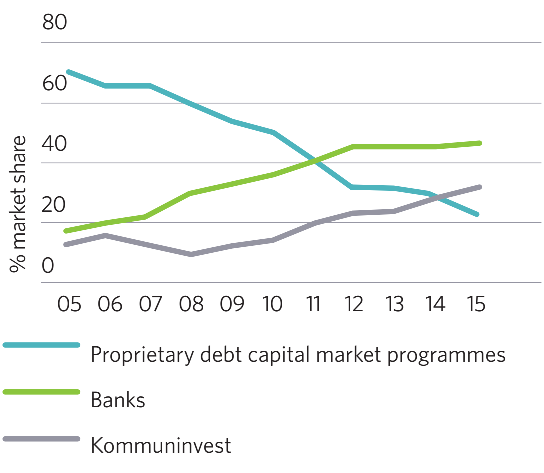
Kommuninvest's loan exposure was dominated by municipalities (40%) and municipal housing companies (30%), with other MOCs accounting for 22% as of June 2017, according to its most recent accounts.

The bank has tracked the mix of financing used by municipalities and county councils since 2005. As banks have lost share precipitously – going from 70% in 2005 to 22% at year-end 2015 – direct bond issuance has increased to 32% and the Kommuninvest's share to 46% going into 2016.

However, the LGFA noted significant differences linked to the size of municipality groups, i.e. municipalities and any related companies. The 19 largest municipal groups – defined as those with borrowing above SEK6bn (EUR600m) – are increasingly using bond programs (62% of their funding mix) and are less reliant on Kommuninvest (21%). By contrast, the remaining 271 groups sourced 4% of their borrowing from the debt capital market but 73% from Kommuninvest.

Interestingly, Kommuninvest research also determined that 18 municipal groups relied However, the LGFA noted significant differences linked to the size of municipality groups, i.e. municipalities and any related companies. The 19 largest municipal groups – defined as those with borrowing above SEK6bn (EUR600m) – are

Market share of alternative forms of financing 2005-2015



Source: Kommuninvest

increasingly using bond programs (62% of their funding mix) and are less reliant on Kommuninvest (21%). By contrast, the remaining 271 groups sourced 4% of their borrowing from the debt capital market but 73% from Kommuninvest.

Interestingly, Kommuninvest research also determined that 18 municipal groups relied primarily on bond issuance in 2015: 13 large ones and 5 small ones, up from 6 in 2010. The number of groups that rely primarily on Kommuninvest had increased from 185 to 255 over the same period, and included 6 large groups.

Overall bond issuance by local government. Municipal and county council issuers had EUR13.2bm long term bonds on their balance sheets, according to official statistics as of the end of Q2 2017. In addition, they held EUR15.4bn of long-term loans. Over 2017 H1, municipalities issued over EUR600m bonds, of which EUR100m abroad.

Sweden – Selected financial assets and liabilities of municipalities

Outstanding amounts in EURm	Municipalities	County councils
Long-term liabilities (most items)		
Bond loans issued in Sweden & municipal certificates	7,970	1,132
Bond loans issued abroad	3,715	1,310
Loans from municipalities and MOCs	304	15
Loans from banks and other financial institutions	13,461	1,920
Long-term demands/loans (selected items)		
To municipalities	150	3
To housing MOCs	7,745	
To MOCs excluding housing	8,959	3,463

Source: Statistikdatabasen Sweden, Data as of Q2 2017. Climate Bonds Initiative analysis

Notably, these statistics also show that municipalities and county councils had lent a total of EUR 20.2bn to housing and other municipally owned companies, and total long-term loans to these entities increased by EUR 688m over 2017 H1. While there is no explicit linkage between raised debt and on lent amounts, it does appear that a substantial part of borrowing is used to fund the operations of MOCs. That presents an opportunity – large municipal housing companies, for example, could issue bonds in their own right to fund investments.

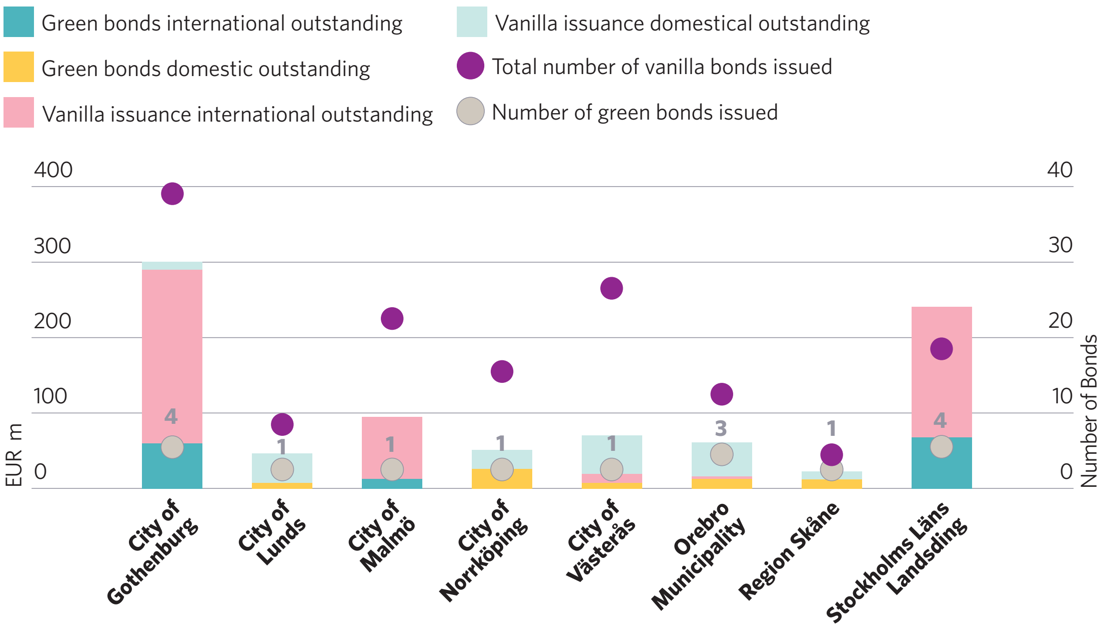
Green bond issuance by local government. Swedish cities, municipalities and regions are active issuers. The City of Gothenburg was the first local government to issue in the green bond market. In June 2016 it became the first city to obtain a green bond rating (GB1) by Moody's and recently had a second bond assessed GB1.

The cities of Gothenburg and Malmö and Stockholms Läns Landsting are also the first among Nordic local government issuers to list their green bonds on the London Stock Exchange.

Eight local governments have issued green bonds. In addition, City of Östersund's debut green issue is still under consideration with respect to the use of proceeds and is treated as pending inclusion in our figures.

The issuance profile of the eight entities depicted in the chart is varied. While large issuers such as the City of Gothenburg, Stockholm County Council and the City of Malmö have issued the majority of their bonds on the international market, smaller issuers are more focused on the domestic market. The relationships hold both for vanilla and green bonds and is likely to continue to hold as larger issuers are better able to absorb the costs of an international listing.

Different market characteristics of eight Swedish local government green bond issuers



Source: Thomson Reuters, Climate Bond Initiative

ISSUANCE BY MOCs AND SOEs

Municipalities, counties and the state use a large number of owned companies to deliver services and engage in economic activity. Two-thirds of these companies are owned by municipalities and counties, but they tend to be smaller on average, than state-owned companies, according to official statistics as of year-end 2015. MOCs include municipal housing and local utilities.

Sweden – Multitude of MOCs and SOEs, but many are quite small

	Companies EUR			Assets, EUR m			Average size EUR m	
Business sector		**MOC**	**SOE**		**MOC**	**SOE**	**MOC**	**SOE**
Industry; mining	34		100%	6,284		100%		185
Utilities	473	92%	8%	72,052	38%	62%	63	1,238
Trade; hotels and restaurants	70	36%	64%	1,748	4%	96%	3	37
Transport, storage; communication	229	82%	17%	15,091	58%	42%	46	160
Business activities; real estate	1,562	62%	38%	99,627	59%	41%	61	69
Education; health care; social services	85	54%	42%	1,213	82%	19%	21	6
Other activities	425	60%	40%	123,949	31%	69%	152	504
Grand Total	**2,844**	**66%**	**34%**	**313,681**	**41%**	**59%**	**70**	**193**

Source: SCB, CBI analysis. Note: Data as of year-end 2015

The relatively small size of MOCs will limit their bond issuing ability, making it much more likely that they will borrow in loan format or issue bonds in Sweden. Small companies generally do not prepare accounts under IFRS which limits their bond listing options, but the creation of Nasdaq First North provides a simplified rulebook more suited to smaller issuers, private placements and small issues (e.g. retail bonds).

All green bond issuance to date is in SEK, with a typical five-year term and almost all of it associated with property: three municipal housing companies and one specialised real estate asset manager.

POTENTIAL ISSUERS

Kommuninvest's most recent annual Local Government Debt report noted the following about local government spending/borrowing in 2015: [32]

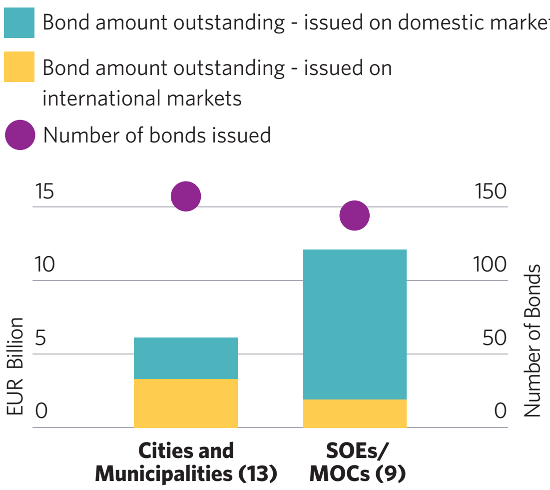
- Municipalities accounted for 36% of investments, MOCs for 42%, county councils/regions and companies owned by them for 21%
- 56% of investments were attributable to housing and other properties such as care homes, schools and sports facilities. Investments cover new construction, renovations and long-term maintenance. In 2015 significant funds were allocated to the construction of Nya Karolinska Hospital in Stockholm
- 25% were linked to infrastructure, including roads, parks, water treatment plants, sewage pipelines, ports and airports
- 11% were associated with district heating and electricity utilities owned by municipalities
- Stockholm County Council's extensive upgrading of hospitals and investment in the metro system meant SCC accounted for half of local government investment volume
- The top 10 municipalities by level of investment were Stockholm (SEK 15.5bn), Gothenburg, Malmö, Örebro, Linköping, Helsingborg, Uppsala, Västerås, Skellefteå and Jönköping (SEK 1.6bn)

These sectors are reflective of green bond issuance, too. All green bond municipal, MOC and SOE issuers are potential repeat issuers, particularly large municipalities and asset rich MOCs/SOEs.

In principle, all large municipal groups (i.e. those with SEK6bn or more debt) could be bond, and green bond issuers, modelling their programs on those of existing issuers.

13 local government issuers and three MOC/SOE companies in relevant sectors have listed vanilla bonds on Nasdaq OMX, but have issued no green bonds as yet. These include the cities of Borås and Helsingborgs and the municipalities of Avesta, Huddinge, Jonkopings, Lunds, Norrköpings, Norrtälje Södertälje, Sundsvalls, Täby, Uppsala and Vellinge.

22 Swedish vanilla bond issuers with green bond issuer potential



Source: Thomson Reuters

Health care real estate. Kommuninvest's *Local government debt 2016* report highlighted renovation plans for hospital buildings and the construction of new ones in Helsingborg, Malmö, Uppsala and Linköping to meet increased demand for care due to a growing and aging population.

Healthcare properties have been financed with green bonds elsewhere, e.g. Canton of Geneva (Switzerland).

Hemsö[33], a sustainability bond issuer, is another example: it owns and manages care homes and schools.

Municipal housing. The public housing sector represents about a fifth of total housing stock in Sweden and half of the rental sector.[34] The Swedish municipal housing association has 306 members. Only three of them have issued SEK-denominated green bonds: Stångåstaden AB (rank 8 in size), Uppsalahem AB (10) and Fastighets AB Förvaltaren (24), and the smallest of them is the biggest issuer! Other municipal housing MOCs are all potential green bond issuers in the same vein.

Sweden – Top 10 municipal housing companies, members of SABO				
Rank	**Municipality**	**Company**	**Apartment Units**	**Green bonds**
1	Göteborg	Poseidon, Bostads AB	26,856	
2	Stockholm	Stockholmshem, AB	26,051	
3	Stockholm	Svenska Bostäder, AB	25,596	
4	Malmö	MKB Fastighets AB	23,618	
5	Göteborg	Bostadsbolaget i Göteborg	23,327	
6	Örebro	ÖrebroBostäder AB	23,297	
7	Stockholm	Familjebostäder AB	19,079	
8	Linköping	Stångåstaden, AB	18,603	3 bonds, EUR113m in total
9	Göteborg	Familjebostäder i Göteborg AB	18,402	
10	Uppsala	Uppsalahem AB	15,814	1 bond, EUR53m equivalent
24	Sundbyberg	Fastighets AB Förvaltaren AB	7,823	3 bonds, EUR161m in total
Total		**306 members of SABO**	**806,988**	

Source: SABO, Climate Bonds Initiative analysis. Green bond issuers highlighted

According to the country's National Board of Housing, Building and Planning (Boverket), 255 of Sweden's 290 municipalities now report a housing shortage and that is the highest level since the agency started recording figures.[35] In the two years between 2015 and 2017 alone, the number of municipalities reporting shortages increased by 72, and for the most part the negative trend isn't predicted to change in the near future. At the current rate of housing construction, some estimate only 44 of the 255 with a shortage will exit from a shortage situation within three years.[36] This presents a clear opportunity for green financing as new housing will likely strive for high energy efficiency.

Other opportunities include the following vanilla bond issuers in attractive business sectors.

Sweden – Existing MOC/SOE bond issuers, but not yet green bond issuers		
Company	**Sector**	**Potential for green bonds**
Samhällsbyggnadsbolaget I Norden AB	Social housing company	Low carbon buildings
Akademiska Hus AB	100% state-owned property company for universities and research facilities with SEK 73bn assets under management. It is responsible for developing university campuses, student housing, laboratory and research buildings. It has issued SEK 4.8bn (EUR 480m) under its EMTN bond program.	Low carbon buildings
Käppalaförbundet	Wastewater utility which serves 11 municipalities	Water and wastewater
Vattenfall	100% state-owned energy company. Moody's credit report from July 2017 highlights the following elements of its clean energy strategy: SEK 50bn (EUR 5bn) investments in 2017/18 particularly in onshore and offshore wind; increasing renewable energy generation from 2.7GW now to 4.5GW by 2020	Wind energy

Source: http://www.nasdaqomxnordic.com/bonds/sweden , Climate Bonds Initiative analysis

Norway

1. Climate plans/initiatives

Norway's 2018 Budget has specific investment priorities that could provide further opportunities in clean energy and low-carbon transport. Electric and hybrid vehicles already account fo 29% of new cars, by far the highest share in Europe.[52]

2. Large/repeat issuers

The city of Oslo is the only Norwegian local government entity to have issued green bonds to this date. By contrast, 146 cities and municipalities have issued vanilla bonds. We expect to see more local governments adopt green bonds.

District heating companies started issuing green bonds in 2014, with two new issuers in 2017. A notable fact is that green bonds represent 30% of total bonds outstanding for grid operator NTE and 25% for district heating company Vardar.

3. Opportunities for green bond issuance

Energy companies Statnett and Statkraft already issue in size in the plain vanilla market, so are good candidates to start using green bonds for part of their funding needs. The state rail company Norges Statsbaner is also a prime candidate given the upgrade plans in the context of Norway's transport strategy.

There is high conversion potential in Norway for local government, energy, district heating and railway companies. The state export credit agency and development fund Norfund are also green bond candidates in our eyes.

In 2009 the Norwegian government implemented guidelines for addressing climate change at the local government level through an amendment to The Planning and Building Act, and with effect from January 2010 municipalities and counties are required to draw up energy and climate plans as part of their annual budgets. The focus areas for emissions reductions include transport, energy, agriculture, waste management and the environmental impact of municipal procurement operations.[37]

However, Norway has specific investment priorities it has incorporated in its 2018 Budget that could provide further opportunities in energy and transport.[38] More specifically:

- **State-owned Enova SF, which is responsible for the promotion of environmentally friendly energy generation,** exploring new sources of clean energy and reducing consumption, will receive committed government funding starting with NOK2.7bn (EUR274m) in 2018.

- **The government is creating a new investment company,** which will contribute to the reduction of greenhouse gas emissions through investments in new technology. The initial NOK400m (EUR40m) investment allocation will be supplemented with grants as the business grows. In addition, Innovation Norway has been commissioned to establish a partnership with private business and NOK10m is suggested as allocation towards this.

- **Transport:** The government will reinforce the focus on public transport and urban environmental agreements with an allocation of NOK2.5bn (EUR250m) to measures towards public transport, cycling and pedestrian spaces in the nine largest urban areas. The allocation is an increase of 23% from 2017.

- **Railways:** High levels of investment in railways is to continue with a NOK23bn budget allocation with NOK8.9bn set aside for ongoing projects, potentially including two new Inter City projects: Venjar-Eidsvoll-Langset on the Dovre-line and Sandbukta-Moss-Såstad on the eastern line, Østfoldbanen. Another NOK3.5bn is earmarked for the purchase of passenger trains, of which 14 new trains to be bought for the Gjøvik- and the Vosse-lines.

According to the National transport plan 2018-2029,[39] the Government will develop efficient transport corridors and invest more than NOK1tn over the 12-year period. Investment areas include roads, railways, public transport in cities, coastal infrastructure and sea transport.[40] Further, a new infrastructure fund – funded with NOK100bn (EUR 10bn) – has been established in order to promote predictable and long term financing of infrastructure projects.

Norway provides development financing through various programs and vehicles, among them is Norfund, an SOE, whose strategic priorities for the 2016-2020[41] period include clean energy investments. Another is the Rainforest Fund (NICFI), to which the government has committed NOK3bn (EUR 300m) annually.[42] Development banks have been very successful in raising funds for their activities in the green bond market. Examples inlcude FMO (Netherlands) and the World Bank.

THE NORWEGIAN BOND LANDSCAPE

Bond issuance in Norway is dominated by mortgage companies, which account for over 40% of total bonds outstanding, according to data from the Statistikkbanken Norway as of end H1 2017. At EUR15bn, direct bond issuance from local government bonds represented 4% of total bonds outstanding and is all NOK-denominated.

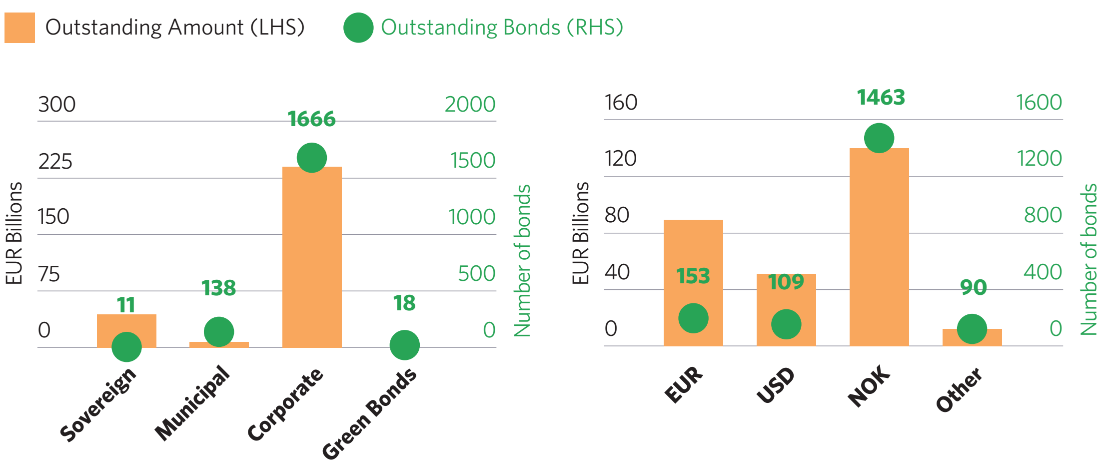
Norway – Bonds outstanding are dominated by mortgage issues

		Central goverment	Local goverment	Mortgage companies	Other FIs	Companies
TOTAL in EUR bn	396.4	46.4	15.4	163.1	75.5	67.2
% total	100%	12%	4%	41%	19%	17%
Bond term > 1 year	93%	83%	63%	100%	87%	96%
NOK	50%	100%	100%	34%	47%	41%
EUR	24%	0%	0%	36%	27%	20%
USD	19%	0%	0%	17%	18%	35%

Source: Statistikbanken, CBI analysis. Note: Data as of 30 June 2017

Corporate bonds, including financial and non-financial corporates, are by far the most common in Norway. Green bonds represent only a small portion of outstanding bond volume with one issue from City of Oslo and 17 from corporates.

Norway – Outstanding bonds



Source: http://cbonds.com/countries/norway-bond. Data as of 2 January 2018 * Municipal and Corporate adjusted for Green Bond issuance (source: Climate Bonds Initiative)

DIRECT MUNICIPAL ISSUANCE

In the Nordic-Baltic region, municipal bonds represent a small part of local government financing. Not so in Norway: the share of bonds in local governments' liability mix has increased from 24% in 2013 to 30% in 2017 Q2, as can be seen in the most recent statistics available for public debt. Given the long-term nature of infrastructure and housing investments, there is an opportunity to combine the issuance of green bonds with long-term debt.

Norway – 30% of Local Government debt is in bond format

	2013	2014	2015	2016	2017 Q2
Total in EUR bn	**392.9**	**425.2**	**460.0**	**483.8**	**497.6**
Loans	76%	73%	70%	69%	70%
Long term bonds	15%	18%	18%	18%	19%
Short term bonds	8%	9%	12%	12%	11%

Source: Statistikbanken, Climate Bonds Initiative analysis

Many municipalities have issued bonds locally, in local currency. The city of Oslo is the biggest issuer and the only one to issue a green bond.

Average bond size, calculated as a simple average, is on the small side for international issuance even for the largest issues and the majority of municipalities come to market with smaller lot sizes. While international issuers typically look for deals of 250-300m EUR or USD, the green bond angle presents an opportunity to reach SRI investors.

Norway – Large municipal bond issuers (>500m NOK)

Municipality	Outstanding Amount			Average size	Green Bonds
	Bonds	NOK m	EUR m	EUR m	NOK m
Akershus fylkeskommune	2	1,250	130	65	
Asker Kommune	4	2,050	213	53	
Bærum Kommune	1	550	57	57	
Bergen Kommune	3	2,750	285	95	1,500
Oslo Kommune	15	23,735	2,460	164	
Sarpsborg Kommune	1	563	58	58	
Sør-Trøndelag Fylkeskommune	3	1,500	155	52	
Stavanger Kommune	4	2,340	243	61	
Trondheim Kommune	9	4,500	466	52	

Source: Oslo stock exchange – data as of November 2017, Climate Bonds Initiative analysis

ISSUANCE BY MOCs AND SOEs

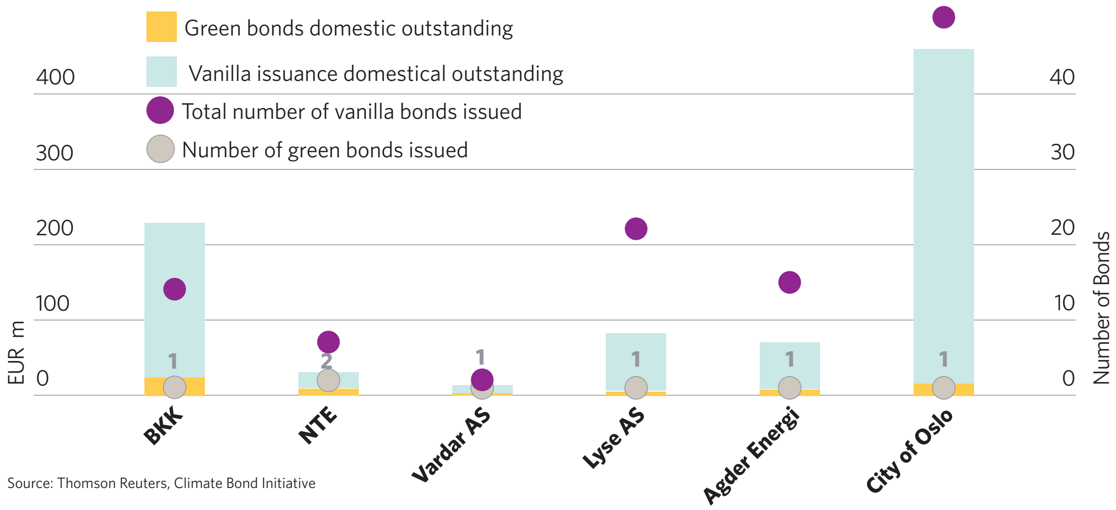
Drect issuance locally from MOCs and SOEs has been concentrated in the energy sector, particularly electricity generation and district heating, and financial institutions. District heating companies started issuing green bonds in 2014, with two new issuers in 2017.

Norway – Large bond issuers (>500m NOK) with state and/or municipal ownership						
Sector	**Ownership share**		**Outstanding Issuance**			**Green Bonds**
Issuer	**State**	**Muni**	**Bonds**	**NOK m**	**EUR m**	**NOK m**
Statkraft AS	100%		5	6,300	653	
Statnett SF	100%		11	10,100	1,047	
Statoil ASA	67.0%		2	3,000	311	
BKK AS	49.9%	50.1%	9	16,500	1,710	2,000
Agder Energi AS	45.5%	54.5%	3	2,000	207	750
E-CO Energi Holding AS		100%	1	500	52	
Eidsiva Energi AS		100%	6	3,350	347	750
Glitre Energi AS		100%	1	500	52	
Hafslund AS		100%	3	1,840	191	
Lyse AS		100%	2	1,225	127	500
TrønderEnergi AS		100%	1	750	78	
Vardar AS		100%	1	500	52	300
Energy Total			**45**	**46,565**	**4,816**	**4.300**
KLP Banken AS		100%	1	500	52	
KLP Boligkreditt AS		100%	3	3,700	384	
KLP Kommunekreditt AS		100%	9	15,464	1,603	
Bank Total			**16**	**19,664**	**2,039**	

Source: Oslo stock exchange, The State Ownership Report 2016, organisations' websites, Climate Bonds Initiative analysis

Total bonds outstanding generally far exceed green bonds. There are two notable exceptions: green bonds represent 30% of total bonds outstanding for grid operator NTE and 25% for district heating company Vardar. Way to go!

Different market characteristics of seven Norwegian green bond issuers



Source: Thomson Reuters, Climate Bond Initiative

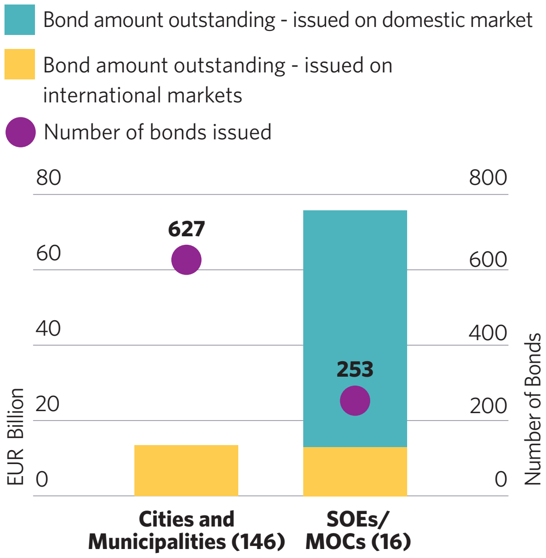
POTENTIAL ISSUERS

Norway is unique in the region in that it has many municipal issuers, but just a handful issue in size and only City of Oslo has issued a green bond. Government-backed corporate entities dominate public sector issuance, and a substantial part of it is listed internationally.

Large and growing municipalities tend to have higher expenditures and funding requirements. The top 10 municipalities by debt outstanding as of end 2016, as per Statistikkbanken Norway, were Oslo kommune with EUR8.4bn liabilities, Bergen (EUR4bn), Trondheim (EUR3bn) and in the EUR1-2bn range: Bærum, Stavanger, Kristiansand, Fredrikstad, Tromsø and Sandnes. Trondheim, Tromsø, Stavanger and Asker are also bond issuers with outstanding bonds of EUR300m or more. While they could be potential green bond issuers, given the size of their bonds outstanding.

Energy companies Statnett and Statkraft already issue in size in the plain vanilla market, so are good candidates to start using green bonds for part of their funding needs. The state rail company is also a prime candidate given the upgrade plans in the context of Norway's transport strategy, as described above.

162 Norwegian vanilla bond issuers with green bond issuer potential



Source: Thomson Reuters

Norway – Existing MOC/SOE bond issuers, but not yet green bond issuers

Company	Sector	Potential for green bonds
Statnett	State electricity grid. Fingrid, Finland's grid operator, debuted on the green bond market with a deal which will fund connecting renewable energy generation to the grid, significant grid efficiency improvements and storage capacity	Electricity grid
Statkraft	Energy company with renewable energy generation from solar, wind and hydropower. It also provides district heating (a popular sector for Norwegian green bond issuers)	Solar energy Wind energy Hydropower
Norges Statsbaner	Railway company – rail is a budget priority sector for 2018-2029	Low carbon transport – Rail
Eksportkreditt Norge	Export credit agency. In the Nordics, a green bond issuer example is provided by Swedish Export Credit	Multi-sector
Norfund	Sustainable development fund, which among other things funds clean energy in developing countries	Multi-sector
Rainforest Fund	The organisation funds a variety of programs and investments that protect rainforests.	Multi-sector

Finland

1. Climate plans/initiatives

In the National Energy and Climate Strategy for 2030, Finland has decided on a number of climate measures, including increasing the share of renewable energy to more than 50%. New funding needs arise from subsidising renewable energy, supporting experimental new energy technology projects, increasing electricity generation capacity as well as promoting electric vehicles and its wider infrastructure.

2. Large/repeat issuers

MuniFin has been an active player in the green bond market. For the first time, Fingrid came to the market in 2017.

3. Opportunities for green bond issuance

Within the local government sector, Helsinki could be a potential green bond issuer. However, it may be that Finland's six largest cities – Helsinki, Espoo, Tampere, Vantaa, Oulu and Turku – pool their resources under the auspices of 6Aika and start issuing on a joint basis to deliver on their sustainable urban development goals.

There is a large number of state-owned companies which operate in suitable sectors for selecting green assets. These include the state rail company, a Helsinki housing company, the Finnish parks and forestry management agency, as well as several energy companies.

There is also scope for existing issuers to come to market with thematic issues. In the case of MuniFin for instance, pooling outstanding housing loans together to support a covered bond or raising funds through a green bond to provide energy efficiency mortgages are both opportunities to scale up.

In the Government's National Energy and Climate Strategy for 2030,[43] published in December 2017, Finland has decided to abandon the use of coal in energy production, halve the use of imported fuel and increase the share of renewable energy to more than 50%. With these measures, Finland will meet its commitments to the Paris Climate Agreement. The climate plan includes the following subsidies and investments:

Finland – Climate-related investment budget

Investments in EURm	2017	2018	2019	2020	2021 - 2013 Total
Investment subsidies for renewable energy and new energy technology	40	40	0	0	
Operating aid for electricity from renewable energy sources	245	305	305	245	1340
Environmental management of grasslands and wetlands	35.9	35.9	35.9	35.9	
Renewable energy investments	9	9	9	9	

Source: National Energy and Climate Strategy for 2030, Government of Finland, December 2017

The most important new funding needs arise from subsidising Renewable Energy. The Government Programme proposes that a support programme for key energy projects covering 2016–2018 be continued through 2023, with an annual budget of EUR60m. Experimental new energy technology projects with significant technological and economic risks – such as biofuel production – would be funded under this program.

Government investments in increasing electricity generation capacity are estimated at EUR13m in 2020 and EUR265m for 2021–2030. This suggests there may be more green bond issuance from energy grid company Fingrid as this new capacity is added to the grid.

The government's strategy target for Low Carbon Transport foresees at minimum of 250,000 electric vehicles in Finland by 2030. Many technologies and infrastructure systems related to alternative transport power sources are still undergoing development. Due to the technology risks associated with them, risk support is needed to promote the wider use of alternative power sources and the government is budgeting EUR25m for this for the 2018–2021 period.

THE FINNISH BOND LANDSCAPE

Central government raises funding mainly on the bond market. By contrast, local government is a small issuer bond issuer in Finland – debt is generally raised in the loan market, as evident from official statistics.

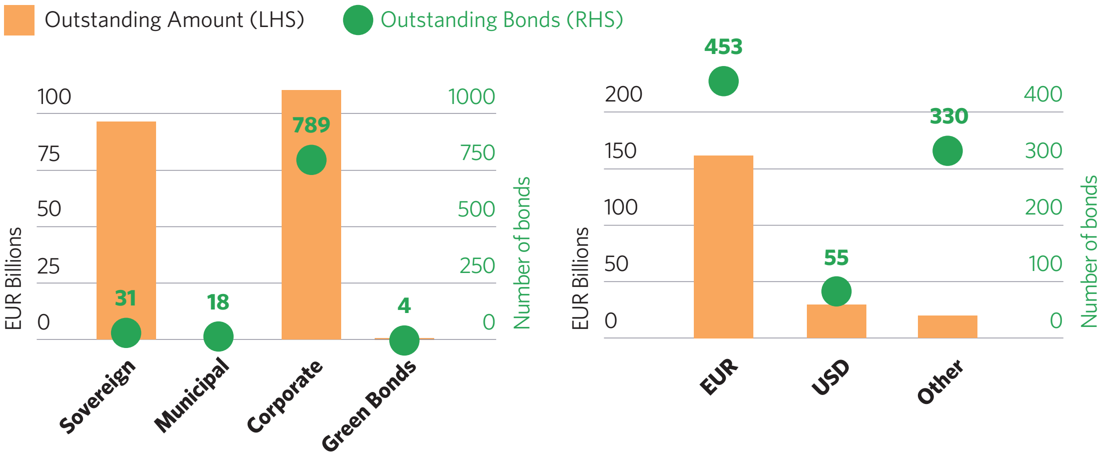
Finland – Local government uses primarily long-term loans for funding

EURm	Assets and liabilities, total	Bonds	Long term loans
Local government	20,239	3.8%	82.5%
Central government	114,410	86.2%	8.1%
General government	**135,922**	**73.0%**	**18.8%**

Source: StatFin, CBI analysis. Note: Data as of Q2 2017

Corporate issuers are quite active with EUR113.6bn bonds outstanding, according to year-end 2017 data from cbonds.com. At EUR1bn green bond issuance is negligible by comparison with room for growth. Finland's Eurozone membership is a credit positive for issuance.

Finland – Outstanding bonds



Source: http://cbonds.com/countries/finland-bond. Data as of 2 January 2018 * Corporate adjusted for Green Bond issuance (source: Climate Bonds Initiative)

DIRECT MUNICIPAL ISSUANCE

MuniFin is the main lender to the Finnish public sector. Municipalities and municipal federations accounted for 42% of its loan portfolio as of year-end 2016, according to its November 2017 investor presentation.[44]

Market participants note that municipalities sometimes avoid bonds due to the lengthy consultation process and the wide range of parties from the city council that need to be consulted. Loans from MuniFin, on the other hand, do not require such thorough consultation.

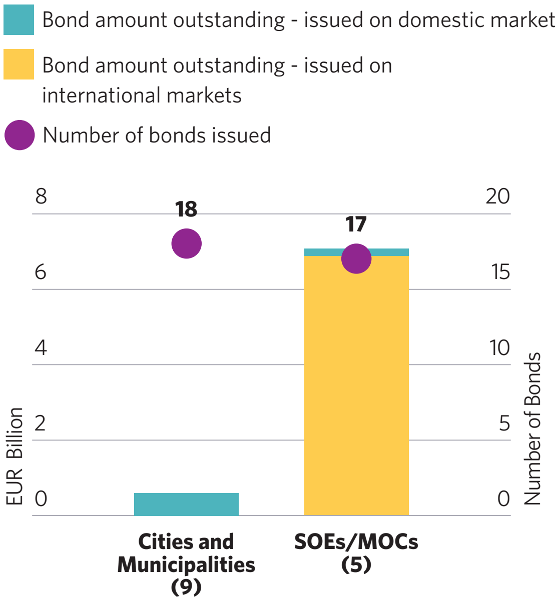
Notwithstanding this, nine cities have issued vanilla bonds: Espoo, Jyvaskyla, Kotka, Lahti, Lappeenranta, Seinajoki, Turku, Vaasa and Vantaa. As average bond size range from EUR25m to EUR50m per city, and EUR38m overall, it is not surprising that all were listed domestically.

ISSUANCE BY MOCs AND SOEs

Bond issuance from government-related corporates is significant but limited to six state-owned entities. By far the biggest issuer is Finland's export credit agency Finnvera with EUR 6.5bn bonds outstanding. Fingrid Oy recently became the first Finnish corporate green bond issuer with a EUR 100m deal closed in November. The other four issuers – Solidium Oy, Finnfund, Kemijoki Oy and Vapo Oy – have issued a total of five bonds sized at EUR 40m to EUR 350m, but no green bonds.

MuniFin's loan portfolio was primarily allocated to MOCs as of year-end 2016. Housing corporations accounted for 44% and MOCs for 14%. The high volume of lending on housing is typical for the Nordics.

14 Finnish vanillan bond issuers with green bond issuer potential



Source: Thomson Reuters

POTENTIAL ISSUERS

All existing issuers could be green bond issuers. The key would be the green credentials of individual investments, i.e. focus on renewable energy, low-carbon buildings, industrial energy efficiency, sustainable land use, etc.

Within the local government sector, Helsinki could be a potential green bond issuer. However, it may be that Finland's six largest cities – Helsinki, Espoo, Tampere, Vantaa, Oulu and Turku – which are home to some 30% of the population, pool their resources under the auspices of 6Aika and start issuing on a joint basis to deliver on their sustainable urban development goals.

Municipal investments in 2016 totalled EUR 2.6bn and were dominated by acquisitions and capital expenditures on properties in the education and social and healthcare sectors, as well as in water and sewage built infrastructure. However, it should be noted that only three municipalities – Helsinki, Espoo and Tampere – invested more than EUR 100m. Without aggregation across smaller municipalities, funding volume will therefore be an constraint for bond issuance.

Finland – Municipalities invest primarily in specialised property and water management

EUR m	Educational and cultural activities	Traffic routes	Social services and health care	Water supply; sewage mgmt.	Parks and public areas	Public transport	Other
Residential buildings acquisitions and investment	2	-	8	0	0	0	10
Other buildings acquisition expenditure	456	9	96	1	0	0	78
... and additional investment expenditure	515	0	127	15	1	11	83
Fixed constructions and equipment investments	90	684	4	211	79	35	54
All investment 2016	**1,065**	**694**	**235**	**226**	**80**	**46**	**226**

Source: StatFin, CBI analysis. Note: Data for 2016.

Official statistics list 120 MOCs. Their aggregated financial statements show no bond holdings as of year-end 2016. However, the top 5 have quite sizeable assets, albeit relatively small investments in non-current assets. There are, for instance, over 20 companies engaged in water and wastewater which may have assets and investment plans suitable for green bond issuance. The most likely are Helsinki City Transport, which has issued two loans and Espoo Facility Services who have higher investment levels than others.

There is also scope for existing issuers to come to market with thematic issues. For instance, MuniFin is a major lender to housing MOCs in the context of the housing subsidy system administered by The Housing Finance and Development Centre of Finland, ARA, which sits under the Ministry of the Environment. Pooling outstanding loans together to support a covered bond or raising funds through a green bond to provide energy efficiency mortgages are both opportunities to scale up.

We considered all 49 companies with state ownership above 50%. Top of our list is export credit agency Finnvera, already a big bond issuer and Finnfund, a development finance agency. There is abundant evidence that financing for sustainable development attracts green and SRI investors.

Other potential issuers fall in one of two broad categories:

- **Companies in suitable sectors** include the state rail company, a Helsinki housing company, the Finnish parks and forestry management agency and Finavia, which is investing in EUR900m in Helsinki Airport's expansion, as well as a number of energy companies

- **Investment companies** could support growth in green sectors and investment energy efficiency by raising funds with a green bond as Altum, Latvia's state-backed investment agency, did: Potential issuers include Business Finland, Governia Oy, TESI Finnish Industry Investment and – perhaps less likely – Solidium Oy, which typically invests in minority stakes in listed companies.

Finland – Potential SOE green bond issuers

Companies	Sector	Potential for green bonds
Finnvera	Finnish export credit agency	Multi-sector
Finnfund	Development finance company that promotes sustainable development by investing in private projects in developing countries	Multi-sector
A-Kruunu Oy	Helsinki affordable rental housing company	Low carbon buildings
Finavia Corporation	Airport operator, e.g. investing in Helsinki Airport expansion. Mexico City Airport's USD6bn deal is an example in raising funding for built infrastructure.	Low carbon buildings
Fortum Corporation	Clean Energy company	Solar, Wind, Hydro
Gasum Corporation	Owner of national network of biogas plants; leading provider of biogas and processer of biodegradable waste	Waste management Biomass
Kemijoki Oy	Largest Finnish hydropower company	Hydro
Metsähallitus	Parks and reserves; timber supplier to Finnish industry	Forestry
Vapo Oy	Peat and energy company, which among other business areas provides district heating and fuel solutions to industry	Heating
VR-Yhtymä Oy	Rail company. European rail companies that have funded investment needs with green bonds SNCF and RATP (France), ADIF Alta Velocidad (Spain) and FS Italiane (Italy)	Low carbon transport – rail
Solidium Oy	Investment company	Multi-sector
Business Finland	Trade and innovation funding agency	Multi-sector
Governia Oy	Venture capital and private equity	Multi-sector
TESI Finnish Industry Investment	Venture capital and private equity	Multi-sector

Source: http://vnk.fi/en/companies , Climate Bonds Initiative analysis

Denmark

1. Climate plans/initiatives

Climate-related investment priorities for 2018 for the Danish government include coastal protection and climate adaptation.

In 2017 the Danish Ministry of Transport announced that it intends to create a state-owned company which will acquire new trains for Danish State Railway, Danske Statsbaner and manage its rolling stock. Increasing capacity is a ca. EUR2bn program.

2. Large/repeat issuers

KommuneKredit issued its inaugural green bond in 2017, joined by a significant first by Ørsted a few months later. KommuneKredit holds a 98% market share of public sector financing!

3. Opportunities for green bond issuance

This suggests we should see more issuance from it, but there is a significant opportunity around mortgages, in light of existing bond volumes.

Rail investments could provide an opportunity for the state rail operator Danske Statsbaner.

2017 was a record year for Danish wind power. Denmark is on track to surpassing its EU energy targets, with 43.4% of its electricity consumption supplied by wind power last year, according to the Danism Ministry of Energy, Utilities and Climate.

Ministers and decision-makers from the world's largest economies will meet in Copenhagen and Malmø for five days towards the end of May 2018 in order to accelerate the global green transition. The member countries of the organisations Clean Energy Ministerial (CEM) and Mission Innovation (MI) account for 75% of global emissions and 90% of global energy investments combined.

Denmark's climate-related investment priorities for 2018 do not include big expenditure items:[45]

- **Better coastal protection and climate adaptation:** Government has earmarked DKK 28m (EUR 3.8m) for the 2018-2021 period for initiatives to support the establishment of preventive coastal protection by municipalities and landowners to better protect communities against rising sea levels and strengthen efforts to limit future floods and erosion.

- **Develop climate atlas:** DKK 27m (EUR 3.6m) is allocated for the development of a consistent, quality assured and updated database to identify areas particularly challenged by extreme weather events and ensure effective climate adaptation and coastal protection where the need is greatest. This would facilitate planning for citizens, companies and the authorities.

- **Nature pool:** DKK 80m (EUR 10.7m) is earmarked for nature conservation, biodiversity, including the protection of fresh meadows, bees and butterflies, over the next four years.

As in other Nordic markets a lot of investment decisions rest with local government. However, all Danish municipalities and regions are members of KommuneKredit, which provides 98% of their funding needs.

THE DANISH BOND LANDSCAPE

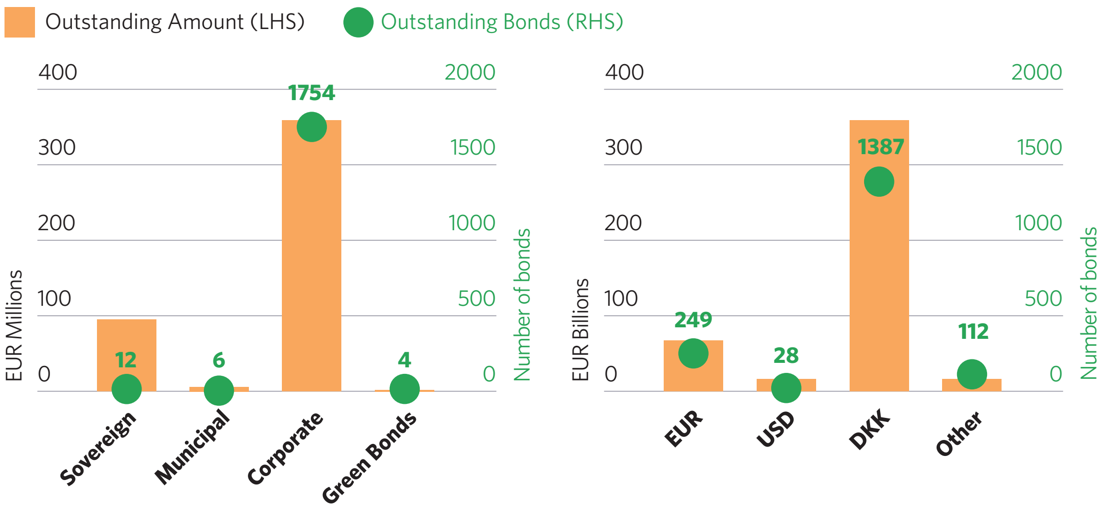
The Danish bond market is predominantly domestic. Even investors in government bonds were 70% domestic, 30% foreign. Danish institutional investors, i.e. insurance companies and pension funds, represent 41% of the investor base.

Danish bond issuance is dominated by mortgage-backed debt, as reflected in official statistics from Statbank Denmark. At 78% of total outstandings as of Q3 2017 it dwarfs corporate issuance, particularly once financial corporates are taken out of the equation.

Denmark – Outstanding bonds				
Nominal value in EURm	**2016**	**2017M09**	**Public admin, health and education**	**Financial institutions**
Central government bonds	81,967	91,627	100%	0%
Mortgage-credit bonds issued by (MFIs)	411,911	399,401	0%	100%
Covered bonds and securitisation	3,638	3,369	0%	81%
KommuneKredit bonds[46]	5,372	5,161	0%	100%
Danish Ship Finance bonds	5,007	5,092	0%	100%
Corporate bonds etc. (other issuers)	7,026	7,031	0%	32%
Bonds, total	**519,088**	**514,256**	**18.3%**	**80.6%**

Source: https://www.statbank.dk/ , Climate Bonds Initiative analysis. Data as of Q3 2017

Denmark – Outstanding bonds



Source: http://cbonds.com/countries/Denmak_bond. Data as of 2 January 2018 * Corporate adjusted for Green Bond issuance (source: Climate Bonds Initiative)

DIRECT MUNICIPALITIES, MOC AND SOE ISSUANCE

There is no direct issuance from municipalities and only two SOEs have issued bonds:

- **Ørsted,** who debuted on the green bond market with a EUR1.25bn deal in late 2017. Green bonds now represent 20% of its outstanding bonds – a very significant size compared to other green bond issuers
- **Danske Statsbaner (DSB),** the state rail operator which has cEUR400m of outstanding bonds, including issuance in EUR, SEK and NOK, but no green bonds yet.

POTENTIAL ISSUERS

In 2017 the Danish Ministry of Transport announced that it intends to establish a state-owned rolling stock company to acquire and manage the stock of new trains for Danish State Railway, DSB. The new company will continue DSB's acquisition programme with a focus on electric trains. The underlying analysis recommends the acquisition of 204 trains with a total capacity of 43,000 seats that will allow DSB to increase the capacity from 59,000 seats to 65,000 seats by 2030. The value of the programme is estimated at DKK 14–17bn (EUR1.9–2.3bn).[47] This type of program can be funded through green bond issuance similar to what rail companies SNCF and RATP (France), ADIF Alta Velocidad (Spain) and FS Italiane (Italy) have done.

Another segment could be district heating. It dominates as a heating solution of households, with 64% of the market as of 2016.[48] This could be a source of green bond issuance if energy is generated from renewable sources: half of district heating is generated by direct use of renewable energy, and in Copenhagen nearly all of the buildings are connected to district heating.

The Danish District Heating Association represents more than 400 such companies, which supply 98% of district heating and some operate combined heat and power plants, using waste heat from industry.[49]

- One option would be for individual district heating companies to issue green bonds following in the footsteps of Norwegian municipality-owned district heating companies and green bond issuers Agder Energi, BKK, Lyse and Vardar.
- Another option would be for the association to work with its members to create a common funding platform to act as an aggregator for borrowing requirements. This would provide an alternative to loan financing from KommuneKredit and diversify funding sources.

Another indicator of investment priorities for local government are the budget allocations by Danish regions. The table below shows selected line items from regional budgets which may potentially present green finance opportunities.

Denmark – Regional budgets feature high spend on property and heat supply

EUR m	Hoved-staden	Sjæland	Syddan-mark	Midtjyl-land	Nordjyl-land	TOTAL
PROPERTY	**46,412**	**25,290**	**35,831**	**25,974**	**15,269**	**148,776**
Joint purpose real estate	5%	57%	46%	45%	21%	32%
Housing	16%	5%	-2%	-2%	6%	5%
Commercial and other real estate	33%	10%	9%	38%	53%	26%
City improvements	47%	28%	47%	18%	21%	36%
UTILITIES	**31,301**	**-926**	**-**	**28,938**	**1,863**	**61,176**
Heat supply	98%	0%	-	100%	0%	97%
Water & wastewater	2%	-22%	-	0%	0%	2%
Other supply plants	0%	122%	-	0%	100%	1%
TRANSPORT	**2,204**	**2,683**	**9,766**	**1,884**	**2,376**	**18,913**
Public transit / bus services	30%	3%	4%	-122%	12%	-5%
Train services	0%	0%	1%	43%	0%	5%
Harbours	57%	83%	89%	165%	88%	92%
Ferry services	0%	15%	0%	14%	0%	4%

Source: https://www.statbank.dk/ . Data for 2017 Budgets by region. Climate Bonds Initiative analysis

Heating is definitely high on the list, but capital expenditures in property, sports & leisure facilities and harbours (built infrastructure) are also priorities. The high level of investment in city improvements suggest there could be scope for issuance from cities.

City investment budgets. The largest budget for city regeneration for 2017 was Copenhagen's, with an overall investment budget for property of EUR 6.6bn for the year. Helsingør had an even higher investment budget of EUR 7.2bn. With the top 10 municipalities spending in excess of EUR 4.5bn, these are volumes that could potentially be funded with bonds, thus providing diversification to the use of KommuneKredit loans. New buildings and renovations to existing ones are quite likely to feature improved energy efficiency.

Denmark – Top 10 municipalities have sizable property investment budgets

2017 Budgets	EUR m	Joint purpose	Housing	Commercial & other property	Latest issue
Helsingør	7,226	2,626	-	4,600	-
Copenhagen	6,586	- 19,365	2,076	8,667	15,108
Hvidovre	6,085	6,273	-	- 188	-
Odense	5,642	6,742	1,735	-	635
Fredericia	5,496	- 403	439	4,668	793
Aabenraa	5,238	-	-	-	5,238
Hedensted	4,998	2,599	- 342	2,337	403
Aalborg	4,997	-	-	4,769	229
Hillerød	4,790	3,125	1,618	-	-
Gentofte	4,691	2,566	2,124	-	-

Source: https://www.statbank.dk/ , Climate Bonds Initiative analysis

Iceland

1. Climate plans/initiatives

Iceland's national budget proposal for 2018 includes a number of climate-related investment priorities and initiatives such as increasing the infrastructure for electric vehicles. Reykjavik's Municipal Plan 2010-2030 discloses plans to increase the use of public transport modes, introduce energy savings initiatives and improving the sustainability of the urban landscape.

2. Large/repeat issuers

There has been no green bond issuance.

3. Opportunities for green bond issuance

Municipality Credit Iceland has issued five bonds on the domestic market. As an aggregator, it has high potential to become a green bond issuer.

16 cities and municipalities have accessed the debt capital market and could potentially issue green bonds. Reykjavik with its investment plans around reducing emissions from transport is a good candidate for green bonds.

Landsvirkjun, Orkuveita Reykjavikur, loan agency Icelandic Regional Development Institute and the Housing Finance Fund are also contenders.

Iceland's national budget proposal for 2018 includes a number of climate-related investment priorities and environmental initiatives:[50]

- **Electric cars.** Doubling of the carbon tax levied on transportation fuels and tax-breaks for electric cars.[51] Plans are underway to increase the number of rapid-charging stations along the ring road to facilitate the faster adoption of electric cars, as opposed to plug-in hybrids! According to 2016 figures from the European Alternative Fuels Observatory, 5.4% of new vehicles in Iceland were electric or hybrid cars, placing it second in Europe after Norway at 29%.[52] Electric vehicle adoption is supported by a state-financed incentive program.[53]

- **Allocation for transport and telecom projects increased by ISK 3.6bn (EUR 28m);** for environmental affairs by ISK 1.7bn (EUR 13m), in part to develop infrastructure for the protection of natural and cultural relics and the establishment of a climate council; and an ISK 90m earmarked for river monitoring due to potential genetic contamination from sea-farmed salmon

Reykjavik's Municipal Plan 2010-2030[54] and Climate Policy 2020 also feature a range of measures:

- **Overall target:** Reykjavík City to be carbon neutral by 2040. A green emphasis will be not optional but mandated in all of the city's operations and all businesses and departments are required to take part in the city's Green Steps project

- **Public transport goals:**

  - Change travel modes so use of public transport increases from 4% to 12% and the ratio of pedestrians and cyclists rises from 19% to over 30% in 2030. The main initiative is a Public Transport Corridor featuring light railways and a bus rapid transit system to be developed in conjunction with adjacent municipalities and the Department of Transport, but also

  - Increasing online services for individuals and business to reduce transport needs

  - Reduce traffic/shorten distances by developing services closer to consumers and, possibly, increasing sea transport

- **Infrastructure for electric vehicles:** The City of Reykjavík is targeting 100% zero-emission vehicles by 2025. To support the transition, the city will:

  - make charging stations available in city parking garages

  - introduce charging stations outside municipal buildings

  - offer free parking for electric vehicles[55]

  - put forth a plan of action to replace city buses and other forms of public transport with zero-emission vehicles

  - update the code of conduct regulating the city and its business to remove obstacles to electric transport adoption and the implementation of projects

  - aim to make electrical charging for ships and vessels available at Faxaflóahafnir (Associated Icelandic Ports) in cooperation with other governments, energy companies and harbours

- **Buildings & energy efficiency:** Implement Smart City solutions for buildings and city infrastructure in order to achieve energy savings and reduce resource waste in co-operation with Félagsbústaðir (Reykjavík Social Hosting) and other stakeholders.

- **Sustainable land use objectives:**

  - 90% of all new residential units will be inside current urban areas to improve proximity of public services and to reduce travel needs.

  - Reduce the petrol stations within city limits by 50% by 2030; and all but extinct by 2040.

  - Developed a forestry plan for Geldinganes and Kjalarnes in order to increase wind shielding and work towards utilising the area more productively. Schools, government institutes and city businesses will be allocated areas to reforest to offset their carbon emission.

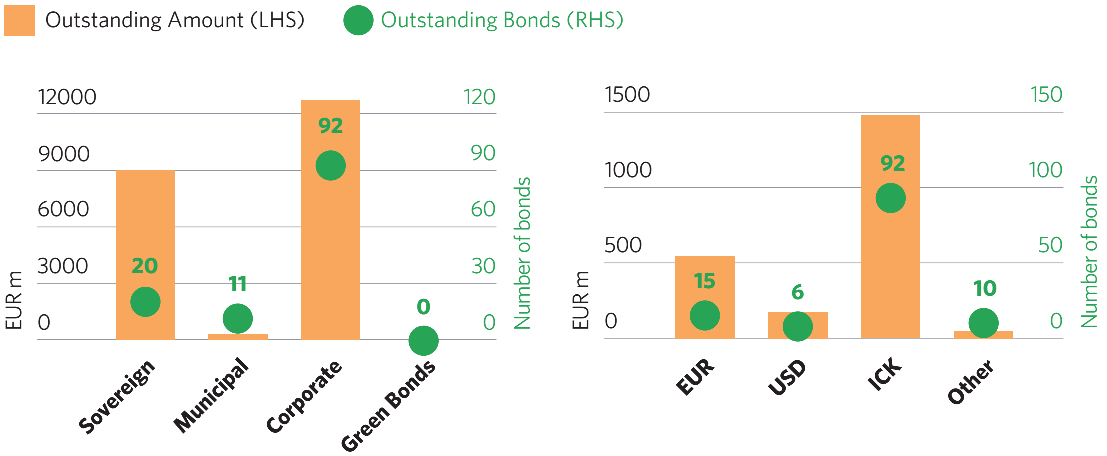
- **Renewable energy:** In co-operation with Reykjavík Energy (Orkuveita Reykjavíkur), explore the possibility of introducing a wind turbine farm within city limits.

- **Waste management:** Complete the anaerobic digestion plant in 2018 and bring it in use in 2019

THE ICELANDIC BOND LANDSCAPE

The Icelandic bond market is largely domestic. Municipal bond issuance is limited to 11 bonds outstanding for a total of EUR 352m. There have been no green bonds issued in Iceland to date.

Iceland – Outstanding bonds



Source: http://cbonds.com/countries/iceland-bond. Data as of 2 January 2018 * No Green Bond issuance (source: Climate Bonds Initiative

DIRECT MUNICIPAL ISSUANCE

Low borrowing requirements can make bond issuance uneconomic. It is, therefore, not surprising that most outstanding bonds were issued domestically.

Four cities – Reykjavik, Kópavogur, Vestmannaeyjabaer and Akureiri – have issued ten bonds between them with an average bond size of EUR10m.

In addition, 12 municipality issuers have accessed the debt capital market. Their average issue size is lower at EUR just EUR2m.

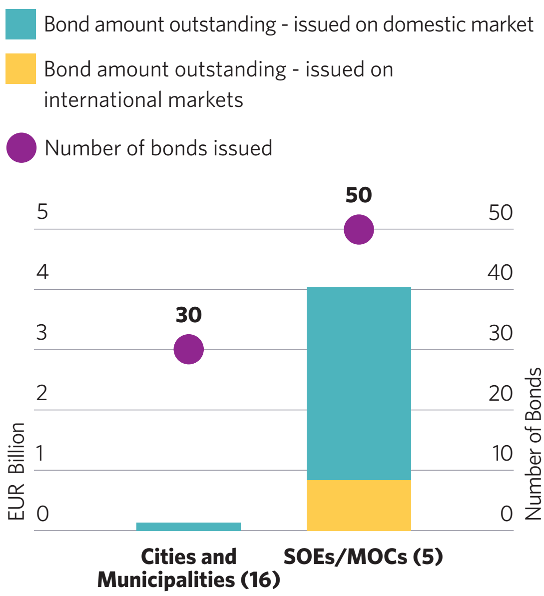
ISSUANCE BY MOCs AND SOEs

Deal sizes are bigger for the five corporate issuers: national power company Landsvirkjun, public utility company Orkuveita Reykjavikur, loan agency Icelandic Regional Development Institute, the Housing Finance Fund and Municipality Credit Iceland.

The largest bond issuer among them – both in terms of issuance volume and average deal size – is the Housing Finance Fund. It has perhaps the highest likelihood of becoming a green bond issuer, including internationally.

However, so far only Landsvirkjun has issued primarily internationally and in USD and EUR.

21 Icelandic vanilla bond issuers with green bond issuer potential



Source: Thomson Reuters

POTENTIAL ISSUERS

Municipality Credit Iceland, the municipality owned LGFA, lends principally on projects in education (kindergartens, primary and secondary schools including sport facilities), geothermal heating, followed by financing of capital investment projects for roads, sewerage, harbours, recreation, solid waste and wastewater treatment and disposal. Geothermal heating is certainly in a suitable green bond sector and many other investment areas can be.

However, borrowing quantum is low. The top two municipal borrowers are Kópavogsbær and Hafnarfjarðarkaupstaður, each with approx. ISK8.3bn (EUR70m) outstanding, according to MCI's 2016 annual accounts. The top municipal company borrower is Félagsbústaðir hf with ISK5.4bn (EUR46m) outstanding. Most municipalities and MOCs are much smaller borrowers.

LGFA Municipality Credit Iceland has issued five bonds at an average size of EUR 65m. As an aggregator, it has high potential to become a green bond issuer, even if only issuing domestically and/or as private placements with select investors.

All other existing bond issuers are potential green bond issuers. Strong candidates for green bonds include:

Iceland – Potential SOE green bond issuers

Company	Sector	Potential for green bonds
Housing Finance Fund	Funding low carbon housing stock and/or energy efficiency improvements is developing into a high-growth are for green bonds. Aggregation platforms are best suited to issue bonds of sufficient size either through a senior corporate bond with funds earmarked for energy efficiency loans or refinancing low carbon buildings or through a secured structure.	Low carbon buildings
Landsvirkjun	Renewable energy categories include geothermal.[56] Their campaign to attract companies to locate their operations near geothermal power plants could generate green bond opportunities itself as industry starts looking for energy efficiency in production processes and products.	Geothermal
City of Reykjavik	Not only is it the largest urban area, but it has a wide range of climate-related investments planned in the current budget period, including public transport and electric cars.	Multi-sector
Iceland	Sovereign green bond issuance could be particularly suitable for a smaller country such as Iceland. It would allow government to address a wide range of funding requirements around its climate agenda.	Multi-sector

The Baltics: Latvia, Lithuania, Estonia

1. Climate plans/initiatives

Improvements to the rail network is a running theme for all three Baltic countries, albeit at a more advanced stage in Lithuania. Other investment areas include energy efficiency improvement to meet 2020 targets, more electric vehicle charging stations, mitigating the environmental impacts from Riga airport and environment protection, housing and utilities.

2. Large/repeat issuers

It is quite remarkable that there have been green bond issuers in each of these three countries, considering that bond activity in the Baltic region is fairly limited. There are four issuers in total and the largest by far is Lietuvos Energija. Its EUR300m maiden green bond closed in 2017 and is listed on several European stock exchanges.

3. Opportunities for green bond issuance

The City of Tallinn (Estonia) has issued both domestically and internationally and could use its exposure to the bond market to start leveraging green debt. Vanilla bond issuers Elering, Tallinna Linnatranspordi and Eesti Raudtee (Estonian Railways) are all in sectors that is favourably viewed for green bond issuance.

Eurozone membership is a credit-risk positive for international investors, but fewer potential issuers and less frequent funding needs due to the markets' smaller size could be an issue. A facilitating option may be to set up a common Baltic green funding platform, similar in aspirations to Nordic LGFAs. This would allow aggregation to more meaningful deal sizes, potentially even for international listing. This need not be a bank, but could also be a fund or some form of joint venture between the municipal sectors across the region.

LATVIA

Renewable energy – most of it coming from hydropower – represents 37% of Latvia's energy mix, according to 2016 figures. This is the third highest renewable energy share in the EU.[57]

The 2018 budget provides for EUR5.8m to be allocated for environment protection and EUR33m to management of municipal territories and housing.[58] In a document released by the Ministry of Transport in 2016 and addressed to the European Fund for Strategic Investments, the government seeks to address the lack of development of its rail network infrastructure.[59] Within the potential project pipeline for railway, it estimates a minimum investment need of EUR5.1bn. The establishment of recharging stations for electric vehicles throughout Latvia was estimated at EUR8.3m. Improving airport capacity, sustainability and mitigating the environmental impact from aviation at Riga airport was estimated at EUR268m.[60]

LITHUANIA

Improvements to the rail network is a running theme for all three Baltic countries.

Although Lithuania still relies on imports of oil and natural gas, it met its renewable energy target for 2020 in 2013. A major contributor to this achievement was the heating sector, which has greatly increased its use of biomass.[61] The country is on track to meet its greenhouse gas reduction target for 2020. It will have to do more to meet its energy efficiency target – energy consumption by households is still relatively high and there is a need to improve the efficiency of its car fleet.

ESTONIA

Estonia has already reached its 2020 target[62] of 25% renewable energy. The potential for renewable energy in Estonia is strongest in bioenergy-based combined heat and power generation and in wind power.[66] Small-scale hydro and solar power capacity is also being developed.

It is also on track to meet its 2020 target to limit greenhouse gas emissions from sectors outside the EU emissions trading scheme (EU ETS). However, its economy is still very energy-intensive, and in addition transport is a significant source of its greenhouse gas emissions. In the transport sector it has made progress in extending the use of biofuels but the market for electric vehicles is less developed.[63] In late 2017, the government authorized county governments to establish regional public transport centres in Southeast Estonia, Tartu County and Ida-Viru County with an estimated budget of EUR10m for 2018.[64]

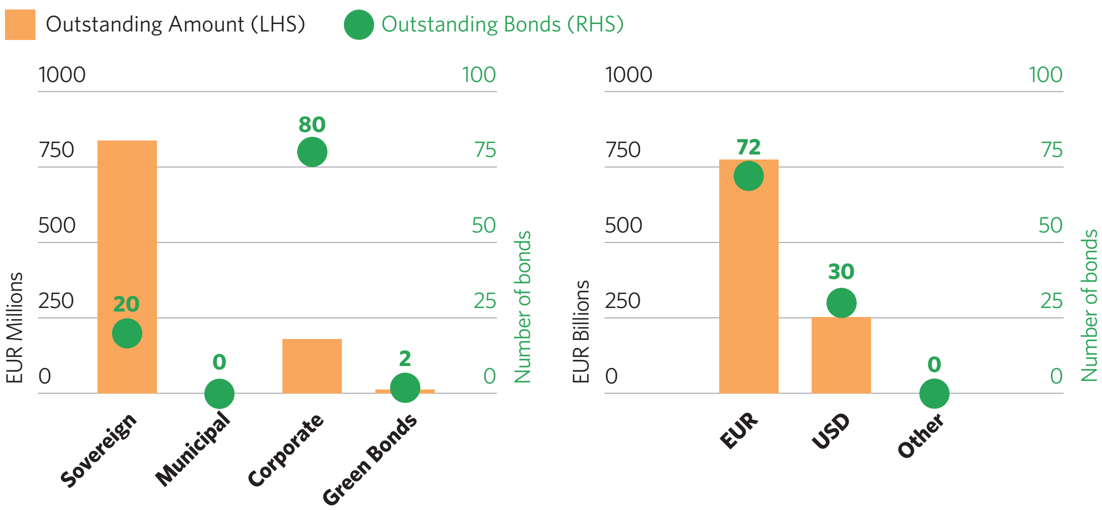
The State Budget Strategy for 2018-2021[65] forecasts local government expenditures in 2018 for environment protection amounts to EUR64m, and EUR102m for housing and utilities. Under the environment sector it lists important activities to be financed: in the energy sector, measures include energy efficiency improvements for apartments and street lighting, some of which to be supported by the European Cohesion Fund.

THE BALTIC BOND MARKETS

Bond issuance in the Baltics is limited. According to Cbonds.com, issuers from all three countries taken together have EUR27bn outstanding, with over 80% of that attributable to sovereigns. It is, therefore, quite remarkable that there green bond issuers in each country already.

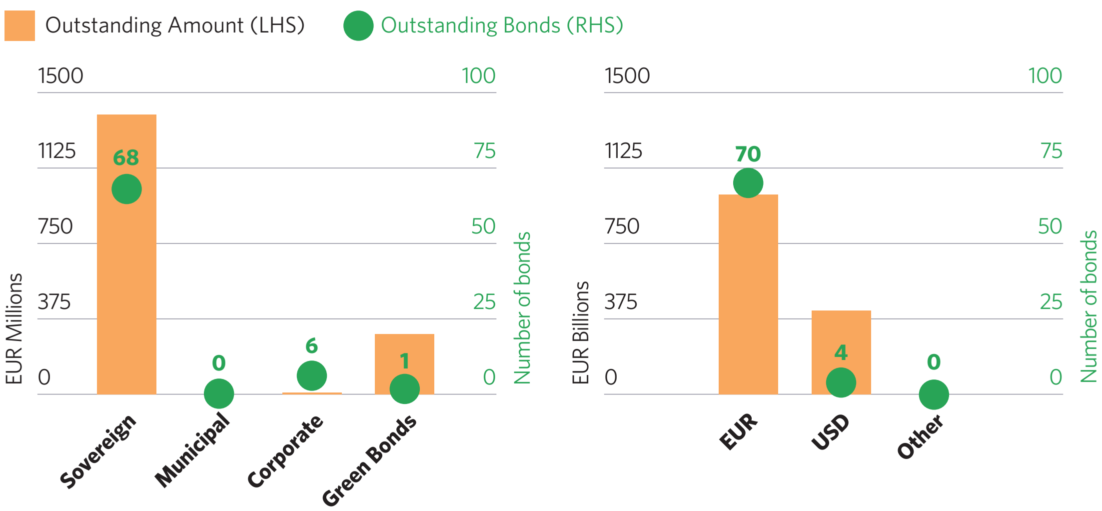
Issuance in Latvia and Lithuania is dominated by sovereign bonds. However, Lithuania's grid company accounts for practically the whole corporate market given it is EUR 300m and the Corporate total is EUR306m according to cbonds.com data.

Latvia – Outstanding bonds



Source: http://cbonds.com/countries/latvia-bond. Data as of 2 January 2018 * Corporate adjusted for Green Bond issuance (source: Climate Bonds Initiative)

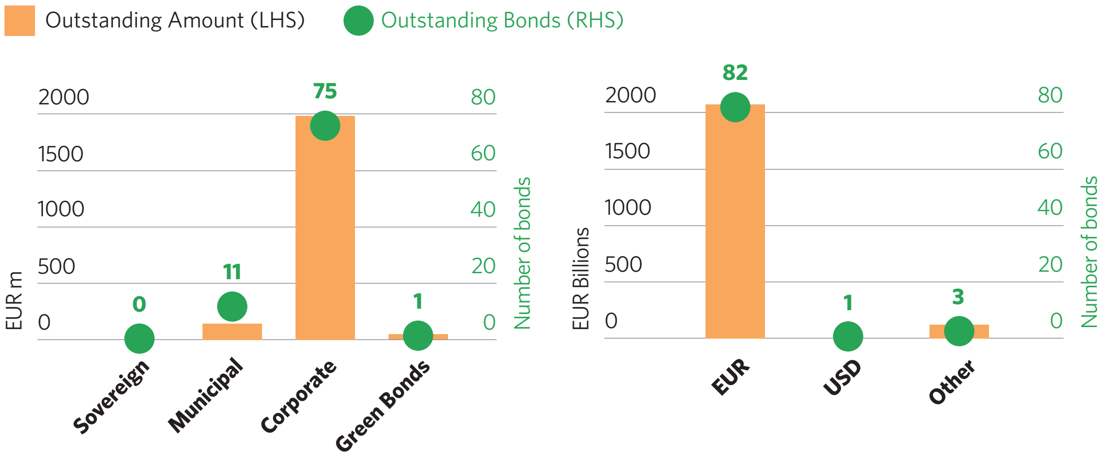
Lithuania – Outstanding bonds



Source: http://cbonds.com/countries/lithuania-bond. Data as of 2 Janauary 2018 * Corporate adjusted for Green Bond issuance (source: Climate Bonds Initiative)

In Estonia, however, bond issuance is dominated by Corporate bonds. There are also 11 outstanding municipal issues totalling EUR 143m, according to year-end 2017 data from cbonds.com. However, the country has an otherwise a very small bond market with just EUR 2.1bn outstanding in total.

Estonia – Outstanding bonds



Source: http://cbonds.com/countries/estonia-bond. Data as of 2 January 2018 * Corporate adjusted for Green Bond issuance (source: Climate Bonds Initiative

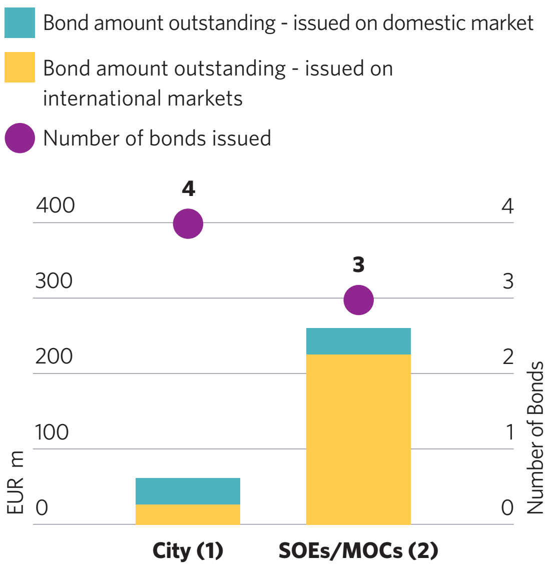
DIRECT MUNICIPAL, MOC AND SOE ISSUANCE

There has been no municipal issuance in Latvia and Lithania. In Estonia, the City of Tallinn has issued both domestically and internationally. However, average bond size is small at ca EUR16m.

There has been limited corporate issuance in Latvia, and in Lithuania the green bond dominates corporate bonds. In Estonia, Elering and Tallinna Linnatranspordi make up the rest of the public sector issuer list, with Elering being by far the bigger issuer.

Another government related company, Eesti Raudtee (Estonian Railways), in a sector that is favourably viewed for green bond issuance has no bonds outstanding.

Estonia – Public sector issuance



Source: Thomson Reuters

POTENTIAL ISSUERS

The Baltics have smaller markets but benefit from being within the Eurozone. Potential issuers such as cities and related companies are relatively small. Estonian Railways and the country's grid company could be potential issuers based on sector. It is unlikely the Baltics will have repeat issuers as in Sweden: ad hoc issuance is more likely given the size of the market, smaller number of potential issuers with possibly less frequent and/or lower funding requirements.

Another option may be to set up a common Baltic green funding platform, similar in aspirations to the LGFAs in the Nordics. A common platform would allow aggregation to more meaningful deal sizes, potentially even for international listing. This need not be a bank, but could also be a fund or some form of joint venture between the municipal sectors across the region.

Last but not least, there is the option of sovereign issuance to aggregate funding requirements.

Supporting further green bond market growth

Investor engagement

Investor engagement in sustainable investment is increasing, particularly from the large pension funds in the region. Over the course of 2017, Sweden's AP7 and Norway's USD1tn sovereign wealth fund have clearly signalled that they are and will divest of fossil fuel investments. Given the size of Nordic pension funds, they have the ability to exert significant influence over asset managers in terms of integrating climate assessments in investment decisions, creating segregated sustainability and/or green bond funds and including green bonds in funds.

More explicit support for climate-aligned investments from pension funds and their asset managers, would provide a further vote of support for the green bond market. NIB's allocation of EUR500m for the purchase of green bonds in the Nordic-Baltic region is an example of such explicit support. Further examples are SEB's Green Bond Fund and SPP's Green Bond Fund.

The rise of green bond funds and the integration of sustainability criteria in asset managers' investment decisions further underpin demand for green bonds and increase liquidity.

Making green bond issuance accessible and economic

Larger issuers can increase their presence on the London Stock Exchange and the Luxembourg Green Exchange. As demonstrated by Swedish city issuers, this is an option for smaller green bond issuers, too! Access to international investors and leveraging demand from a wider range of SRI investors is a key benefit.

The creation of a green bond list on stock exchanges provides visibility and discoverability of green bond issuance. Oslo Stock Exchange and Nasdaq Stockholm have had green/sustainability bond segments since 2015. Hopefully, Finland and Denmark will follow. The extension of the First North listing venue to green/sustainable bond issuers will provide easier market access to smaller issuers and for private placement, coupled with greater visibility for the SRI investor base.

A feature of most Nordic and Baltic issuers is their relatively small funding requirements. Finding ways to decrease green bond issuance costs would certainly help them issue more green bonds. Pooling funding requirements and issuing through a common funding vehicle is one way to achieve this. Alternatively, Nordic governments could consider targeted incentives such as covering external review costs for certain issuers or providing tax deductibility for issuance costs. This would be in similar vein to tax incentives for electric vehicles, which have been introduced in Iceland.

Use of aggregation and joint issuance to scale up

The use of LGFAs as aggregators is a best-practice example of scaling up financing for public sector investments. Alternatively, the use of a joint funding platform is a structure that can be deployed for any sector, any type of issuer and in any market – given the will to cooperate! It can provide bond market access to a wide range of issuers that may lack size to make direct bond issuance economically viable.

In Finland, for example, six cities[67] have agreed to cooperate on innovation – in a similar vein, they could pool resources to issue green bonds.

Sovereign green bonds

Sweden's Climate Act came into force on 1 January 2018 and the government has an extensive investment list in the climate sector for the 2018-2020 budget period. Expectations that Sweden will issue a sovereign green bond have risen as a government inquiry commissioned by Per Bolund, Minster for Financial Markets and Consumer Affairs, was recommended by government.[68]

2017 saw strong sovereign issuance and 2018 is looking promising. As of early February, Poland has closed its second sovereign green bond, Indonesia and Belgium are in the market with their firsts.

Conclusions

The Nordic countries are at the forefront of defining "green" and their green bond markets have evolved in the context of the Nordic Model, which relies strongly on consensus and cooperation to achieve equitable and sustainable social development. Environmental and wider sustainability targets are integrated in local and central government budgeting and in key laws including a Climate Act that has just come into force in Sweden. All of this provides for wide support of related initiatives and climate-aligned investments.

- Based on its bond market size, **Sweden** is likely to remain a top issuer even as its neighbours step up their own green bond issuance. A sovereign issue could well boost its ranking globally.
- There is high conversion potential in **Norway** for local government and district heating companies, which are already issuing vanilla bonds. The country's transport strategy could underpin issuance from Norges Statsbaner. The state export credit agency and development fund Norfund are also green bond candidates in our eyes.
- **Finland** has yet to see direct local government issuance, most likely from Helsinki, but potentially from the members of 6Aika. There are also a large a number of state-owned companies which operate in suitable sectors for selecting green assets. Finvera and Finnfund are good candidates.
- **Denmark's** public sector is very reliant on LGFA KommuneKredit, which suggests we should see more issuance from it, but there is also a significant opportunity around mortgages, in light of existing bond volumes. Rail investments could provide an opportunity for DSB.
- **Iceland's** local government has issued domestically so there is conversion potential. Reykjavik's climate action plans make it a good candidate for a green bond. Or Iceland could issue a sovereign green bond.
- We expect issuance from the **Baltics** to be ad hoc purely due to the smaller size of the markets, but Eurozone membership is a credit-risk positive for international investors.

Increasing support for the market through investors, stock exchanges, cost-focused incentives for smaller issuers and the continued use of aggregation to pool funding requirements should help the Nordic and Baltic markets to continue to grow and innovate.

APPENDIX. NORDIC AND BALTIC PUBLIC SECTOR GREEN BONDS

Country Issuer sector	Green bond issuer	Amount EURm	Green bonds[69]	Active since	Latest issue	Tenor min	Tenor max
Supranational	NIB Nordic Investment Bank[70]	2,978	18	Feb-10	Aug-17	2	20
Denmark		**1,750**	**3**	**Jun-17**	**Nov-17**	**10**	**1001**
LGFA	KommuneKredit	500	1	Jun-17	Jun-17	10	10
Energy Wind	Ørsted (prev. DONG Energy)	1,250	2	Nov-17	Nov-17	12	1001
Finland		**1,007**	**4**	**Oct-16**	**Nov-17**	**5**	**10**
LGFA	MuniFin Municipality Finance	907	3	Oct-16	Oct-17	5	10
Energy SOE	Fingrid	100	1	Nov-17	Nov-17	10	10
Latvia		**120**	**3**	**Jun-15**	**Oct-17**	**6**	**7**
State Fund	Altum Attistibas Finansu	20	1	Oct-17	Oct-17	7	7
Energy SOE	Latvenergo As	100	2	Jun-15	Apr-16	6	7
Lithuania		**300**	**1**	**Jul-17**	**Jul-17**	**10**	**10**
Energy SOE	Lietuvos Energija	300	1	Jul-17	Jul-17	10	10
Norway		**2,203**	**21**	**May-10**	**Nov-17**	**3**	**15**
Bank - Muni	KBN Kommunalbanken[70]	1,555	13	May-10	Nov-17	3	15
Energy MOC/SOE	Agder Energi	77	1	Nov-17	Nov-17	10	10
	BKK AS	238	1	Oct-14	Oct-14	7	7
	Lyse AS	55	1	Apr-17	Apr-17	6	6
	NTE[70]	89	3	Nov-14	Nov-14	3	7
	Vardar AS	32	1	Dec-14	Dec-14	5	5
Municipal	City of Oslo	158	1	Dec-15	Dec-15	9	9
Sweden		**4,849**	**45**	**Oct-13**	**Dec-17**	**3**	**7**
State Bank	SBAB Bank	397	2	Jun-16	Oct-17	5	5
	Swedish Export Credit	444	1	Jun-15	Jun-15	5	5
LGFA	Kommuninvest	1,511	3	Mar-16	May-17	3	4
Local government	City of Gothenburg	601	7	Oct-13	Jun-17	6	6
	City of Lunds	77	1	May-17	May-17	5	5
	City of Malmö	131	2	Dec-17	Dec-17	4	6
	City of Norrköping	62	1	Oct-16	Oct-16	6	6
	City of Västerås	76	2	Nov-16	Nov-16	5	5
	Örebro Kommun	133	3	Oct-14	Oct-16	5	5
	Region Skåne	124	1	Oct-16	Oct-16	5	5
	Stockholms Läns Landsting	518	5	May-14	Jun-17	5	6
Forestry SOE	Sveaskog	213	3	Mar-16	Sep-17	5	5
Housing MOC	Fastighets AB Förvaltaren	161	3	Oct-14	Sep-16	5	5
	Stångåstaden	113	3	Sep-15	Oct-16	5	5
Real Estate SOE	Uppsalahem	53	1	Sep-15	Sep-15	5	5
	Specialfastigheter	126	2	Nov-17	Nov-17	5	7
Grand Total		**13,207**	**95**	**Feb-10**	**Dec-17**	**3**	**1001**

Pending	Green bond issuer	Country	Amount EURm	Bonds Issues	Active Since	Latest issue	Tenor min	Tenor max
Real Estate GBE	Hemsö Fastighets AB	Sweden	107	2	May-16	May-16	5	5
Energy GBE	Eidsiva Energi	Norway	80	1	Sep-17	Sep-17	6	6
Local Government	City of Östersund	Sweden	80	1	Dec-17	Dec-17	5	5

Commentary: Only bonds with at least 95% of proceeds dedicated to green projects that are aligned with the Climate Bonds taxonomy are included in our figures. f issuers do not provide sufficient information upfront on the use of proceeds, bonds are tagged as "pending". If and when satisifactor information becomes available, we may include them in the labelled green bonds database.

Hemsö Fastighets AB's sustainability bonds fund primarily low carbon buildings and energy efficiency improvements in public buildings such as schools and care homes. However, up to 10% may be allocated to social uses such as internal or external areas of school premises and/or nursing homes which improve learning, respectively well-being, and adapting premises for refugee housing. If actual allocation to social uses that are not also "green" uses is within 5% the bond will be included in the Climate Bond Initiative labelled green bond database.

Eidsiva Energi proposes to use the proceeds raised from the bond for hydro projects and improvements in energy efficiency at a district heating plant. The Climate Bond Initiative has reservations about certain types of hydro projects and seeks to determine the scale of climate impact, including on land use and social aspects, before inclusion. With respect to district heating, there are two aspects under consideration: (a) energy source – fossil fuels are highly undesirable and (2) scale of energy improvements, i.e. level of climate impact.

City of Östersund proposes to use part of the proceeds to fund hydropower with water-rights court ruling in Sweden or concession in Norway and Climate Bonds Initiative requires further information on this aspect. We are also seeking to clarify the parameters around the production of hydrogen from electrolysis and other residual flows, another potential use of proceeds.

Endnotes

1 The Global Financial Center Index can be viewed here https://www.statista.com/statistics/270228/top-financial-centers-on-the-global-financial-centres-index/
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10 Excluding issuance from the multi-lateral Nordic Investment Bank, headquartered in Helsinki
11 Information provided by the Head of funding and Investor Relations, Nordic Investment Bank
12 The MOC and SOE category includes companies which are at least 50% owned by local or central government. So Ørsted (prev. DONG Energy) is included since the Danish state holds a 50.1% share, but Entra AS is not because the Norwegian government holds only a 33.4% share.
13 The report can be retrieved here https://www.climatebonds.net/resources/reports/post-issuance-reporting-green-bond-market-trends-best-practice-june-2017
14 The Position Paper on Green Bond Impact Reporting can be retrieved here https://www,munifin.fi/recents/news/2017/10/24/nordic-issuers-release-guide-on-green-bonds-impact-reporting
15 Participants: City of Göteborg (SE), Kommunalbanken (NO), Kommuninvest (SE), Municipality Finance (FI), Municipality of Norrköping (SE), Municipality of Örebro (SE), Stockholm County Council (SE), Swedish Export Credit Corporation (SE). KommuneKredit (DK) has participated in the group as an observer, with the intention to comply with the positions of the paper at a later stage. Municipality of Borås and Swedish Association of Local Authorities and Regions (SALAR) participated in the development work, as representatives of the Kommuninvest Green Bonds Environmental Committee
16 The Nordic Model: Local Government, Global Competitiveness in Denmark, Sweden and Finland, KommuneKredit, Kommuninvest, MuniFin, 2012
17 KBN Kommunalbanken Norway, S&P Ratings Direct, July 2016
18 Extracted from Nordic Local Governments: Credit quality boosted by support expectations and inherent strengths, Moody's, May 2016
19 More information is available here http://www.nordicinnovation.org/sustainablecities
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22 Keva is the local government pension fund
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24 Total outstanding as per Thomson Reuters database. Issue amount and number of bonds as per the Climate Bond Initiative's green bonds database
25 Local Action on Climate Change – Swedish Experiences, Swedish Association of Local Authorities and Regions, 2009
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30 Information from cbonds.com
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32 The top 10 municipalities by level of outstanding debt in 2015 were Gothenburg (SEK38.5bn), Stockholm (SEK33.6bn), Linköping, Örebro, Uppsala, Malmö, Södertälje, Umeå, Jönköping and Västerås (SEK8.5bn)
33 85% owned by AP3 Third Swedish National Pension Fund
34 http://www.housingeurope.eu/member-57/sabo
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41 Norfund's Strategic Plan 2016-2020 can be retrieved here https://www.norfund.no/getfile.php/131726/Dokumenter/Norfund%20strategy%202016-2020%20ENG%20%28ID%20161654%29.pdf
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44 MuniFin investor presentation, November 2017
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69 The figures represent the number of bonds. However, transactions may have multiple bonds. For example, NTE has only had one deal but it included three bonds of 3-, 5- and 7-year maturity.
70 Some of this issuer's deals have matured.

How the public sector can support green bond markets

Financial Regulators
- Strengthen disclosure requirements on environmental performance for all bonds
- Offer capacity building for investors, on both general bond aspects and green aspects
- Explore adjusting risk-weightings for green

Ministries of Finance
- Develop a robust pipeline of specific investable projects, working with investors and development banks
- Issue sovereign green bonds
- Provide green bond tax incentives

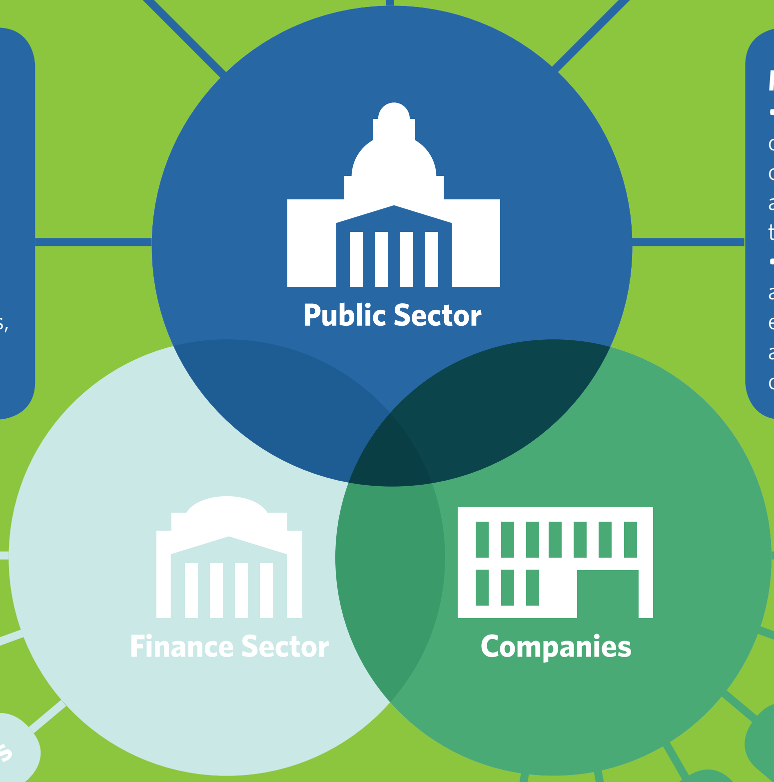
+ more

Central Banks
- Explore cheaper liquidity operations to green bonds
- Explore allocating reserves to green bonds
- Explore preferential treatment of green bonds in their asset purchasing programs and collateral they are receiving

Development Banks
- Provide green bond issuance and investment
- Credit enhance green bonds
- Support green securitization: standardization of loans contracts for green assets, warehousing

+ more

Municipalities
- Demonstration issuance of green municipal bonds, or encourage utilities and associated companies to issue
- Municipal bond agencies and municipality-affiliated entities, such as utilities and transport providers, can also issue green bonds



Banks

Asset owners

Fund managers

Water Utilities

Transport Companies

Renewable Energy Providers

Forest & Agriculture

Real Estate

Waste & Pollution

Multi-stakeholder green bond committees bring actors together to kick-start markets

Lead Author: Monica Filkova, CFA

Co-author: Camille Frandon-Martinez

Design: Godfrey Design

Source data from Thomson Reuters Eikon, climatebonds.net and other parties. All figures are rounded.

Climate Bonds INITIATIVE

Prepared by the Climate Bonds Initiative

Foreign & Commonwealth Office

Commissioned by the FCO