

»» Green bonds – a sustainable alternative for municipal infrastructure finance?

No. 245, 7 March 2019

Authors: Dr Stephan Brand, phone +49 69 7431-6257, stephan.brand@kfw.de
Dr Johannes Steinbrecher, phone +49 69 7431-2306, johannes.steinbrecher@kfw.de

Municipal infrastructure is important for the competitiveness and quality of life of regions. Municipalities also need to make a contribution to climate action and adapt their infrastructure to climate changes. So it is worth examining whether the existing financing mix is adequate to cover the necessary investments. The mix can be supplemented by green bonds, which were developed as financing tools for sustainable investment but have been rather uncommon in Germany's municipalities so far. The main reason is that local governments incur higher costs with this instrument as issuers without being able to identify a significant price advantage in return. Transaction costs have to be reduced before green bonds can unfold their potential for municipalities in the future. Changes should also be initiated within local governments themselves, particularly in the form of more effective internal coordination and an overarching vision of investments across project boundaries.

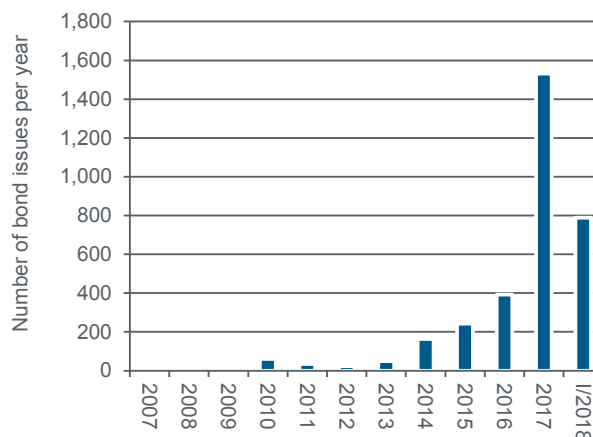
Local governments provide a large portion of infrastructure in Germany. They play a pivotal role in shaping local competitiveness and quality of life. According to the KfW Municipal Panel 2018, the backlog of municipal investment has already reached a formidable EUR 159 billion.¹ Now a further megatrend – climate change – is calling upon local governments to increase investment.² Public capital cannot (and should not) be used exclusively to fund this transformation. At the same time, many investors around the globe are becoming increasingly aware of the ecological and social impacts of their investments, also because an interested public has become more critical. With green finance, a domain has evolved in the capital market in which ecologically oriented investors can be paired up with demand for capital for climate action and adaptation investment.³

The financing of complex municipal investment projects with bonds has been tried and tested internationally and is regarded as a potential lever for greater climate action investment.⁴ However, bonds still play only a minor role for German municipalities. So far, around 20% of municipal investment is financed with debt capital, while bonds and debt certificates – seen in isolation – account for only around 4%. In total, debt capital contributed less than EUR 5 billion to investment finance in recent years. At the same time, however, green bonds were issued for more than EUR 130 billion around the world in 2017 alone.

Green bonds: first steps in the right direction

The number of bond issues with climate-friendly investment priorities surged in recent years (see Figure 1). Green bonds are arguably the most popular type of climate-friendly financing instrument today but a relatively young type of security. The first green bond was issued by the European Investment Bank (EIB) in 2007.⁵

Figure 1: Dynamic growth of green bonds



Note: Number of issues listed in the Green Bond Library of the Climate Bond Initiative.

Source: Climate Bond Initiative, own rendition.

Basically, the main feature that distinguishes green bonds from ordinary bonds is that the funds raised are specifically used for environmental protection and climate action measures (see info box 1). Green bonds worth a total of some EUR 185 billion were issued up to 2017.⁶ Compared with conventional bonds, green bonds thus remain a niche market.⁷ Nonetheless, they are already widespread internationally. In the first half of 2018 alone, 156 different issuers from 31 countries brought green bonds to market.⁸ There are now green bonds in more than 30 different currencies.⁹

Green bonds do not (yet) speed up municipal investment

Green bonds and their investment priorities should be of interest to German municipalities as well.¹⁰ With their buildings, vehicles and technical installations, municipalities play a pivotal role in the transition to a zero-carbon economy. This creates not just financing requirements but financing opportunities via green bonds.¹¹ However, there are no 'true' municipal green bonds in Germany yet, even though Hanover was the first German city with a green and social bond, raising EUR 100 million in capital in 2018.¹²

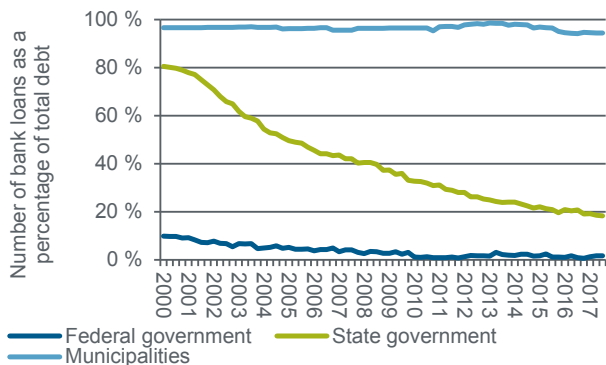
Internationally as well, municipalities currently only play a minor role in the global market for green bonds.¹³

Info box 1: Green bonds as financing products with sustainable goals

Capital market products labelled ‘green’ are those in which the funds raised are invested mainly in climate action measures. The main focus is on green bonds, which are bonds that are primarily used for projects with renewable energy but also for greenhouse gas reduction in the building and transport sector.¹⁴ Except for their orientation to sustainable investment, green bonds are essentially the same as normal bonds. The investor receives an agreed (usually fixed) interest rate and the repayment of the invested amount at the end of the term. The main characteristic of green bonds is that the funds are tied to climate action and environmental protection projects. Thus, investors select and assess the assets to be financed, not just against purely commercial aspects but also against ecological criteria.¹⁵ So far, however, binding definitions are used on a voluntary basis. The key challenge, therefore, is to identify what are truly ‘green’ investments.¹⁶ So in order to enable green bonds to be rated independently, various approaches, such as the Green Bonds Principles for example, were developed. Furthermore, the EU is seeking to establish a uniform taxonomy.¹⁷ But it remains to be seen which standard will assert itself globally.¹⁸

So far, conventional and green bonds are not very widespread in Germany in particular, probably mostly because municipal finance has relied on four solid instruments for many years.¹⁹ Nearly 80 % of investments are financed from own resources, subsidies from the federal and state governments and purpose-tied investment allocations. The remaining 20 % is borrowed, with most of the capital requirement covered by classic bank loans (see Figure 2).²⁰ As most municipal treasurers currently perceive access to credit and credit conditions as satisfactory, alternative financing instruments are hardly sought-after.²¹ Despite constantly emerging debates, and with the exception of a few large cities, bonds have not been able to establish themselves as a significant financing instrument for municipalities.²²

Figure 2: For municipalities, bank loans are traditionally most important



Source: Deutsche Bundesbank, own rendition.

There are many uses for green bonds

However, it cannot be concluded from the low use of alternative financing instruments in general and of green bonds in particular that these instruments are not generally of interest to municipalities. Major social challenges such as climate action and climate change adaptation, in particular, require significant investment sums which may not be obtainable through traditional financing schemes. International experience shows that green bonds can be successfully used for (large-volume) projects, enabling higher investment in climate action and climate change adaptation (see info box 2).

Info box 2: Examples of municipal green bonds

Göteborg, Sweden, was one of the first cities to issue green bonds. In the past five years, it brought green bonds to market to a value of more than USD 2.5 billion. They were used to realise projects such as the electrification of the city’s bus fleet, the Västlänken railroad tunnel and the repair and expansion of the Götaälv tram bridge.²³

Ile-de-France, France, is another municipality that issued green bonds very early on. It placed its seventh green bond already in 2017. Among other things, the construction and redevelopment of schools, metro and tram lines as well as social housing projects were financed with a volume of EUR 500 million.²⁴

Östersund, Sweden, is an example of how this instrument can be used in medium-sized and smaller cities. A town of only 50,000 inhabitants, it issued a green bond of around EUR 80 million in 2017 to finance a number of projects for climate action and the adaptation from renewable energy generation through the procurement of electric vehicles to ground preparation.²⁵

If we look at the enormous backlog of municipal investment in Germany, it becomes clear that climate action is a Herculean task that a municipality cannot undertake in passing. But the contribution of municipalities to climate action is vital because a large portion of resource consumption is attributable to urban regions.²⁶ Municipalities also need to take action in adapting to climate change and extreme weather events because, after all, they provide the bulk of the affected infrastructure. The potential need for municipal investment is therefore high.²⁷ The use of green bonds could be considered to finance many of these investment requirements.²⁸ The question therefore remains why municipalities have not yet made more use of this instrument.

Needs of municipalities and investors must be aligned

The interests of capital providers and municipalities must be brought into alignment if funds are to be successfully raised in the financial market. But both sides do not place the same demands or expectations on a financing instrument. For a start, green bonds may not necessarily be attractive to both sides because of several factors.²⁹

First, assessing the strictly purpose-tied investment sums involves high costs for capital providers. If they want to

ensure that the funds actually flow to meaningful green projects, that assessment adds to the transaction costs.³⁰ What may make it more difficult for investors is that green bonds often fail to fully meet specific information needs. This is the case, for example, when they fail to fully meet the requirements of market standards such as the Green Bond Principles, for example. Not least, it must be considered that the liquidity in the green bond market is still relatively low. The papers are relatively sought-after in the primary market but then hardly traded in the secondary market. Ultimately, that increases the liquidity risk for the investor.³¹

For municipalities, high costs and limited experience in managing capital market financing might be a key obstacle. A bond issue comes with a number of documentation obligations and involves external partners. Both generate costs that can be recovered only with a minimum issue volume. Obtaining an external opinion on a green bond and the issuer's framework incurs additional expenditure.³² Most German municipalities, however, do not reach the financing volumes considered reasonable for bonds.³³

However, if the economic environment is right for both sides, there are also good reasons for raising funds through conventional or green bonds. First, the financing conditions can be flexibly adapted to the municipality's particular needs – depending on the market situation. For example, unlike in classic bank loans, the interest rate is usually fixed for the total term even with longer maturities, which provides more planning certainty. Given that banking regulation has been tightened, diversifying the group of capital providers as a way of becoming more independent of individual banks is in the municipalities' interest. Second, in addition to the advantages mentioned above, a municipality can also enhance its own reputation by making climate-friendly investments. Similar arguments also apply to the capital providers. Key advantages include higher diversification, the low risk of municipalities, the fact that the investments are tied to a specific purpose and potential image gains.

What will ultimately decide whether capital providers and recipients come together with green projects are, above all, the interest rate and the financing conditions associated with the additional cost of a green bond. So far, issuers of green bonds often do not benefit from having their investment funds tied to a specific purpose, even if recent international studies have identified interest advantages at least for the municipal area.³⁴

Higher transparency and lower transaction costs make green bonds more attractive

Ultimately, apart from possible interest rate advantages, the benefits of the instrument can therefore be achieved primarily through lower transaction costs. To achieve this, uncertainties regarding standards need to be reduced and municipalities' expertise needs to be strengthened. There is still no single international standard for certification, even if an additional step has been taken in this direction through the Green Bonds Principles with the 'Guidelines for Green,

Social and Sustainability Bonds External Reviews', which were published in mid-2018, and several international and national initiatives are working on the further development of standards.³⁵

This still constitutes a structural disadvantage. It is likely to increase the reputation risks for both sides and, hence, diminish capital providers' willingness to invest if there are no guarantees that the investment will in fact be sustainable. Therefore, in order to offer investors a distinct advantage that also translates into favourable conditions for the issuer, comprehensible and uniform criteria for green investments in municipalities have to be established. Policymakers should actively promote the further development and coordination of standards and, moreover, provide stakeholders with significantly higher planning certainty and more clearly define the eligibility of individual investment areas for support.³⁶ Farther-reaching standardisation of certification and implementation would also reduce transaction costs for municipalities and thereby make the instrument more attractive.³⁷

Furthermore, municipalities in particular often lack the human resources necessary to assess and manage capital market transactions. Their investment volumes are also too low for them to resort to these instruments alone. Here, closer coordination and cooperation between the municipalities can generate additional potentials for municipal green bonds in addition to lower transaction costs. The federal and state governments could set up platforms and pilot initiatives that ensure the sharing of experiences, evaluate realised projects and, under certain conditions, become more active themselves as issuers of (possibly pooled) green bonds and make expertise thus acquired available to the municipal level. Another requirement for lower transaction costs is that municipalities have to attach sufficient importance to the sustainability documentation and promote necessary internal cooperation.³⁸

Conclusion

Green bonds are an option for targeted investment in climate-friendly and environmentally sustainable projects. Ideally, providers of capital offer recipients an interest rebate that makes investing in climate-friendly projects more attractive. Although municipalities face many challenges that can be financed with green bonds, so far they are hardly using this instrument.

Green bonds are clearly a debt-based financial instrument that requires investment purposes to be not just ecologically but also financially sustainable, just like any other debt financing instrument. Against this backdrop, parts of the huge investments in climate action and environmental protection could be financed, with green bonds representing a supplement to established municipal financing instruments.

In order for this financing instrument to be able to unlock its full potential, a change in perspective is necessary, away from the myopic view of individual expenditures to a vision of

the bigger picture of sustainable transformation. An improved framework and a different form of cooperation in public administration would make it easier to realise large environmental projects. Classic credit will remain the tried and tested and most appropriate debt financing instrument for municipalities' day-to-day business for the foreseeable future.³⁹ For large-volume investment in climate action and climate change adaptation, however, green bonds could, under the right circumstances, play a bigger role in the future and help

to finance necessary investments in sustainable municipalities. ■

KfW Research municipalities

All publications and information from KfW Research on the thematic area 'Municipalities and infrastructure' can be found [here](#).

Sign up for our free email newsletter and don't miss out on any KfW Research publications.

[Subscribe here](#)

¹ Cf. Krone, E. et al. (2018): **KfW Municipal Panel 2018 – Summary**, KfW Research

² An EU panel of experts estimates that the EU alone needs to invest EUR 180 billion annually to achieve the 2-degree target of the Paris Climate Agreement. Cf. Necessary investment in adaptation measures will still increase these needs considerably.

³ Cf. Brockmann, K. (2017): **Green finance – green banking**, Focus on Economics No. 189, KfW Research or also Brüggemann, A. (2017): **Green Bonds: global market is growing fast and issuers are becoming more diverse**, Economics in Brief No. 148, KfW Research.

⁴ Cf. Climate Bond Initiative [CBI] (2017a): Bonds and climate change – The state of the market 2017.

⁵ While in the beginning the market was dominated by public institutions, including promotional banks such as the EIB and KfW, since 2016 the largest share of annual issues has come from the private sector (financial and non-financial corporates).

⁶ The amount of USD 221 billion was converted to euros. However, the market for climate-oriented securities – securities not classified as green bonds but used nevertheless for climate action or adaptation in a broader sense – was worth just under EUR 900 billion in 2016 already. Cf. CBI (2017a): loc. cit.

⁷ Cf. Zeuner, J. (2018): Green Bonds – mehr als nur "Green Shoots" (*Green bonds – more than just 'green shoots'* – our title translation, in German only), Börsen-Zeitung of 7 March 2018. Ten per cent of global green bonds come from Germany alone. But China in particular is gaining importance, cf. LBBW (2017): Alles was Sie über Green Bonds wissen müssen (*Everything you need to know about green bonds* – our title translation, in German only), LBBW Blickpunkt, February 2017.

⁸ Cf. CBI (2018): Green Bonds Market Summary, H1 2018, Climate Bond Initiative, July 2018.

⁹ Cf. CBI (year not cited): "Labelled green bonds data"- database of the Climate Bond Initiative, accessible at <https://www.climatebonds.net/cbi/pub/data/bonds>.

¹⁰ Those responsible appear to be increasingly aware of sustainable finance but it does not yet play a role for most municipalities. Cf. Nitsche, S. (2019): Kämmerer liebäugeln mit interkommunalen Krediten (*Municipal treasurers are contemplating inter-municipal loans* – our title translation, in German only), Der Neue Kämmerer of 21 February 2019.

¹¹ Green bonds are part of debt. Debt must be serviced with sufficient revenues in order to ensure financial viability in the long term. So with this financing instrument it is obvious that budgetary regulations also need to be complied with.

¹² Cf. Landeshauptstadt Hannover (2018): Hannovers Green & Social Schuldschein: Nachhaltig und gut (*State capital Hanover (2018): Hanover's green and social debt certificate: sustainable and good* – our title translation, in German only). Press release of 15 May 2018. It has both green and social purposes and thus follows a broader understanding of sustainability and sustainable finance. At the end of the year, the local energy utility Enercity followed with a further green debt certificate with an issue volume of EUR 100 million, cf. Mohl, A. (2018): Enercity emittiert grünen und digitalen Schuldschein (*Enercity issues green and digital debt certificate* – our title translation, in German only), Der Neue Kämmerer of 22 November 2018.

¹³ Cf. Eisinger, F. et al. (2017): Der deutsche Green Bond Markt – für ein langfristiges Wachstum (*The German green bond market – for long-term growth* – our title translation, in German only). VÖB (eds.)

¹⁴ Cf. LBBW (2017), loc. cit.

¹⁵ Four types of green bonds have established themselves which differ primarily in how liability is determined and, thus, how risks are allocated, cf. NordLB (2016): Green Bonds – Nachhaltigkeit im Trend (*Green bonds – sustainability en vogue* – our title translation, in German only), Fixed Income Research Financial Special, September 2016.

¹⁶ Thus, climate-friendly investments in a broader sense also include nuclear power or large-scale hydropower plants which, however, must be rated extremely unfavourably for other environmental reasons. Even so, 37% of all investments analysed by CBI that were refinanced with climate-friendly bonds go to hydropower or nuclear power. Cf. CBI (2017a): loc. cit.

¹⁷ Cf. European Commission (2018): Commission action plan on financing sustainable growth.

¹⁸ Thus, China has also developed its own proposal for green bond standards. Efforts are currently underway to harmonise these standards between China and the EU but it remains to be seen whether this will succeed. Cf. Ehlers, P. and Packer, J. (2017): Green bond finance and certification, BIS Quarterly Review, September 2017: 89–104.

¹⁹ Cf. Brand, S. and Steinbrecher, J. (2017b): Paradigmenwechsel in der Kommunalfinanzierung? – Aktuelle Entwicklungen beim Kommunalkredit (*Change of paradigms in municipal finance? – Current developments in municipal borrowing* – our title translation, in German only). In: Junkerheinrich, M. et al. (eds.) Jahrbuch für öffentliche Finanzen 2017, p. 425ff.

²⁰ While other forms of borrowing, particularly bonds, have been very important for the federal and state governments for a considerable period of time, for decades local governments have almost consistently relied on bank loans for more than 90% of their total debt. In 2017 bond debt accounted for around EUR 3 billion, or only around 2% of total local government debt; cf. Brand, S and Steinbrecher, J. (2017b): loc. cit., as well as the debt statistics of the Federal Statistical Office for 2017.

²¹ General public funds, that is, the freely available funds from tax revenues and key allocations in the municipal fiscal equalisation system, take the largest share, 45%, while promotional funds and purpose-tied investment allocations also account for a significant share of the financing mix, at 33%. Credit-like transactions such as leasing or public-private partnerships (PPPs), debt certificates or bonds have a share of just under 4% in municipal investment and have therefore have not yet played a relevant role. Cf. Krone, E. et al. (2018): loc. cit.

²² Cf. Lenk, T. et al. (2015): Kapitalmarktfinanzierungen für Kommunen (*Capital market financings for municipalities* – our title translation, in German only). UniCredit Bank AG (ed.). The KfW Municipal Panel 2018 also highlights this using the example of debt certificates: This instrument is used by some 7% of municipalities but by 27% of cities with more than 50,000 inhabitants. Here, 22% of the surveyed municipalities also expect an increase but of only 10% on average. Bonds are likely to be tailored more to large cities as their transaction costs are higher, which in turn makes it reasonable to issue higher volumes to enable cost-effective use. However, most German municipalities are rather small as around 98% of all towns and municipalities have fewer than 50,000 inhabitants. For more on this debate see also Wolff, S. (2014): **Kommunalanleihen in Deutschland – ist der klassische Kredit ein Auslaufmodell?** (*Municipal bonds in Germany – is the classic credit out of date?* – in German only), Economics in Brief No. 62, KfW Research.

²³ Cf. CBI (2017a): loc. cit.

²⁴ Cf. Île de France (2018): Projects financed by the 2017 green and sustainability bond.

²⁵ Cf. CBI (2017b): Green Bond Fact Sheet.

²⁶ Cf. Hoorweg, D. et al. (2011). Cities and Climate Change: Responding to an Urgent Agenda, World Bank, 2011. Not least, cities and regions that are more environmentally sustainable and climate-friendly can provide added value for their dwellers, e.g. in the form of cleaner air or less noise and waste, cf. Gouldson, A. et al. (2018): The Economic and Social Benefits of Low-Carbon Cities: A Systematic Review of the Evidence, Coalition for Urban Transitions Working Paper.

²⁷ This applies all the more because municipal infrastructure in Germany has already reached the end of normal life cycles in many areas. One estimate put the percentage of municipal non-residential buildings that were older than 35 years in 2011 at around 70% and the share of schools and administrative buildings at more than 80%. Cf. Müller, M. (2012): Energiesparpotenzial in Gebäuden der kommunalen und sozialen Infrastruktur (*Energy-saving potential in buildings of municipal and social infrastructure* – in German only), Akzente No. 62, KfW Research.

²⁸ For the investment priorities discussed above, many different projects could be financed with green bonds. Cf. CBI (2015): How to issue a green city bond.

²⁹ For a discussion of these aspects see e.g. Eisinger, F. et al. (2017): loc. cit.

³⁰ For example, the high pace at which green bond transactions are placed in the primary market in combination with the appraisal effort is a challenge for many institutional investors, cf. Eisinger, F. et al. (2017): loc. cit. That is why investors are increasingly demanding external certification. For example, the share of green bond issues rated by independent external bodies in the U.S. increased continuously from 0% in the year 2013 to 43% in 2017. Cf. S&P (2018): loc. cit.

³¹ The main reasons for this are the low overall volume of the green bond market and the high share of buy-and-hold investors. Cf. Eisinger, F. et al. (2017): loc. cit. However, this limits a key advantage of securities traded at the stock exchange: the option of liquidating the position at any time.

³² However, according to recent international studies, the cost of an external opinion does not need to be excessively high for municipal green bonds, cf. Baker, M. et al. (2018): Financing the Response to Climate Change: The Pricing and Ownership of U. S. Green Bonds, Working Paper, April 2018.

³³ Most of the municipal green bonds thus far have had an issue volume of less than EUR 100 million but some even have less than EUR 25 million. Still, even the total debt of many German municipalities is below this level. The total debt level of nearly 80% of German municipalities is less than EUR 25 million and just 3% are actually more than EUR 100 million in debt. Municipalities' investment sums are even significantly lower.

³⁴ Cf. Baker, M. et al. (2018), loc. cit., who have identified an average interest advantage of six basis points for municipal green bonds in the US. For externally certified green bonds the interest advantage rises to around 26 basis points, which is equal to a rating increase by two notches (e.g. AA- to AA+), see also Ehlers, P. and Packer, J. (2017): loc. cit. But in Germany, only minor advantages can be identified in the conditions of green bonds in the current market environment, although no experience has yet been gathered with explicitly municipal green bonds.

³⁵ Cf. ICMA (2018): Guidelines for Green, Social and Sustainability Bonds External Reviews.

³⁶ The federal government, however, is not planning to issue green bonds of its own at this stage, cf. Johannson, K (2018): Grüne Bundesanleihen stehen nicht auf der Agenda (*Green federal bonds are not on the agenda* – our title translation, in German only), Börsen-Zeitung dated 8 December 2018.

³⁷ The EU Commission is currently working on the further development of the taxonomy for an EU Green Bonds Standard, cf. EU Commission (2018): Technical Expert Group on Sustainable Finance (TEG).

³⁸ In accordance with the principle of complete cover, municipalities generally finance their overall funding needs so that separate evidence has to be provided for how funds are used for individual projects and purposes. This requires close collaboration between different administrative areas, for example between treasuries and specialised departments.

³⁹ For classic municipal loans as well, initial efforts have been undertaken to emphasise sustainability more strongly, cf. e.g. CommneX (2019): Nachhaltige Kommunalfinanzierung: CommneX und imug bieten neuartiges Zertifikat "Grüner Kommunalkredit" an (*Sustainable municipal finance: CommneX and imug offer innovative certificate 'Green Municipal Credit'* – our title translation, in German only), press release dated 9 January 2019.