Investment White Paper

Green & Sustainable bonds: a label is not enough

GENERALI INVESTMENTS

Released by Generali Insurance Asset Management S.p.A. Società di gestione del risparmio

Contents

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Summary

- **Market structure:** We expect a significant growth of green bond (GB) supply, dominated by issuance in Euro and US Dollar. Corporates, financials and utilities used to comprise the main issuers of green bonds, but more sectors are now joining the party, e.g. car makers. Demand is outpacing supply, leading to a mismatch and, potentially, a larger greenium. As climate risks rise, regulatory interventions may further distort markets.

- **Market Standards are evolving quickly:** the historical “Green Bond Principles” (GBP) of ICMA are now being complemented by new standards. The future EU Green Bond Standard (GBS), based on the EU taxonomy, will be fostering the emergence of a public standard for green bonds at the European level. Transition bonds can also be part of the solution for issuers with below-average ESG profiles willing to finance transition to sustainable activities. Sustainability-Linked-Bonds (SLBs) might prove an even more effective vehicle.

- **Analysing the green bond impact:** So far, green bonds have evolved along voluntary guidelines (GBP, GBS etc.) rather than within a strict regulatory environment. This makes it ever more important for investors to filter GBs and avoid greenwashing. Disclosure of (1) intention to generate impact must be completed by the issuer with (2) objectively measurable improvements. The proceeds must create (3) an additional output, which will have a lasting impact (4). Using this framework, we believe that the EU Green Bond Standard will become complementary to Sustainability-Linked Bonds in the financing strategy of issuers.

- **The ECB will foster the expansion of the green bond market.** The ECB currently buys GBs as part of its various asset purchase programs. Economic research on the topic is still scant but it is becoming clear that there is potential for monetary policy to support an orderly transition towards a low-carbon economy. Most significantly, Sustainability-Linked Bonds (SLBs) are now eligible collateral from 2021 onwards, despite their step-up feature.

- **From a solvency point of view,** the so-called greenium may create a sub-optimal use of investors’ capital. So far EIOPA has not gathered enough statistical evidence that green bonds are less risky than standard bonds, but it is increasingly mindful of transition risks faced by insurance companies.

- **We propose a dedicated framework for green and sustainable bonds selection**, aiming at avoiding greenwashing and maximizing the assurance that a green bond will generate real world objective impact. We filter GBs through a number of factors, including external reviews, allocation and impact reporting on a project basis, specific targets having deadlines within a bond’s lifetime, OPEX financing rules, refinancing rules, pipeline for new projects, substitution of sold, expired or ineligible assets.

- **Sustainability-Linked Bonds are our favourite impact investment alternative**. We see EU Green Bonds as being complementary to Sustainability-Linked Bonds.

- **Learning by doing:** Over the years, Generali Insurance Asset Management (GIAM) has gained important knowledge of the green & sustainable bonds market, benefitting from a virtuous environment at Group level. GIAM will use this expertise to capture opportunities in this increasingly complex and wide market, for the benefit of its institutional clients.

01

Green and sustainable bonds: citius altius fortius

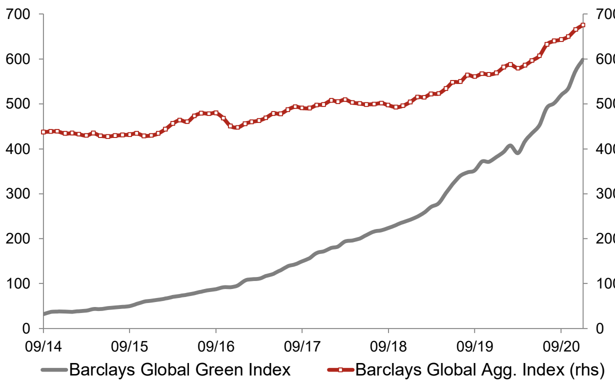
The universe of ESG-related bonds has expanded quickly in recent years. In the process it has become more diverse and complex. In the following, we focus on two types of securities: **green bonds** (including climate bonds, transition bonds, and EU Green Bonds) and **sustainability-linked bonds**.

Although these two are prominent constituents, let us be clear that by focusing on the environment, we de facto exclude other types of bonds from the analysis (e.g. social bonds). The urgency of the climate crisis is such that the E component of ESG has grown much faster than S and G over the past few years.

The anatomy of the green bond market

As environmental awareness in OECD countries has increased in recent years, economic agents have come under strong pressure to reduce their environmental footprint. Corporations, under the influence of governments, public opinion, and investors, are working towards reaching carbon neutrality as soon as possible. One intended consequence has been the rise of the green bond market. According to the Bloomberg Barclays MSCI Global Green Bond Index, the outstanding volume of green bonds has increased by almost 1800% since the end of 2014 (see chart). Although the broader green bond market is now approaching USD 1 trillion, the overwhelming share of the international bond market is still conventional.

Chart 1.1: Strong Increase in Green Bonds market size



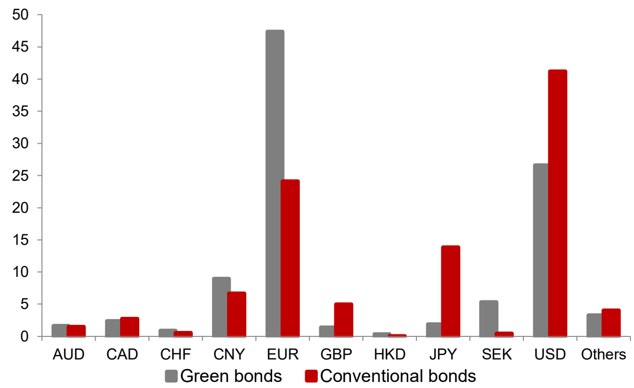
Market value in bn USD, source: Bloomberg

While the market used to be largely dominated by agencies and corporates, sovereigns are increasingly issuing green and sustainable bonds.

An area of Euro dominance

The following figure illustrates the breakdown of the green bond market per currency. It is largely dominated by the Euro-denominated segment (almost 50% compared to less than 25% in the broad market). A little more than a quarter are denominated in US-Dollar while less than 10% are Yuan-denominated.

Chart 1.2: Green Bond Market Breakdown per Currency



Market value in %, source: Bloomberg

Exponential growth of green bonds supply

The EU announced that it will issue up to €225 bn in green bonds under the Recovery Fund within the next few years (this implies an increase of more than 50% from current levels), hence the Euro is set to expand its dominance. This initiative will also accelerate the expansion of the green bond space.

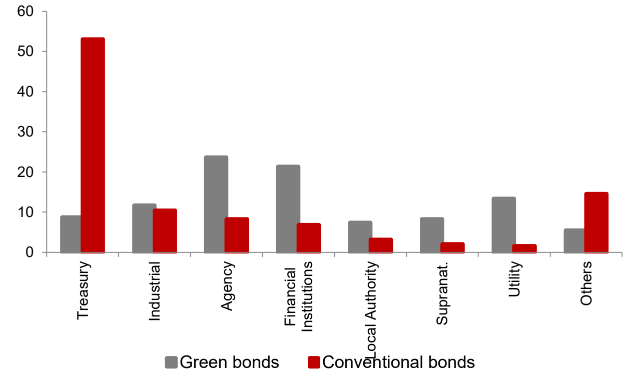
Following the introduction of the EU taxonomy in July

2020, **all European sovereigns are also expected to print** on the back of eligible assets, which will significantly increase the share of sovereigns within the green bond universe. For now, compared to the broad market, sovereigns are lagging (less than one-tenth compared to more than 50% in the broad benchmark).

In the corporate world, GB issuance has been concentrated: Financial companies have been the lead issuers, while utilities and industrials represent more than 10% each. Those sectors will continue to issue, but new ones, like automotive in 2020, are becoming more active. We expect the sector diversification of the corporate pipeline to grow.

Across EMs, the size of the green bond market has remained relatively small, developing at a slower pace than in DMs. Green issuance has been anecdotal on the sovereign side even if the commitment to this asset class has been growing. In 2020, EM sovereign green bond issuance stabilised, at c. $ 7.0 bn vs. c. $ 230 bn for total external issuance. EM corporates still dominate the market: EM sovereigns represent roughly 15% of the

Chart 1.3: Green Bond Market Breakdown per Sector

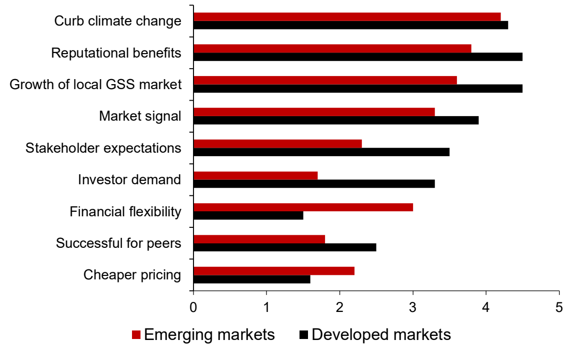


Market value in %, source: Bloomberg

green bonds issuance, with a strong focus on the IG sector. Only a few active sovereign issuers have intended to build a curve: Chile, Poland, Indonesia, and then only Egypt in the HY segment. More issuance will come but we expect only a gradual pickup, mainly focused on IG liquid names.

On the supply side, the limited depth and liquidity of the emerging financial markets are hindering the opportunities to issue green bonds. It already proves difficult for some EMs to sometimes access the regular market, and green issuance requires extra technical, legal, and financial conditions.

Chart 1.4: Intentions for issuing a Sovereign GSS bond, CBI survey



Score, source: Climate bond initiative Sovereign Green, Social, and Sustainability Bond Survey 2021

Compared to conventional bonds, green bonds have a moderately **shorter time to maturity**, with very long-dated ones particularly underrepresented. Indeed, many bonds are issued by corporates that predominantly fund themselves with short to medium maturities.

EU Taxonomy: green history in the making

The EU supports the transition to a climate-neutral economy via several policy actions. From a regulation point of view, two initiatives are key to facilitate sustainable investments. First, the introduction of a classification system to determine whether activities are environmentally sustainable: the so-called EU Taxonomy. Second, the development of an EU Green Bond Standard.

The EU Taxonomy is part of the EU Action Plan on Sustainable Finance. It aims at directing investments towards sustainable projects and activities. For the time being, the EU Taxonomy deals only with sectors playing a key role in climate change mitigation. Eventually, more sectors will be covered. To become taxonomy-eligible, economic activity must contribute to at least one of the six environmental objectives defined by the EU (e.g. climate change mitigation and adaption, transition to a circular economy, pollution prevention and control), while not harming the others. Moreover, minimum social safeguards must be met.

Eventually, the taxonomy incentivises financial market participants to look more closely at the activities they finance and invest in. This is to ensure that sustainable investments are scaled up and the EU Green Deal is successfully implemented. The EU Taxonomy defines which economic activities can be considered as sustainable and creates security for financial market participants in part by protecting investors from greenwashing.

While parts of the classification appear straightforward, important topics remain under discussion. France, for instance, is pushing for the inclusion of nuclear energy, arguing that its role in the low carbon energy supply is well documented; but opponents argue that it could cause harm to other environmental objectives, e.g. the circular economy and waste management. A similar debate is open on gas, which Germany sees as a transition away from oil, being twice less carbon-intensive; opponents continue to consider it as too pollutive. The Taxonomy should be fully operational by 2022 following the adoption of its Delegated Acts and will provide a solid background for green bond issuance on the back of all eligible assets.

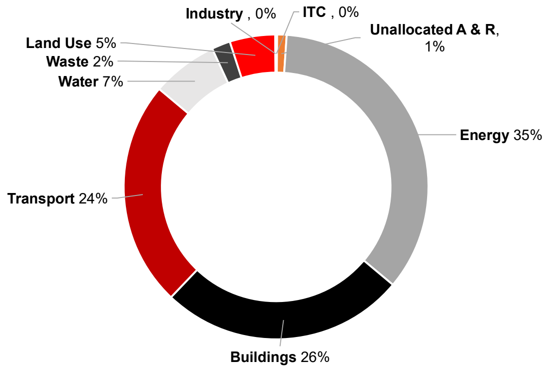
EU Green Bond Standard: a future reference

The EU Green Bond Standard (GBS) is the second main initiative fostering the emergence of a (voluntary) public standard for green bonds at the European level. First, the International Capital Market Association (ICMA) introduced the now widely accepted Green Bond Principles (GBP) in 2014. Then the EU decided to develop its own standards – the EU GBS. Work is still in progress but eventually, a homogenous standard within the EU will be established. Generally, it should be noted that the EU GBS is stricter than other standards, implying that it may not apply in the future to all green bond issuers.

The EU GBS requires that the investments follow the EU Taxonomy. It also demands that issuers publish several reports concerning the use of proceeds and the environmental impact – most of which must be certified by an accredited verifier. In any case, issuers must explain how their strategy aligns with the EU environmental objectives. This creates a clear link between real economy investments and the intended environmental impact. The GBS represents the best practices in reporting, helps to verify sustainability matters and improves comparability among issues. We expect most sovereign issuers going forward to follow the EU GBS format, while for corporates, it might not necessarily become a unanimous standard from day one.

The scope of eligible sectors is also greater than in the ICMA classification because the EU Taxonomy has embraced a pragmatic approach. For instance, the cement industry is among the most polluting ones but, realistically, Europe depends on cement. Hence the cleanest possible technologies of the cement industry have been made eligible to the EU GBS. We expect that all public-related investors will eventually have investment targets based on this EU GBS format, while the regulatory evolutions will also be based on this standard. Hence the technicals might become even more supportive for EU GBS-compliant bonds than for traditional green bonds, leading to possibly even tighter valuations compared to traditional bonds.

Chart 1.5 Green Bonds' Use of Proceeds



Source: *Climate Bonds Initiative January 2021*

Transition bonds: late to the party?

In principle, transition bonds have a very similar format to traditional green bonds, but their use of proceeds targeting technologies that reduce carbon emissions do not need to be considered as fully green. In other words, transition bonds are attractive funding vehicles for the most polluting sectors from which investors are reluctant to consider green issuance…

This way, issuers can fund their transition out of polluting activities and investors gradually reduce the transition risk in their portfolio. ICMA has established a climate transition finance working group, aimed at releasing guidelines on transition bonds by the end of 2021. Second-party-opinion providers have also launched a service for transition bonds. Hence transition bonds can be part of the solution for issuers with a below-average ESG profile, though Sustainability-linked-bonds (SLBs) could prove even more effective for them.

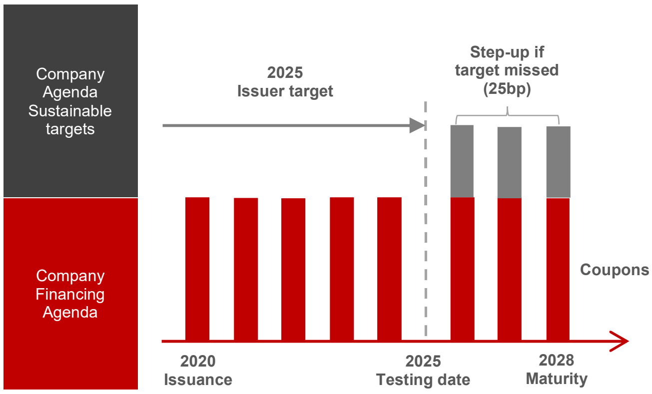
Sustainability-linked bonds: a new sub-asset class is emerging

Because green bonds face several challenges, starting with the amount of eligible assets outstanding to the lack of measurability on the issuer's overall strategy, a new type of bond emerged in 2019: Sustainability-Linked Bond (SLB). According to the ICMA's definition in its Sustainability-Linked Bond Principles "*SLBs are any type of bond instrument for which the financial and/or structural characteristics can vary depending on whether the issuer achieves predefined Sustainability / ESG objectives*". Unlike green bonds, these are general purpose corporate bonds which do not fund specific projects. In practice the issuer is committing to reaching a target - either green or sustainable - on a precise date; **should the target be missed the bond's coupon will suffer a step-up**. From an issuer standpoint, they are more flexible since the cash raised might be allocated more freely and there is no limit of eligible projects capping issuance. On the investor side, they also require less patrolling activity than green bonds since the issuers will be judged on outcomes, with any disappointment being compensated by extra income, provided that the structure is well calibrated (see section 2 for details).

For dirty sectors, investors' concerns regarding the lack of "Use of Proceeds" disclosures might be circumvented by the issuance of SLBs with "Use of Proceeds", where these disclosures are mandatory.

The size of the market is only €19 bn as of today but given its flexibility and strong impact, we expect the SLB market to grow at an exponential pace over the years to come, eventually becoming a sub-asset class.

Chart 1.6: SLB most common bond structure



Source: GIAM

Type of Bond (standard setting body)	Certification	Use of proceeds constraints	Industry specific	Post Issuance constraints	Target KPI	Impact on coupon	Example of issuers
Green Bond (ICMA)	Second Party Opinion Providers	Renewables, water, land, biodiversity	No	Voluntary	No	No	ORSTED, SSE, POLAND
EU Green Bond (EU)	Registered as official certifier	Based on EU taxonomy	No	Voluntary	No	No	To be started in 2021
Climate Bond (CBI)	Climate Bond Initiative	CB taxonomy close to GBP	No	Requested to maintain label	No	No	SOCIETE DU GRAND PARIS
Transition Bond (AXA IM)	SPO?	Transition technologies	« Dirty » industries: Cement, Steel	No	No	No	SNAM
Social Bond (ICMA)	Second Party Opinion Providers	Housing, Infrastructure, Education	No	Voluntary	No	No	WORLD BANK
Sustainable Bond (ICMA)	Second Party Opinion Providers	[Green] + [Social]	No	Voluntary	No	No	COM. OF MADRID
Sustainability Linked Bonds (ICMA)	Contractual	No	No	Contractual	Linked to sustainable KPI	Step-up coupon	ENEL, NOVARTIS, LAFARGE

Source: GIAM

02

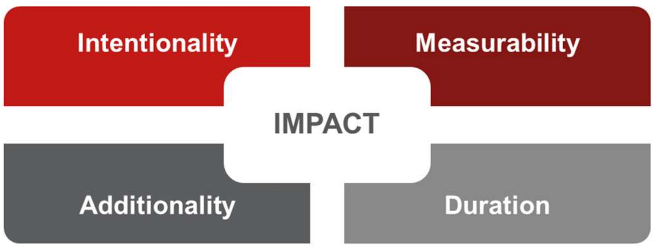
Making sure green bonds create an impact on the real world

The disclosure of “Use of Proceeds” by green bond issuers creates the impression that companies offer transparency on their investment plan. This is not always the case since they frequently disclose the “Use of Proceeds” only as spend categories. This generates a high degree of uncertainty for investors as they have very few assurances about the impact that the bond will generate. Therefore, we propose a specific framework to reduce the risk of financing issuers that would not generate impact or less impact than expected.

4 key concepts of impact applied to green bonds

This section explains our view on the avenues to improve the current frameworks, structuring our thoughts around four key pillars: Intentionality, Measurability, Additionality and Duration. ‘Impact’ investors will be familiar with those pillars; we also find them useful for filtering green bonds. Green bonds exclusively, however, cannot be seen as pure impact investing, which has instead a more holistic approach with stricter measurement standards.

Chart 2.1: The four dimensions of impact investing

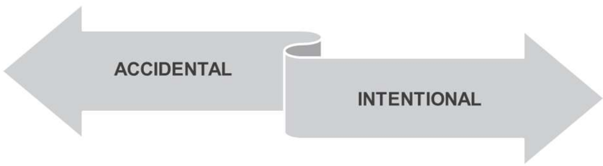


Source: GIAM

Intentionality

Disclosing the “Use of Proceeds” as categories demonstrates an intention which however needs to be reinforced, since this does not necessarily give clear direction on the eventual action plan. The EU taxonomy – to which the EU Green Bonds Standard refers – indicates which types of assets are acceptable as GB “Use of Proceeds” by setting technical thresholds for specific sectors. For example, only vehicles emitting below 50g CO_2/km will be eligible, whereas the Green Bond Principles of IMCA only mention currently generic vehicle categories.

Also, one could question how refinancing existing assets could be interpreted as a sign of intentionality, since the final investment decision has already been taken. Arguably, some green assets may need to be refinanced to be kept in the portfolio and to continue to generate an impact over their lifetime. More convincingly, the step-up coupon of Sustainability-Linked Bonds reinforces intentionality, since it generates a self-imposed incentive for the issuer: in case of failure to achieve the target, the yield of the average coupon will increase and the reputational damage will be immediate.



Measurability

Green bond pioneer issuers have failed to meet transparency expectations, causing frustration among investors. According to the Climate Bond Initiative Post-Issuance Reporting 2019, only 68% of green bonds issuers disclosed the allocation of proceeds in an allocation report, and only 53% of green bond issuers disclosed the impact of their investments in an impact report (see details in the chart 2.2). While reporting is mentioned in the Green Bond Principles of ICMA, it is nevertheless a **voluntary activity**, which has left a lot to be desired still in terms of transparency: granularity matters. Indeed, project-by-project reporting should be mandatory (or at least portfolio level reporting for issuers with numerous projects like banks).

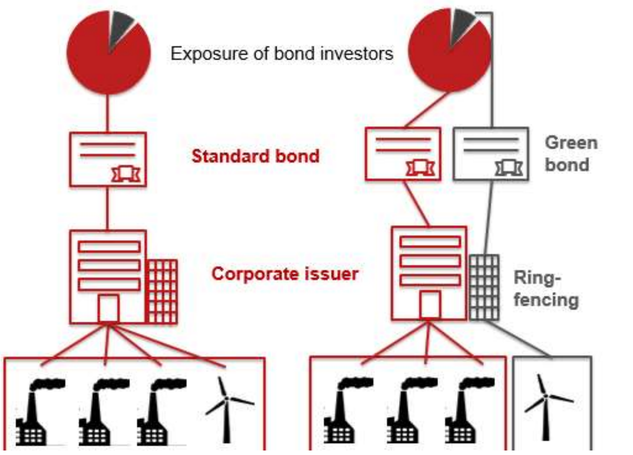
Contrary to the Green Bond Principles of ICMA, the EU Green Bond Standard will make allocation reporting and project level disclosures **mandatory**, which is a great step forward (the Climate Bond Standard will include the same requirements). Also, the EU Green Bond Standard is set to require an *annual* allocation report, while the impact report is being made mandatory "at least once during bond lifetime after full allocation". To us, though, this impact reporting frequency is insufficient: in case of a 10-year maturity bond fully allocated at maturity, shall the investor wait for 10 years for impact to be demonstrated? In all fairness, the ultimate way to measure impact is to disclose a metric against which progress will be measured. The Sustainability-Linked Bond framework provides an interesting answer to that need of measurability. Indeed, the metric becomes a legal parameter in the prospectus; hence the issuer is bound to disclose the evolution over time.

Chart 2.2: Green bond issuers reporting allocation and impact

Number of issuers	Use of Proceeds reporting	Impact reporting	Both
Reporting	251	194	172
Not reporting	116	173	195
%	68%	53%	47%

Source: Climate Bonds Initiative – Post-Issuance Reporting 2019 (covers 367 issuers and 1,905 bonds worth USD 281 bn issued prior to November 2017).

Chart 2.3: Does a green bond create additionality?



Source: 2DIIi - Measuring how green bonds contribute to scaling up investments in green projects (page 10)

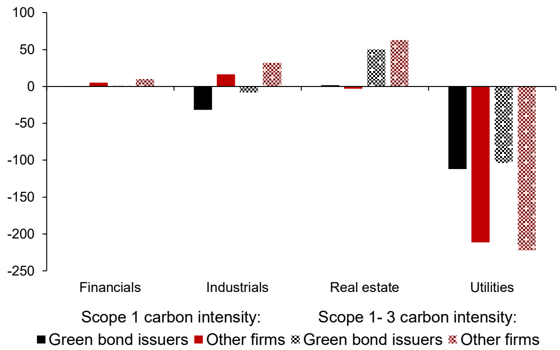
Additionality

The 2 Degrees Investing Initiative (2DII) states that "green bond issuance does not necessarily involve changes in investment plans and investors exposure to green projects." In other words, ringfencing an existing asset and refinancing is not enough to demonstrate its impact (see chart 2.3). Refinancing existing assets enables corporates to pursue the impact already achieved, but new projects may offer more additionality.

Another study from the Bank of International Settlements showed that "green bond issuers have, on average, achieved smaller reductions in carbon intensity" than peers during the 2015-2018 period. This study thus questions the true additionality of green bond issues.

Therefore, we believe that a green bond framework needs to incorporate **clear targets** related to the selected "Use of Proceeds" categories. For example, even if an issuer does not disclose an explicit objective in its green bond framework for renewable energy, we might look for a specific target in terms of carbon intensity reduction. Likewise, a best additionality practice consists of reporting the **geographical location** of the assets being financed. Finally, we believe that the **deadline** of these targets should be set within the lifetime of the bond. Indeed, a corporation being committed only to carbon neutrality by 2050 and issuing a green bond maturing in 2030 may lack credibility. The Sustainability-Linked Bond framework associating a target with a step-up coupon answers the concern raised above.

Chart 2.4: 2015-18 average changes in carbon intensity by sector



Source: BIS - Green bonds and carbon emissions: exploring the case for a rating system at the firm level (page 8)

Duration

If a 10-year bond is supposed to finance a new project which will be sold after 5 years, we want to make sure that it will be replaced by a similar asset. Otherwise, it would be difficult to claim impact over the full lifetime of the bond.

Furthermore, financing OPEX could be seen as not investing in sustainable impact. However, some categories of OPEX dedicated to the maintenance of green assets, research and development related to "Use of Proceeds" categories, or trainings for social bonds have a lasting impact and should be allowed. Again, when an asset loses it eligibility, we expect issuers to replace them with a compliant one.

Are Sustainability Linked Bonds a solution to secure impact?

Green bonds increasingly obey market best practices based on existing private standards, but the introduction of an official regulation would ensure the adherence to minimum standards. We believe that Sustainability-Linked Bonds could gain a lot of traction since they answer a lot of caveats discussed above. However, some challenges remain to be overcome:

- **Ambition of the target:** it is difficult to evaluate the level of ambition of a target linked to water consumption, land use or biodiversity.
- **Size of the issuance:** One avenue to consider for analysing SLB is to which extent the outstanding amount issued is adjusted to the stated target.
- **Use of the step-up coupon:** on one hand, the investor benefits from higher yield when the environment suffers from missed targets. On the other hand, the step-up supports better alignment of the issuer's economic interest over ESG performance.
- **Size of the step-up:** even if the size of the coupon could be seen as marginal (25bps per "missed year" or 75bps once at maturity), we consider the reputational impact for an issuer missing the target is likely to be larger than the coupon step-up itself.
- **Global ESG profile**: since an SLB is associated to only one target, one could claim that an issuer may "hide" questionable practices in other areas. Still, issuing an SLB is a clear commitment towards a specific goal and should be praised as such.
- **Complexity:** As of today, no standard setting structures have properly emerged, making the pricing of those securities rather challenging. We expect the standard to evolve further, i.e. on top of the variable structure of step-ups, one could think of step-downs in case the issuer's strategy proves particularly virtuous.

What future for the EU Green Bond standard?

The EU, as an issuer, and the ECB will certainly incentivise market players to issue EU Green Bonds. But other considerations could slow the development of that market:

- **Complexity:** the constraints of the Climate Bond Standard have limited its development (in 2019, 12% of green bonds issuance have the climate bond label according to CBI – by amount). With 79 standard pages and 414 pages for the taxonomy, will the EU Green Bond be able to gain more market share than Climate Bonds?
- **Stringency:** the EU taxonomy, to which the EU Green Bonds Standard refers, is clearly indicating which types of assets are eligible by setting technical thresholds to specific sectors (e.g. 50g CO2/km for cars).
- **International cohesion:** International cooperation, like the International Platform on Sustainable Finance (IPSF), is more necessary than ever to avoid multiple taxonomies. International issuers will otherwise have to manage an additional layer of complexity when deciding on their financing strategy, especially if some sort of extra territoriality starts to apply.

Finally, some industries (car makers, cement, oil & gas) could use the EU Green Bond standards for dedicated projects (like dedicated electric vehicle plant, best in class cement plant or renewables projects) and complete their financing structure by issuing Sustainability-Linked Bonds thus globally financing their strategy. Some issuers may fail to gather enough eligible projects to reach the minimum thresholds to issue an EU Green Bond. Banks may not be able to identify eligible projects in their information system.

	Green Bonds	Climate Bonds	Transition Bonds	EU Green Bonds	Sustainability Linked Bonds
Intentionality	Reference			+ Stringent UoP thresholds	+ Incentive (step-up) - Not ringfenced
Additionality	Reference		+ UoP extended to new sectors	+ Max 3 years look back period	+ Target - Ambition of target?
Measurability	Reference	+ Reporting mandatory (allocation & impact)		+ Reporting mandatory (allocation & impact)	+ Metrics associated with the target
Duration	Reference				+ Deadline to meet target

Source: GIAM

03

What support from the EU institutional framework?

Climate change is high on the agenda of the ECB's strategic policy review

The ECB will foster the expansion of the green bond market. It currently buys them as part of its various asset purchase programs. Data on ECB green-bond-buying is scarce and not regularly published but has shown that the ECB currently holds about 20% of the eligible green corporate bond universe. These purchases are guided by the principle of market neutrality.

Over the recent quarters, the ECB has also endorsed socially responsible goals. President Lagarde (and other Governing Council members) have made it clear that climate change initiatives will be high on the ECB's agenda. We expect the Strategic Review, due by late summer 2021, to detail specifically how these will be considered. There are several options on the table and the key challenge for the ECB will be not to crowd out private investors in a structurally overcrowded market. The ESG market development must itself be sustainable.

Greening banks prudential supervision

On the banking supervision side, the ECB could ensure that banks properly assess climate risk by giving green assets a preferential treatment. The ECB is currently working on a robust analytical framework to improve the modelling of climate risks, which should enable a more accurate pricing of assets. The European Banking Authority (EBA) could also possibly include this approach into its stress test exercises. Similarly, the European Insurance and Occupational Pensions Authority (EIOPA) has recently launched a consultation on the supervision of the use of climate change scenarios in ORSA, with the same objective of incentivizing Insurers to support the transition towards a green economy.

Collateral rules are also starting to evolve towards more favourable rules for green assets

Recently, the ECB took another measure to support green financing by declaring step-up (variable coupons) sustainability-linked bonds (SLBs) as eligible collateral from 2021 onwards. Unlike traditional green bonds, SLB coupons are linked to sustainability performance targets. The ECB had to change the rules to make them eligible since bonds as step-ups are usually otherwise not eligible collateral. The practical implications are rather limited for now – only a handful of those bonds are currently outstanding – but the message is clear. Further adjustments on collateral rules will also likely be considered. Applying more favourable haircuts for green bonds could easily be envisaged, which would encourage banks to hold more green assets.

In December 2020, the ECB extended not only the volume and the length of the PEPP, but also stated that reinvestment from PEPP purchases will be made until at least year-end 2023. More generally, it will reinvest the stock of its QE purchases well beyond the timing of its first key rate hike, something we still see far away and unlikely to take place before 2025. **The risks are tilted towards sustained asset purchases**.

Non-monetary portfolios

The Eurosystem agreement sets rules and limits for holdings of financial assets which are related to domestic tasks of the national central banks. Those financial assets can be related, for example, to their counterpart(s) for their capital and accounting reserves or other specific liabilities, their foreign reserves and employee pension funds or they can be held for general investment purposes.

On February 4, 2021, the Eurosystem agreed on a common stance for climate change-related sustainable and responsible investment principles for euro-denominated non-monetary policy portfolios. In the declaration, the Eurosystem promotes disclosures and understanding of climate-related risks, aiming at starting climate-related disclosures for these types of portfolios within two years.

New TLTROs with green objectives could be launched

Under the current framework for the TLTROs, banks can borrow from the ECB at a rate linked to their credit extension. An even more active step to green the ECB policy would be the launching of green TLTROs with financing conditions linked to bank lending activities that comply with the EU Taxonomy. In fact, this option is currently being analysed as part of the strategy review and could, in our view, easily become part of the ECB's regular operations. The ECB would thereby increase banks' appetite for supporting green projects.

The ECB has expressed a (non-trivial) desire to address climate issues via its monetary policy

The adoption of green QE could potentially be the strongest impact of the green bond market but is also not likely given the strongly heterogenous views within the Governing Council.

Indeed, the view of the Governing Council members seems to be divided on this issue. On one side of the spectrum there are central bank purists like Weidmann (Bundesbank) arguing that tools like green QE would overburden monetary policy. If and when the degree of policy accommodation needs to be reduced, the discussion whether this also applies to green assets could in the end jeopardize central bank independence or erode policy credibility. On the other side of the spectrum there are also strongly pro-green policy views advocated within the Governing Council. President Lagarde herself publicly claimed that she wants to "*explore every avenue available to combat climate change.*" Moreover, the Governor of the French Central Bank, Villeroy de Galhau, called for, in an FT article, the ECB to decarbonize its €2.4 trn corporate credit holdings, while Klaas Knot, the Dutch Central Bank Governor, in a speech held on February 11 called for the ECB to redesign their monetary policy instruments to prevent biases linked to distorted carbon prices.

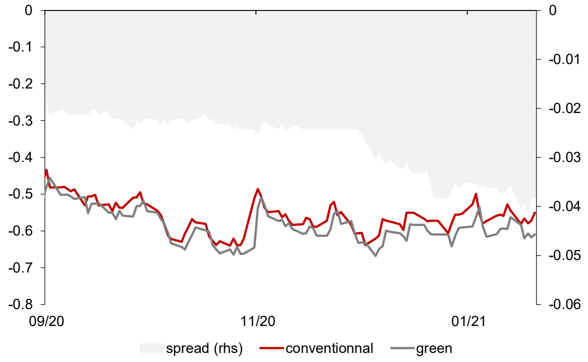
Economic research on the topic is still scant but it is becoming clear that there is a potential role for monetary policy to support an orderly transition towards a low-carbon economy. A recent ECB working paper, for instance, shows that green QE can be helpful, provided that regulation discriminates 'green bonds' in favour of 'brown bonds'. Regarding the importance and merits of green regulation, there seems to be agreement within the Governing Council. Internationally, a majority of surveyed central banks are considering climate-related actions in general terms while the implementation of specific measures (protectively and proactively) in their operational frameworks is still at a very early stage. What are the potential routes?

First, the equilibrium real policy rate (r-star) has fallen negative and will stay as such. The impact of climate change is theoretically ambiguous, but we doubt that it will carry a positive perception in the foreseeable future.

Second, climate change potentially impairs the transmission channels of monetary policy (via changes in risk premia, bank capital, the global economy, exchange rates and fiscal policy) and thereby increases the need for monetary policy action.

Last, as we laid out in greater detail in an earlier article, we expect the low growth and low inflation environment to persist medium term, thereby keeping needs for monetary policy

Chart 3.1: Twin German bonds: green vs. conventional DBR 0 08/15/30



YTM Source: Bloomberg, GIAM

support high. Hence, a strong tailwind from monetary policy, via asset purchases, will contribute to an expansion of the green bond market.

In all, we expect the **ECB to become greener** as the result of its strategy review. We are very confident that it will increasingly focus on climate change as a source of financial stability risk and support and skew financial returns via regulation in favour of the green sector. Bottom line: regulation as well as monetary policy will support the growth of the green bond market over the coming years.

EIOPA regulation: now and then

An important aspect of investing in green bonds for insurance portfolios is the capital treatment granted to these instruments under the Solvency II framework, set out in the spread module of the Delegated Acts. Capital treatments are relevant under two perspectives:

- First, they may affect the economic incentive to invest in green bonds in terms of the return on capital for insurance companies.
- Second, they may help to foster the transition to a greener economy.

As the greenium (or green premium: green bond trading at a slightly lower yield than its twin conventional 'brown' bond or curve) is typically observed in the primary market (almost a structural characteristic), capital absorption becomes especially relevant for large insurance portfolios as an element of potential asymmetry between the investment in green bonds versus standard bonds.

In fact, the primary market is inevitably the main option to scale up investment in green bonds, considering the relatively poor liquidity of the secondary. As such, for big hold-to-maturity investors, investing in green bonds may represent a sub-optimal use of the company's capital on a mere economic basis when compared to the investment in standard bonds of the same issuer (assuming lower capital charges are not being granted to the former).

The implications are even more relevant when considering that the primary market is the main channel to provide resources for green projects from lenders to borrowers, paving the way for the transition to progress.

The spread module of the Delegated Acts provided for mitigations in the capital charges of some categories of assets which, as a result, have found a growing interest and relevance in the asset mix of insurance portfolios. Nonetheless, **current regulation does not provide for mitigated treatment for green bonds**. In fact, while EIOPA acknowledges the importance of incentivizing insurers to help the transitioning into a greener economy, it does not recognise capital requirements as the adequate lever to achieve that.

In the view of the regulator, capital charges incorporate risk parameters and, as we stand, EIOPA has no statistical evidence to support that green bonds are less risky than standard bonds. Green bonds are still a relatively new asset class, with insufficient historical data; whilst there have been certain concessions in Solvency II for lowering capital charges of asset classes that have socioeconomic benefits, there has always been some sort of quantitative risk-analysis-based justification for EIOPA to support it, as was for instance the case for infrastructure in 2015, corporate infrastructure in 2017 and long-term equity in 2019.

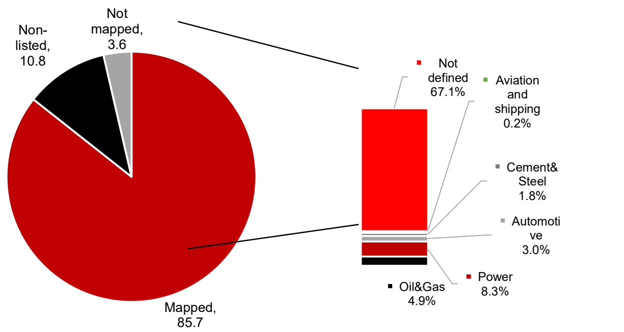
"EIOPA is of the opinion that within a risk-based framework like Solvency II any change to capital requirements must be based on a proven risk differential compared to the status quo. Assessment of the underlying risk is therefore also the starting point and guiding principle for the analysis and opinion on capital requirements related to sustainability."

Source: EIOPA Opinion on Sustainability within Solvency II Sept 2019

Therefore, while the industry is working to speed up the process of carving out lighter charges, the need is for historical data/analysis that EIOPA could rely upon, showing evidence of lower spread volatility and Loss Given Default (LGDs) when comparing green to conventional bonds.

Nonetheless, capital charges are not the only way to promote investments in green bonds and to support the transition to a greener economy. Beside fiscal benefits, possible incentives may be set up through risk management policy encompassing a more holistic approach to the balance sheet of insurance companies. This is especially the case for the management of transition risk, where an issuer/sector-based approach appears to prevail over the issue-based approach deriving from the green label defined at instrument level.

Chart 3.2: Share of corporate bonds in key climate-policy sectors



All undertakings. incl. unit-linked. EEA excl. UK Source: EIOPA Sensitivity analysis climate change transition risks

The Regulator itself seems increasingly mindful of transition risk* faced by insurance companies and particularly concerned by its implications should a political shock occur in the future. In that spirit, EIOPA recently published the results of a stress test on the insurance sector specifically focusing on climate change.

In this context, a sensitivity analysis assuming a policy shock with an abrupt policy change to align future CO2 emissions with a "2-degree Centigrade temperature rise" is performed. In this scenario, the sensitivity analysis estimates expected changes in the value of assets held by insurance companies where "climate change positive assets" rise in value while "climate change negative assets" sink. With this holistic view, the overall impact on the balance sheets of the sector is counter-balanced by investments in renewable energy and the limited exposure of European insurers to high-carbon investments.

While there are a number of caveats to this exercise and any modelling of climate changes must be taken with a grain of salt (with the results being highly dependent on future transition strategies adopted by companies), resiliency of insurance balance sheet and own funds to the risks associated with the transition process are clearly an area of concern for the Regulator and are leading it to a more comprehensive assessment of the underlying implications.

*Together with transition risk among the potential drivers of climate-related asset impacts, EIOPA acknowledges also physical risk. The Regulator, as evidenced in the paper, recognizes the capacity of this latter to be substantially impactful for assets, liabilities, and business models, among the Insurance sector. Nevertheless, further analysis and data are still required for this category of risk to be better understood and finally allow for more reliable estimates of its related impacts.

04

Investing, with an impact, in green and sustainable bonds

Why invest in green bonds? As an institutional investor linked to an insurance company, it is our mandate in GIAM to fund the transition towards a less carbon-intensive economy. We are also deeply convinced that ESG performance will positively contribute to financial returns. Hence, we have been since the beginning an active player in the green bond market.

Not all green bonds are created equal

A dedicated framework for green and sustainable bonds selection

Besides our internal investment process, including financials and ESG parameters, we have developed a dedicated framework to better capture "sustainable and responsible" market opportunities, **reducing potential risk of "greenwashing"**. In essence, the aim is to define a minimum internal standard that will qualify green and sustainable bonds.

The green bond filter will aim at translating into practice the four key concepts of **Intentionality, Measurability, Additionality and Duration,** previously described in section 2. Within the investment process, each "green labelled" bond will be assessed through our internal framework, which entails two main filtering stages:

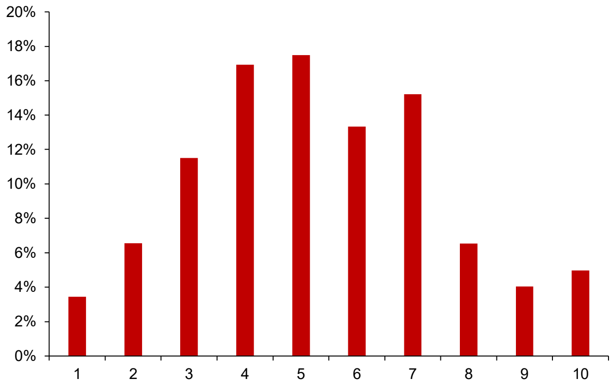
First, we apply an internal methodology to exclude true laggards from our portfolio.

Second, we run an analysis at the issue level to assess the robustness of the specific bond's G&S framework.

The methodology aims at evaluating the quality profile, credibility, and level of sustainability of the issue, through the test of a set of criteria, divided in four macro categories covering the essential angles of the framework:

1. **Audit – external review:** External review from Second Party Opinion providers (or other entities) is believed to grant a first basic assessment on the "Use of Proceeds" credentials and, as for credit ratings in conventional bond markets, is gradually becoming a market standard.

Chart 4.1: MSCI Environmental Pillar Score



Decile distribution Source: MSCI, GIAM

Nevertheless, as of today, around 15% of labelled G&S bonds do not comply with this requirement. Audits should cover both allocation and impact reporting.

2. **Transparency**: Assessment on transparency is translated into a double test regarding reporting (or commitment to reporting in case of a primary issue) of **allocation of proceeds** and **achieved impact** (as opposed to projected impact). Disclosure of these two documents (or commitment to disclose) is believed to be a critical aspect for a transparent framework. The reports offer insight on how the issuer intends to deploy proceeds, and on type and magnitude of the results achieved through the financed projects. We would not consider a bond compliant to internal G&S bonds standard should the answer be negative. Moreover, when applicable (i.e. Climate-related "Use of Proceeds"), compliance with the EU Taxonomy provisions will also be evaluated when in force for the disclosed "Use of Proceeds" ; we expect this to become, in time, a market standard.

3. **Granularity:** The third category within the assessment process relates to the granularity of information about the projects planned to be financed. In specific cases, such as frameworks of banks' green bonds, disclosure of financed projects is given at portfolio level but should anyway identify in a clear manner the type (activity/sector) of assets earmarked for the specific financing. As for the first two, a positive test of granularity is critical, as it reflects on the credibility, commitments and

Chart 4.2: Application of the framework to 2 Green bonds

Criteria	Issuer 1 - PASS	Issuer 2 - FAIL
E Score	9,2	9,8
External reviewer	Vigeo	Sustainalitycs
Allocation report	Yes	Yes
Impact report	Yes	Reported - but not mentioned in Green Bond Framework
Project/ Portfolio level reporting	Yes	Yes
Public target	60 GW - Issuer strategy	Yes - ESG Report
Target deadline in bond lifetime	2025 - Issuer strategy	Not mentioned
Type of OPEX	CAPEX only	Vague statement on maintenance
Eligible assets details (refinancing)	Dedicated policy for refinancing in green bond framework	Not disclosures
Pipeline for new projects	Pipeline details in investor presentation	Generic statement on future demand
Timeframe for cash deployment	Not mentioned - but 2025 & 2030 bonds fully allocated	Not mentioned - 2025 & 2030 fully allocated
Substitution of assets sold	Specified in Green Bond Framework	Not mentioned
Replacement of ineligible assets	Specified in Green Bond Framework	Not mentioned

Source: GIAM

plans of the issuer.

4. **Additionality:** The fourth passage of the assessment process touches a series of criteria related to the additionality of the issue, verifying availability of:

- Measurable targets within the issuer's Sustainable strategy (associated with at least one of the assets attributable to "Use of Proceeds").

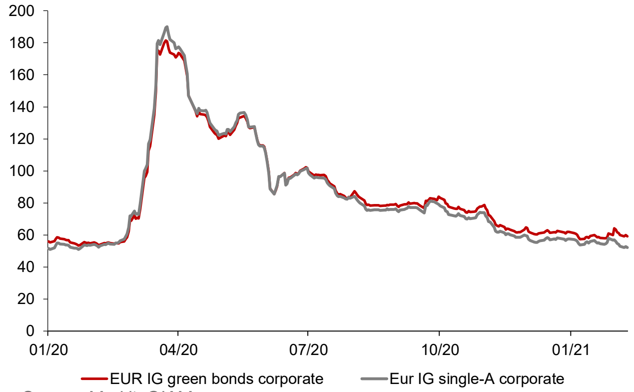
- Assessments, in case financing is used for Operating Expenditures, of whether these have a "sustainable" and long-term reflection on the issuer's activity or assets (e.g. R&D, Maintenance, Training).

- Information on eligible assets in the portfolio and lookback period in case of refinancing, which is used to determine the magnitude of the financing and immediate allocation.

- Disclosure of pipeline projects in the issuer's strategy, which is instrumental in understanding potential consistency in the proceeds deployment within the broader business profile of the issuer.

- Disclosure of timeframe indication for cash deployment, potentially providing a reliable measure of the ambition of the framework and its credibility, as well

Chart 4.3: EUR Corporate green bonds vs EUR Corporates single-A



Source: Markit, GIAM

as a dedicated rule applicable to proceeds before allocation.

- Declared commitment to substitute assets sold or expired before maturity of the bond.

- Declared commitment to replace assets, should they become ineligible.

The first three categories (audit, transparency, and granularity) are critical and for eligibility to be met, each must result in a positive outcome.

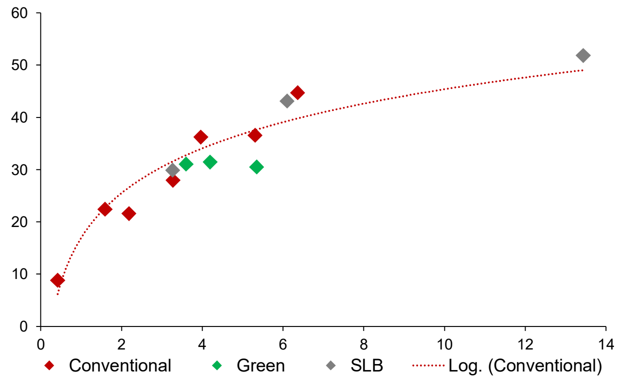
For the sake of clarity, bonds that do not pass the filtering test will not necessarily be excluded from our broad investible universe (unless restricted for other matters).

Market dynamics

Are green bonds less volatile?

First, let us recall that from a pure financial point of view, green and conventional bonds represent the same

Chart 4.4: ENEL Euro Senior Curve



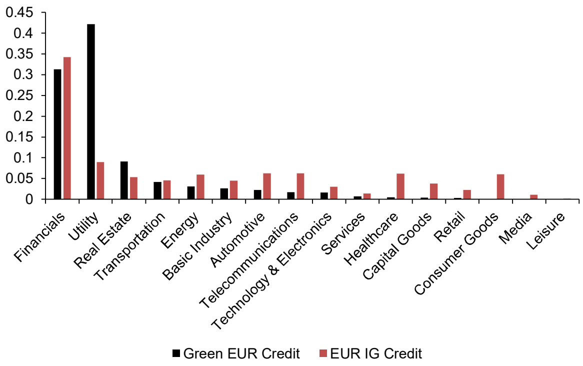
Z-spread vs years to maturity Source: Bloomberg, GIAM creditor claim on the issuer. Notwithstanding the "Use of Proceeds" for green bonds, the investor's claim is not linked specifically to these assets. From a pure spread volatility standpoint, green bonds have been more volatile in 2020 than conventional bonds, because of their larger share of financials which have been more volatile at the beginning of the Covid crisis. However, adjusted for sector, rating, and maturity bias, we see no significant difference at this stage.

Dynamics of the greenium

On the existence of a positive or negative premium, the empirical results are mixed. However, most studies conclude that green bonds are trading at a negative premium, i.e. lower yield of approximatively 5bp. The most striking example are the German 10-year twins currently trading at a negative premium of around 4 bps, all other things being equal.

There are theoretical arguments in favour of a negative premium, where investors are comforted by the issuer commitment to dedicate the proceeds to green projects and the corresponding reporting requirements while issuers bear additional costs to issue green and sustainable papers and might be tempted to pass on that extra cost to investors. Additionally, there is evidence that demand is outpacing supply, leading to potentially larger negative premia. Moreover, as climate risks are increasingly moving into the centre of attention there is a certain probability that regulatory interventions will further distort markets. More broadly, we notice that the greenium is larger on the corporate side and within corporates it is larger on most cyclical sectors and Covid-affected sectors. This may be because turnover was greater on those names in 2020, allowing investors to position preferably on green bonds versus conventional bonds.

Chart 4.6: BofAML GREEN Index corporates only vs EUR IG Corp.



% maturity Source: Bloomberg, GIAM

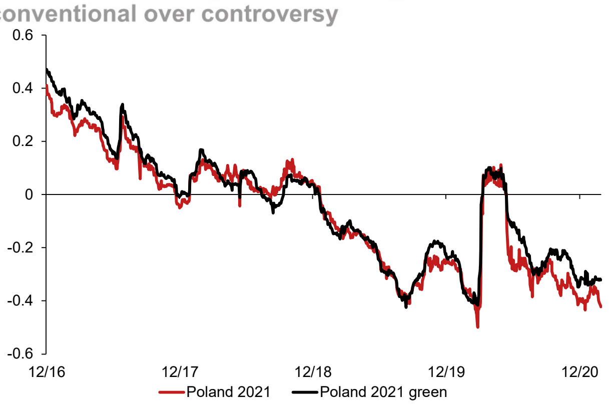
Green bonds and the controversy risk

May green bonds become more volatile than comparable brown bonds, in particular hybrids, in case of controversies? We note that despite the concerns on the global Green Strategy of the Polish government, the first EUR Polish Green Bond hardly underperformed in 2018 when concerns emerged. Since then, its performance has been close to its peers and it has even outperformed the Polish EUR subindex, especially in through the March 2020 Covid sell-off. There was a similar case in 2020 with State Bank of India, leading also to short-term underperformance, then normalisation. Hence, evidence suggests that there could be short-term under-performance in case of controversies on green bonds, but the differential versus conventional bonds of a given issuer does not reach significant levels, because otherwise "non-green investors" would step-in and pick-up the green bond.

Limited diversification opportunities

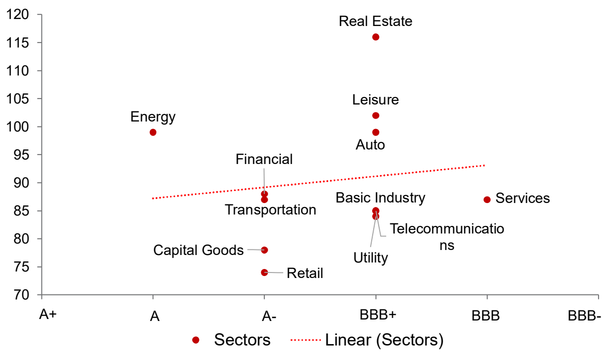
The green bond market, as highlighted in section 1, is still far smaller than the conventional one, implying a strong

Chart 4.5: Limited spread between green and conventional over controversy



yield-to-maturity, % Source: Bloomberg, GIAM

Chart 4.7: EUR IG average rating vs spread BOFAML universe



yield-to-maturity, % Source: Bloomberg, GIAM composition bias. Hence the GB market offers less diversification opportunities in terms of not only sectors, nationalities of issuers, and currencies, but also maturities, as the under-representation of sovereigns limits green investment opportunities on the 30-years+ segment.

From issue to issuer, where to put the cursor?

Beyond the green bond space, it is likely that the investor focus will gradually shift from the "Use of Proceeds" of the green bonds towards how issuers plan to achieve net zero emissions (a more holistic view). Since its launch in September 2019, the Net Zero Asset Owners Alliance has quickly doubled in size and now unites 33 investors with assets totalling $5.4 trn. They aim at reaching net zero emissions across all AuM by 2050, and with interim targets to be set for 2030 across their entire asset portfolios. They will also work on identifying decarbonisation pathways for strategically key, high-carbon sectors.

Conclusion

Generali Insurance Asset Management has gained over the last 3 years competitive knowledge of the green & sustainable bonds market, benefitting from a virtuous environment to expound upon it:

Indeed, Generali Group has worked since 2018 to support the Just Transition, climate change remediation, social impact migration and more. It is also one of Europe's major players in fixed income, with extensive experience in managing euro-denominated fixed-income assets. Generali Group itself has been a pioneer in the insurance sector as a green bond issuer, and in defining its first Green Insurance-Linked Securities Framework, in line with the Group's sustainability and capital management strategy.

Generali Insurance Asset Management is specialized in Liability Driven (LDI) solutions, leveraging on a solid a track record of performance in managing Generali Group insurance companies' portfolios and pension fund mandates. The company's experience and know-how include an in-depth understanding of clients' liability constraints, an effective risk management approach embedded in its investment process and a range of proprietary analysis tools developed to support LDI management - all together giving GIAM a competitive edge. Since 2018, Generali Insurance Asset Management has invested more than €5bn (market value) in green & sustainable bonds, issued by government and corporate issuers, in a wide range of sectors, leveraging on a strong team of dedicated ESG analysts and specialized PMs and Credit Analysts.

Moreover, from a mark-to-market perspective, Generali Investment Partners launched in December 2019 the GIS Euro Green & Sustainable Bond Fund, investing primarily in euro-denominated green and sustainable Investment-Grade bonds and designed to outperform its benchmark, the Bloomberg MSCI Euro Green Bond Index.

With the new framework developed in this White Paper, GIAM is setting a new milestone in the development of its capacities in the green & sustainable bond asset class. GIAM will use all the expertise and experience acquired over time to capture opportunities on this increasingly complex and wide market, for the benefit of its institutional clients.