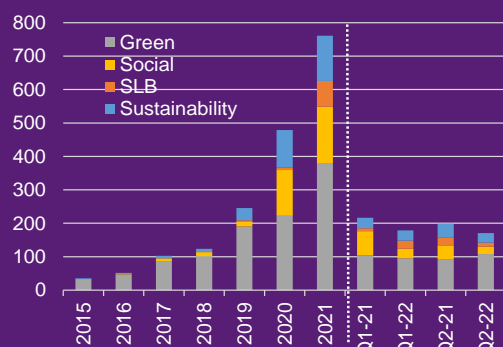


Green Bonds Review

July 2022



New issuance (€bn-eq) by type of ESG bonds



Sources : Bloomberg, Natixis

Table of contents

Focus on Repower EU and energy transition in Europe	2
G&S bonds: trends in new issuance and outstanding	4
Focus on Green € sovereign bonds & the EU	5
Focus on €-denominated A-rated Corporate debt	6
Focus on €-denominated BBB-rated Corporate debt	7
Focus on €-denominated Senior Preferred Financial debt	8
Focus on €-denominated Senior Non-Preferred Financial debt	9
Focus on €-denominated Covered bonds	10
Focus on Corporate Greenium	11



Thibaut Cuilliere

Tel. +33 1 58 55 80 56

thibaut.cuilliere@natixis.com



Samy Lakhdari

Tel. +33 1 58 55 24 45

samy.lakhdari@natixis.com



Bouchra Rhajbal

Tel. +33 1 58 55 79 93

bouchra.rhajbal@natixis.com



Jennifer Levy

Tel. +33 1 58 55 82 80

jennifer.levy@natixis.com



Cyril Regnat

Tel. +33 1 58 55 82 20

cyril.regnat@natixis.com

www.research.natixis.com

Q2-22: RepowerEU: financing the (accelerating) energy transition in Europe

New green & sustainable bonds issuance by currencies & sectors

- We consider green, social, sustainability and sustainability-linked bonds as "green & sustainable" (G&S) in the entire document.
- **New G&S bond issuance declined again in Q2-22 vs Q2-21 for the 2nd consecutive quarter (-14%).**
- Green issuance has proved dynamic in Q2-22 (+16%), mainly led by sovereign, supnationals and agencies. Social and SLB formats have been lagging, the latter being impacted by a sharp reduction in corporate issuance overall.
- As expected, gross supply of sovereign & EU G-bonds increased significantly in Q2-22, to €29bn. The EU itself raised €13.5bn via its green issuance while the French Treasury issued the first ever Green linkers.
- ESG Covered Bond Supply reached a new record this quarter, totalling €7bn. In terms of execution dynamics, ESG covered bonds benefited from a stronger investor demand than Conventional peers and lower spread compression from IPT.

G&S bonds in primary markets

- Although G&S NIPs have been increasing on the back of the market repricing, it is worth noticing that they are significantly lower for BBB-rated G&S than for their conventional counterparts.

Greenium: the recent trends

- **The Greenium has slightly expanded in the € corporate market during Q2-22 (0.5 pb on average), to almost 4 bp, and is close to its record level currently.**
- Green, sustainability and Social bonds display Greenium in the range of 6 to 8 bp, while SLBs are actually trading wider than their conventional counterparts.
- Greeniums of Bunds tightened marginally during Q2-22, in a very volatile market context. Surprisingly, Green OATs proved more resilient than nominal OATs on the long-end with a 3-4bp outperformance vs. swap.

What's next?

- Q3-22 supply should remain sizeable in the govies + EU space, approaching €24bn. The EU will remain the biggest green bond issuer in H2 with up to €17bn on the offer given its €50bn target for the semester. Belgium is expected to launch a new 15Y-25Y, while Italy should start reopening its G-bonds program this quarter.

Food-for-thought



- Is the G&S market ready to absorb the financing needs coming from the accelerated energy transition ?
- What does the acceleration in the energy transition mean for the supply from the EU in GSS format?

Focus on Repower EU and energy transition in Europe

- Last May 18, the European Commission (EC) responded to Russia's aggression against Ukraine through the announcement of its RepowerEU package aimed at fully ending EU's dependency on Russian gas imports as early as 2027.
- To this end, RepowerEU features a sequenced approach, with:
 - **A clear short-term focus on energy security**, through diversification of energy supplies to the widest possible extent, including development of additional gas import facilities and partial displacement of gas plants by coal plants in the electricity sector, and
 - **In the medium and long terms, a marked intensification of the various energy transition measures under development** in the EU through EC's Fit For 55 (FF55) climate package unveiled in July 2021. RepowerEU extensively raises some of the targets embedded in FF55 in the fields of energy efficiency and production and uses of renewable energy sources: renewable power, renewable hydrogen and biomethane.
- (For more details on RepowerEU and its overlap with EU's climate policies, please refer to Natixis CIB Research's recent ad hoc study: [EU's climate policy: the great acceleration?](#))
- CapEx-wise, Repower EU induces considerable additional investments compared to those underlying EU's decarbonization plan in FF55, i.e. +€300bn by 2030, +€210bn by 2027.

G1: Main measures from the RePowerEU plan

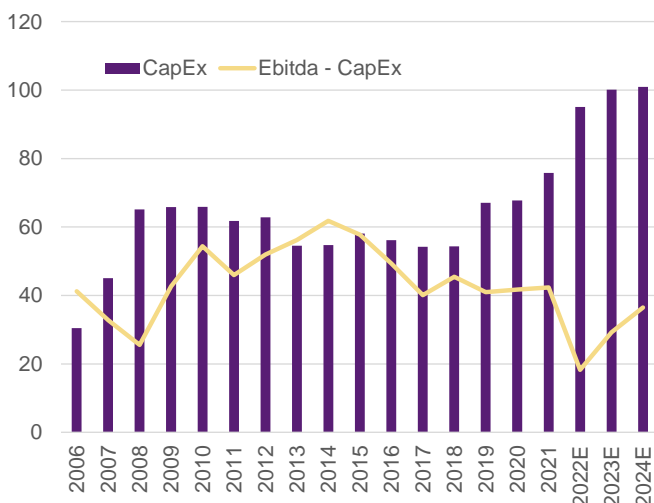
Timing	Measure(s)	Bcm (in 2030)	€bn investments (2022-2030)
FF55 savings by 2030	Total of all FF55 measures	116	NC
ST preparedness	Diversification of gas supplies using existing infra. (LNG terminals & pipelines)	60	
	Delayed phase-out & increased operating hours for coal	24	2
	Abandoned nuclear phase-out	7	0
	Fuel switch in the residential and service sectors	9	
	EU Save: demand measures	10*	**
MT preparedness (until 2027)	New LNG infra. and pipeline corridors	0	10
	Additional investments in the power grid / storage / PV / wind	21*	125
	Biomass in power gen	1	2
	Energy efficiency and heat pumps	37	56
	Sustainable biomethane	17	37
LT preparedness (by 2027 & beyond)	Reduced use in industry	12	41
	Renewable hydrogen (domestic & imported)	27	27
Total		310	300

*bcm figures followed by an asterisk are provided for information but not included in the total / ** investment cost included in investments for other power technologies & infrastructures

Sources: EC, Natixis

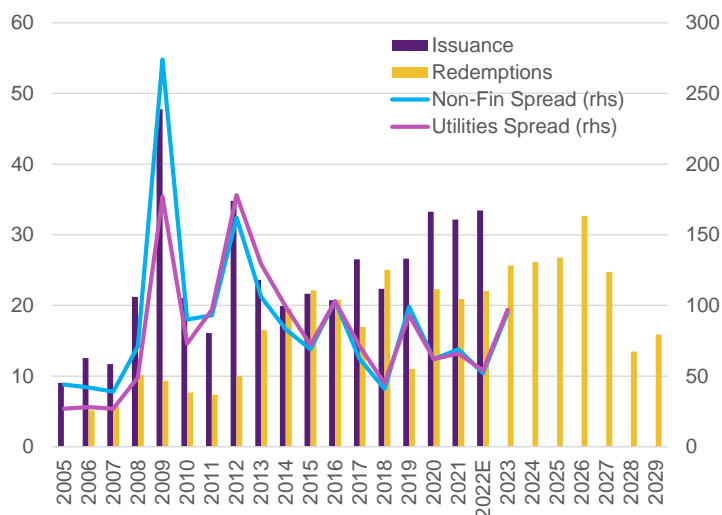
- **The scale of these additional investments raises a financing issue:** will the players involved (eg mostly European Utilities) be able to raise the funds necessary to carry out these investments? Will the market itself be able to absorb these expected additional flows of emissions?
- **European Utilities have already started to engage in substantial increase in capex plans for the years ahead, largely on the back of increasing investments needed in the fields of renewable energies** (that's particularly the case for some companies such as Enel and Iberdrola for instance). As shown on chart G2 below left, the total CapEx is expected to grow by 30% over the next two years vs an already high 2021 in terms of CapEx (record high), to more than €100bn for the top 24 Utility companies in Europe.
- **As expected, Ebitda growth will not be enough to offset the expected spike in CapEx, the required energy transition will necessarily lead to a substantial increase in €-denominated from Utilities**, towards €45-50bn a year from the 30-35bn regime we have experienced since 2020 (see chart G3 below right). The good news is that most of those bonds should be in G&S formats, knowing that i/ a 15bn increase in €-denominated issuance per year on those G&S markets represents a 5% increase in total €-denominated yearly issuance vs today's levels, ii/ the total outstanding of €-denominated G&S market has been growing at a much faster speed over the recent years, without any signs of demand shortage.

G2: Trend in Ebitda and Capex for European Utilities (€bn)



Sources: Market data, Natixis

G3: €-denominated issuance from Utilities and spreads vs swap

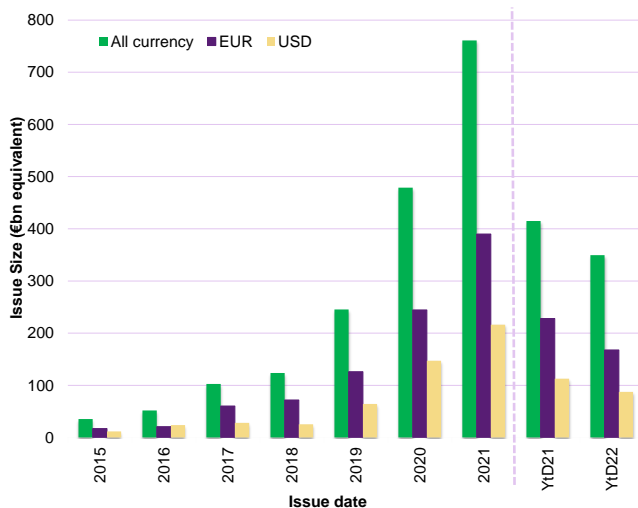


Sources: Bloomberg, Cortex Dealogic, Natixis

G&S bonds: trends in new issuance and outstanding

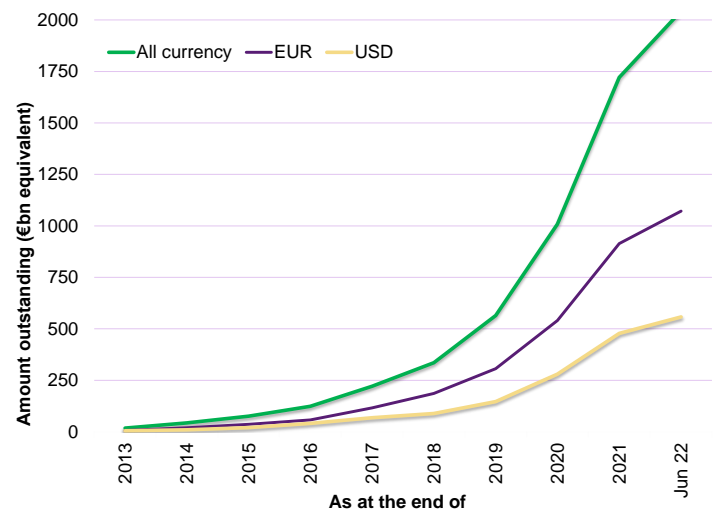
- **New G&S bond issuance declined again in Q2-22 vs Q2-21 for the 2nd consecutive quarter (-14%), although slightly less than in Q1-22.** Only the JPY G&S market is up in terms of issuance in Q2-22, while the USD G&S market has been more impacted by the reduction in issuance than the €-denominated one.
- **On the other hand, the total outstanding of G&S bonds (graph G6) continues to increase** although at a slower pace: it has reached **2trn €-eq end Q2-22, an 8% increase vs Q1-22 levels**. In €-denominated format, the total G&S outstanding has exceeded €1trn and represents 52% of the total G&S outstanding, followed by USD (27%), GBP (3.6%) and JPY and SEK formats (2.6% each).
- Although the overall G&S issuance volumes have been declining significantly, Green issuance only has proved dynamic in Q2-22 (+16%), mainly led by sovereign, supranationals and agencies. Social and SLB formats have been lagging, the former driven by more Green issuance from SSAs, while the latter has been impacted by a sharp reduction in corporate issuance overall.
- **After supranationals and France, Germany is now the 3rd biggest country of domicile for G&S bond outstanding, ahead of the US. China now ranks 6th ahead of Spain** after registering the 3rd biggest increase in total G&S outstanding in H1-22 (35bn €-eq.), with a noticeable expansion of corporates (the majority of which came from the Utility sector with CNY G&S issuance).

G4: Green & sustainable bond issuance (by currency, €bn equivalent)



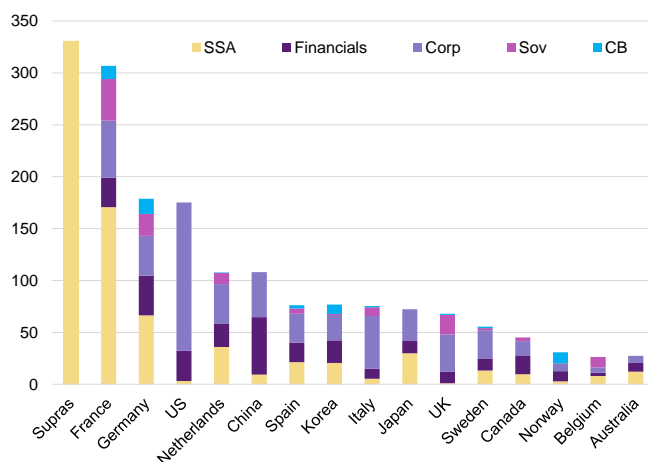
Sources : Bloomberg, Natixis

G5: Outstanding of green & sustainable bonds (by currency, €bn eq)



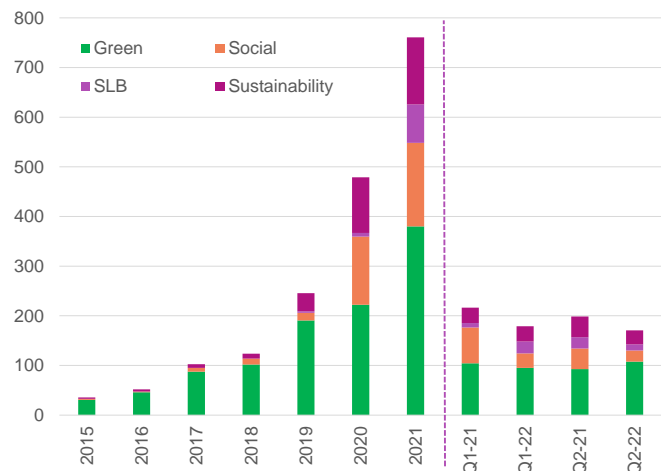
Sources : Bloomberg, Natixis

G6: G&S total outstanding by country of domicile and sector (€bn eq.)



Sources : Bloomberg, Natixis

G7: Green & sustainable bonds issuance by type (all currencies, €bn equivalent)

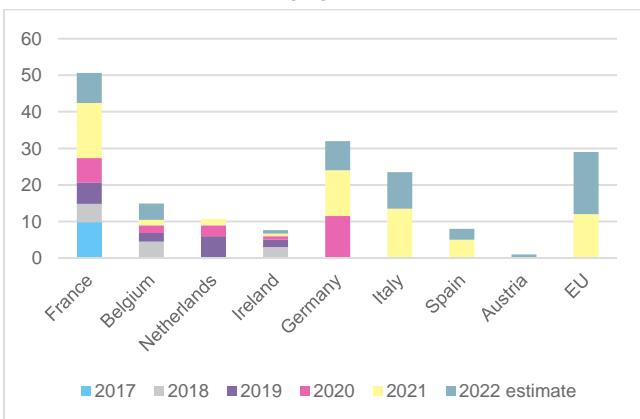


Sources : Bloomberg, Natixis

Focus on Green € sovereign bonds & the EU

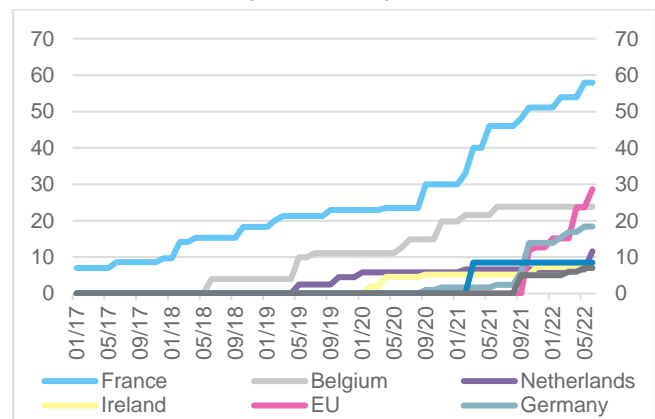
- As expected, gross supply of Green sovereign & EU bonds picked up quite significantly during Q2 with **€29bn of issuance**, a record high for a given quarter, and after only €9bn during Q1. Out of the €90bn of green supply we expect for this year, €33bn has been raised so far by the end of June which means that **gross supply will have to increase substantially during H2 2022**.
- Looking back at Q2, the **European Union** has been the key issuer during this quarter and is likely to keep its first rank as the biggest green bonds issuers in the quarter to come given its **€50bn global issuance target for H2**. Implicitly, it means that the Institution will be raising up to **€17bn** via Green bonds before the end of the year and therefore is likely to launch **2 new Green bonds**.
- France** reached another milestone by issuing the first inflation-linked Green bond ever. Indexed to the European HCPI (ex- tobacco), the Green OAT€i 0.1% 25 7/38 was a clear success with €27bn orders book of which €4bn were allocated. Out of the €15bn to be raised this year, the AFT has been issuing 6.8bn so far. The new green bond being a linker, the remaining €8bn of supply are likely to be concentrated a bit more on the Green OAT 0.5% 6/44 which will be reopened as early as July 7th by the Treasury.
- Among the other noteworthy mentions for this quarter on the supply side, we note the issuance of the **first Green RAGB 5/49** (4bn raised) and the **tap of the Green DSL 1/40 for €5bn**. While the Austrian Treasury may decide to tap its new bond before the end of the year (€1bn), the **DSTA**, with its June operation, **completed its Green bond issuance** program for this year.
- About **expected supply for Q3**, activity should be concentrated other 4 issuers: 1/ the **EU** of course with taps and a new Green bond, 2/ **Belgium** which is likely to issue a new 15Y-25Y Green bond in September, 3/ **France** and finally 4/ **Italy** which did not tap its Green BTP 4/45 even once this year. All in all, Q3 gross supply is expected to be around €24bn, slightly lower than the €29bn we had during Q2.
- German greeniums tightened marginally** during Q2, Green Bunds suffering a bit from their lower liquidity and wider bid-offer spreads. Greeniums on the 8/30 & 8/31 lost a couple of tenths of bp and are now trading around 2bp as illustrated in the chart below. **Green OATs** behaved differently and managed to **outperform nominal OAT** as illustrated by the 3-4bp tightening of the OAT 44 vs. 45 or OAT 39 vs 38 ASW spreads since April.

G8: Current Eurozone sovereign greenbond market



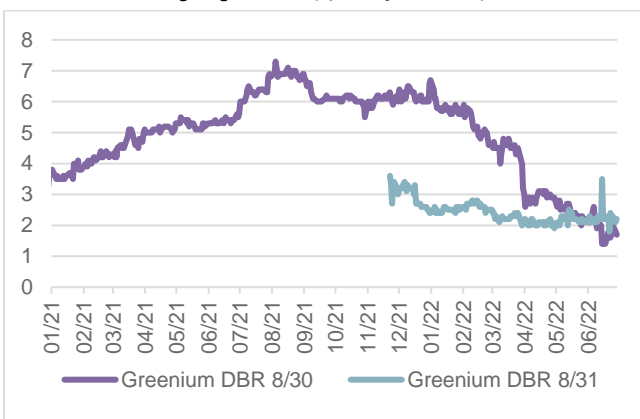
Source: Bloomberg, Natixis

G9: Evolution of the outstanding of eurozone green bonds



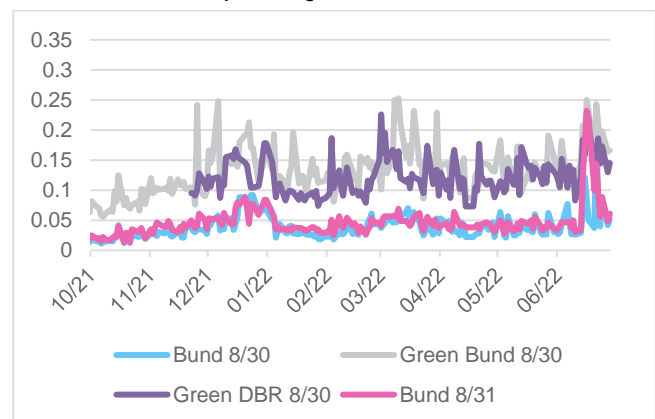
Source: Bloomberg, Natixis

G10: Euro sovereigns greenium (bp, mid yields used)



Source: Bloomberg, Natixis

G11: Green bond issuance in percentage of total EZ issuances

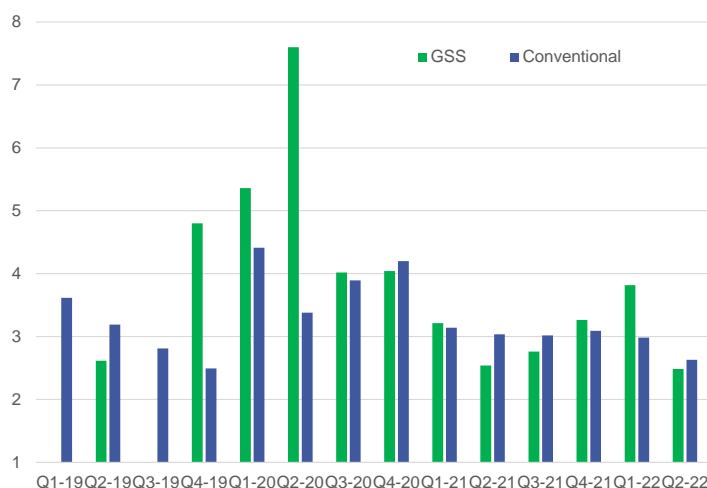


Sources: Bloomberg, Natixis

Focus on €-denominated A-rated Corporate debt

- **Oversubscription rates indicate the magnitude of investor appetite for bonds at the time of their issuance.** While the investors' appetite for G&S bonds in this category significantly exceeded their demand for comparable conventional bonds between Q4-19 and Q2-20, both G&S and conventional bonds in this category were, on average, similar since Q3-20, except for Q1-22 (see chart G13).
- **Spread compression between the time of the IPT and the time of pricing is closely related to oversubscription rates.** As part of the pricing process, bonds experience spread tightening. Stronger investor demand for a bond (reflected in higher oversubscription rates) results in a higher spread compression between the time of the IPT and the time of pricing. Euro-denominated G&S A-rated corporate bonds evolve at a lower spread compression versus the IPT than their conventional peers in Q2-22, in line with the trend observed in oversubscription rate (see chart G14).
- **New issuance premium (NIP) refers to the extra yield received by the buyer (paid for by the seller) for a newly issued bond relative to how other bonds from the same issuer trade in the secondary market at the time a new bond is priced.** To calculate NIPs, we built z-spread curves for each issuer in our sample and interpolated the secondary curve on the maturity of the newly issued bond.
- **Average NIPs exhibited by G&S €-denominated A-rated Corporate debt have been lower** than the NIP displayed by similar bonds in a conventional format from Q4-20 to Q1-22. This has not been the case however in Q2-22 (see chart G15), although market repricing phases actually explain part of that situation (reopening of primary market usually done with ESG bonds, but higher NIP too). **Several NIPs of G&S were particularly high, such as:** 7-year TenneT Green displayed NIP of 21bp and 9-year Prologis Green displayed NIP of 18 bp.
- Finally, **A-rated corporate newly issued G&S bonds in Q2-22 performed better than their conventional counterparts in the secondary market.**

G12: Oversubscription: G&S vs Conventional Bonds



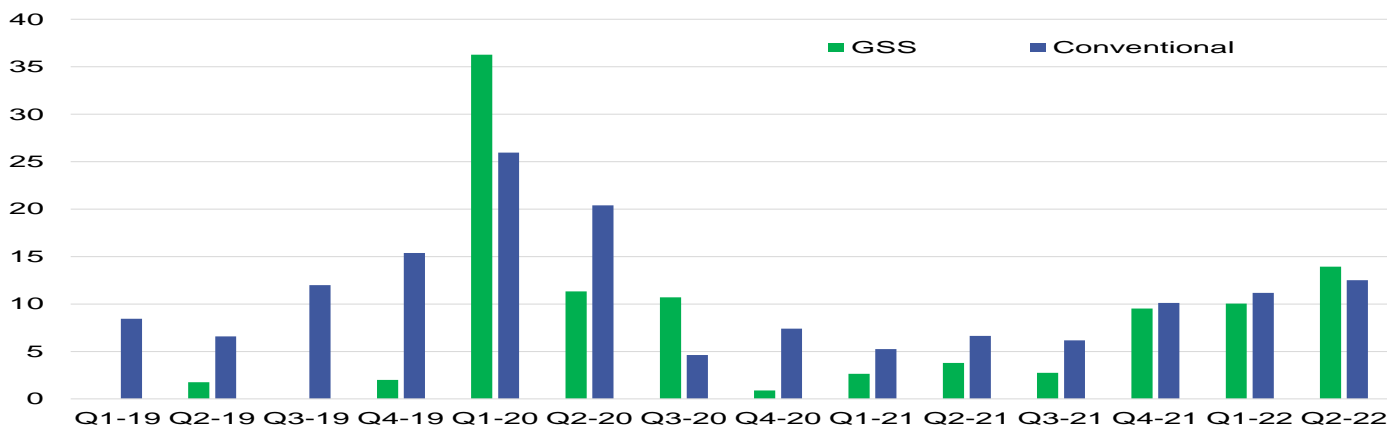
Sources: Bloomberg, Natixis

G13: Spread – IPT: G&S vs Conventional Bonds



Sources: Bloomberg, Natixis

G14: New issuance premium (NIP): G&S vs Conventional Bonds

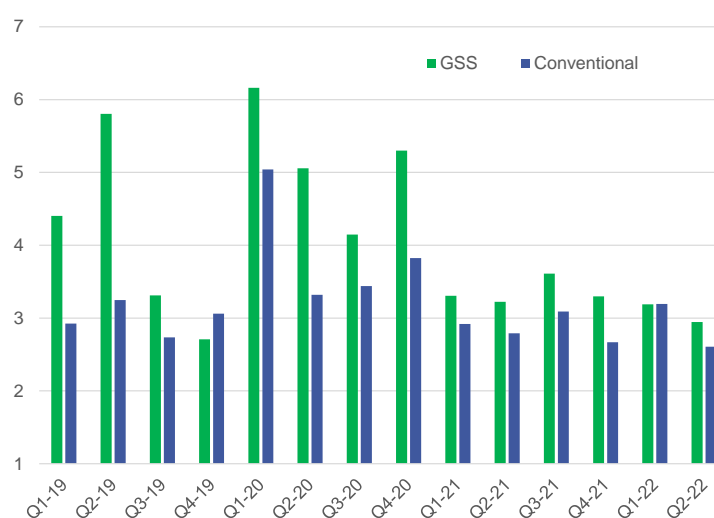


Sources: Bloomberg, Natixis

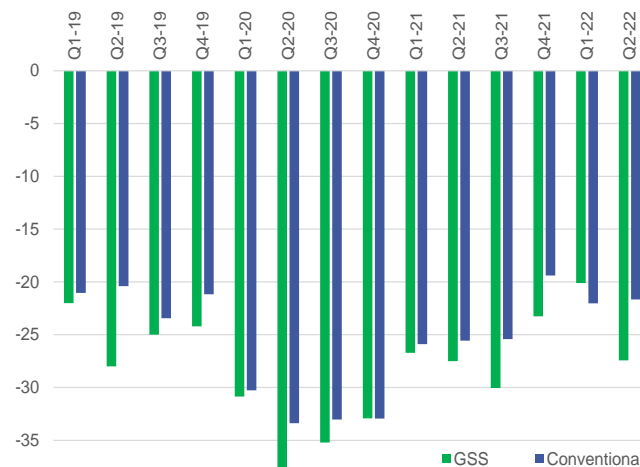
Focus on €-denominated BBB-rated Corporate debt

- Investor appetite for G&S BBB-rated corporate debt far exceeds their demand for similar conventional bonds as G&S bonds in this category exhibit, on average, a higher oversubscription rate in all quarters but Q4-19. It was the case again in Q2-22, particularly for 5-year VW Green (4.3x oversubscribed) and 10-year Orange (5.6x oversubscribed).
- Illustrating the strong investor appetite, Euro-denominated G&S BBB-rated corporate bonds evolve at a much higher spread compression versus the IPT than their conventional peers in Q2-22 (see chart G17).
- G&S bonds in this category are consistently displayed a lower NIP than conventional bonds except in Q1-22. Interestingly, the average NIP has stabilized for BBB G&S new bonds in Q2-22 (albeit at high levels of 15bp), while the NIPs have continued to increase for conventional bonds (see chart G18) to more than 20bp. The highly oversubscribed above mentioned 5-year VW Green displayed NIP of 9bp and the 10-year Orange Green displayed NIP of 13bp.
- Finally, BBB-rated corporate newly issued G&S bonds in Q2-22 performed worse than their conventional counterparts in the secondary market: the average spread vs swap has widened by 10bp for the former following the first 20 days post issuance and by 7 bp after 30 days, while the average spread vs swap of conventional BBBs has tightened by 2bp after 20 and 30 days.

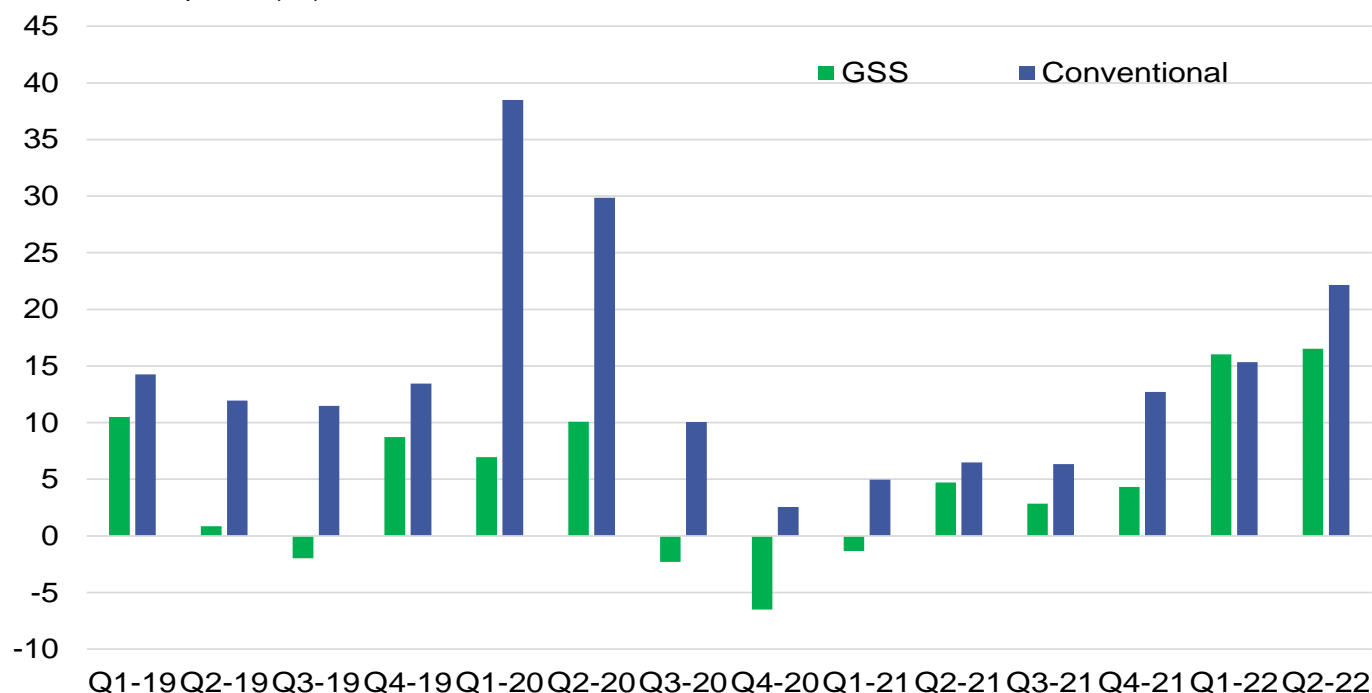
G15: Oversubscription: G&S vs Conventional Bonds



G16: Spread – IPT: G&S vs Conventional Bonds



G17: New issuance premium (NIP): G&S vs Conventional Bonds

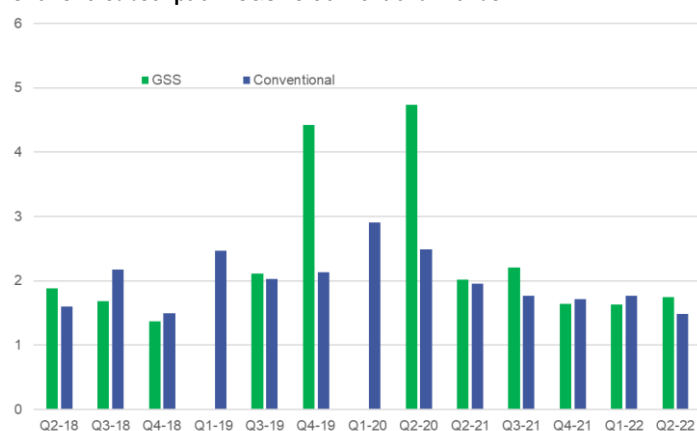


Sources: Bloomberg, Natixis

Focus on €-denominated Senior Preferred Financial debt

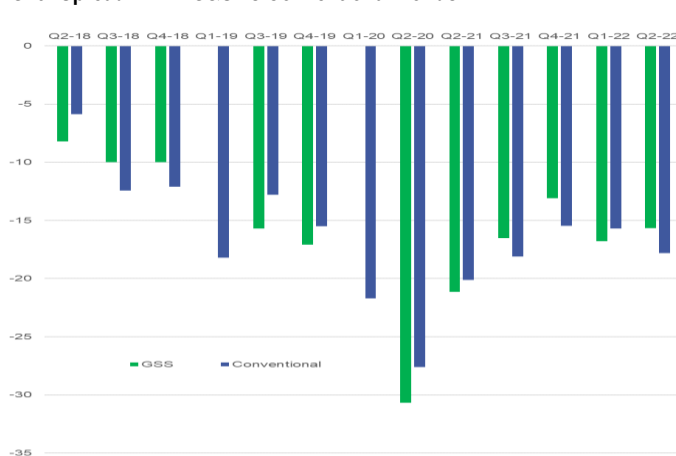
- After a record of issuance (€5.15bn) during the first quarter of 2022, only €2.25bn were issued in Q2-22. This is the lowest level of issuance since Q1-20.
- This quarter, subscription rates on average were higher than their conventional peers (BTC 1.75x for ESG vs 1.5x for conventional bonds). The difference in oversubscription rates between G&S and conventional bond format in this category has become particularly pronounced throughout 2020 and much more attenuated throughout 2021.
- €-denominated G&S Senior Preferred Financial bonds experience, on average, slightly lower spread compression versus the IPT than their conventional peers. During this quarter, ESG issuances tightened by c. 16bp vs 18bp for their conventional peers. This was also the case in Q3-21 and Q4-21.
- G&S NIPs reached their highest levels since 2018 to 17.6bp to attract investors. For example, SBAB Bank AB issued a 3.5Y with a NIP of 14bp compared to 1bp for a 5Y issued in January 2022. Conventional bonds offered a slightly higher NIP than G&S bonds (18.3bp vs 17.6bp respectively).

G18: Oversubscription: G&S vs Conventional Bonds



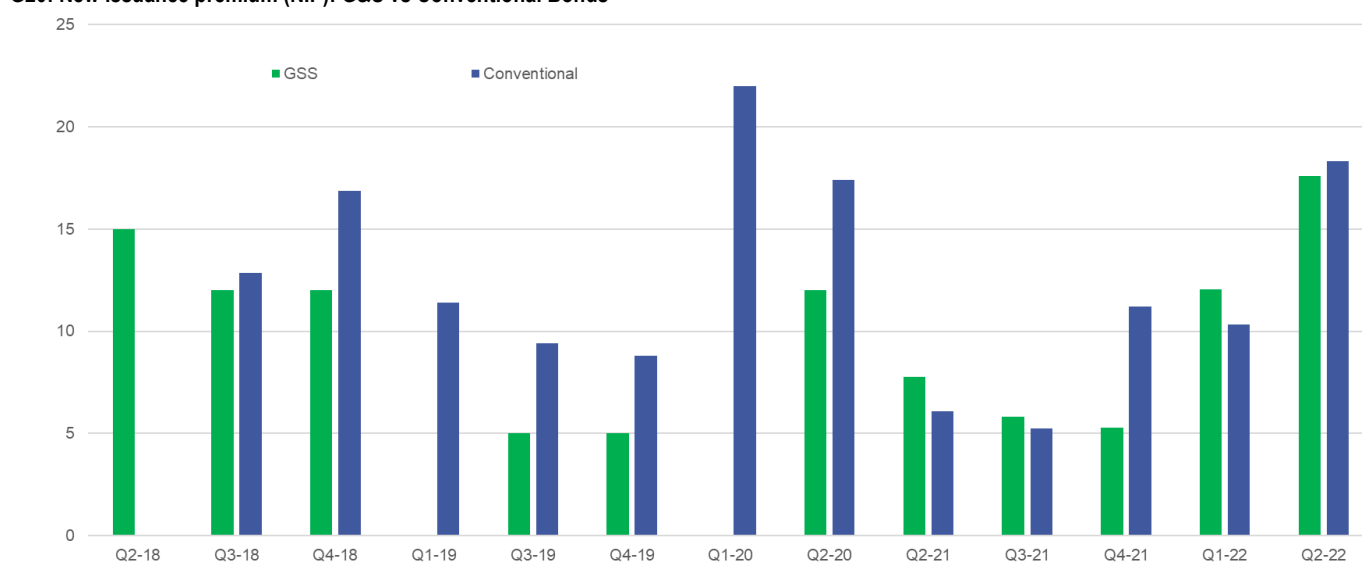
Sources: Bloomberg, Natixis

G19: Spread – IPT: G&S vs Conventional Bonds



Sources: Bloomberg, Natixis

G20: New issuance premium (NIP): G&S vs Conventional Bonds

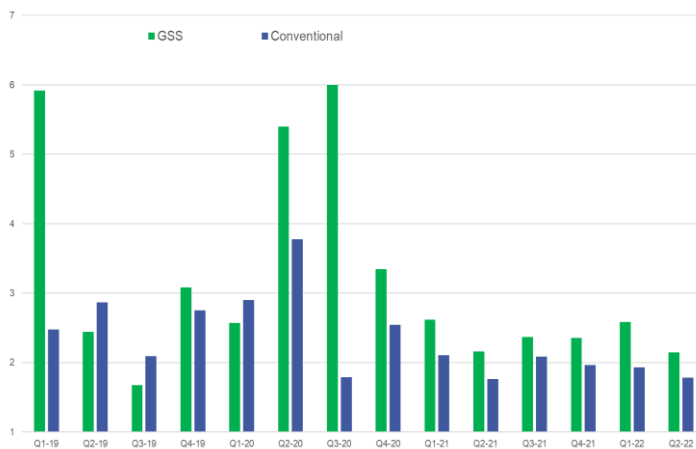


Sources: Bloomberg, Natixis

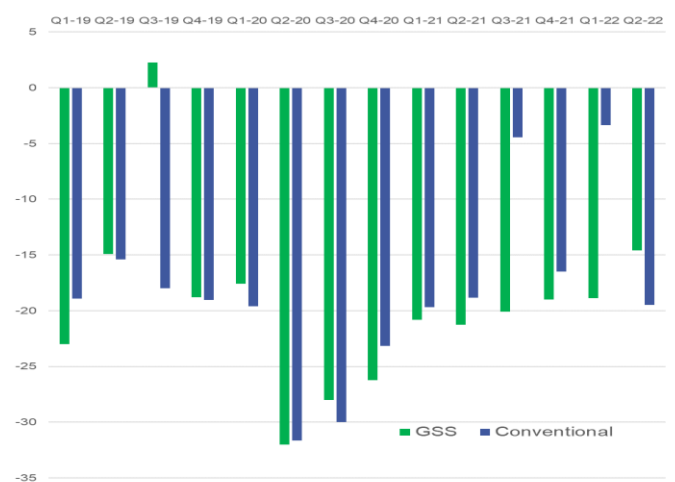
Focus on €-denominated Senior Non-Preferred Financial debt

- Like senior preferred debts, **ESG Senior non-preferred registered a low level of issuances (€3.75bn) compared to last quarter (€7.6bn)**. Dutch banks were particularly active on this segment with a share of 53% of ESG deals.
- Investors' appetite for G&S bond format in this category consistently exceeds their demand for comparable conventional bonds since Q1-20**, as shown by quarterly average oversubscription rates for both G&S and conventional bond formats (**BTC 2.15x vs 1.8x for conventional bonds**). On May 17th, Deutsche Bank attracted a strong interest with an orderbook of €3bn for its 6Y €500m non-preferred green bond. The deal benefited from a BTC of 6x.
- Trends in average spread compression versus the IPT in this category are heterogeneous over time. In Q2-22, G&S issuances achieved lower average spread compression versus the IPT than their conventional peers** (14.6bp for ESG bonds vs 19.5bp for conventional bonds).
- Average NIP stood at a high level in line with the last quarter, but we observed a slightly lower NIP for ESG bonds (c.17bp) than for conventional bonds (c.20bp).

G21: Oversubscription: G&S vs Conventional Bonds



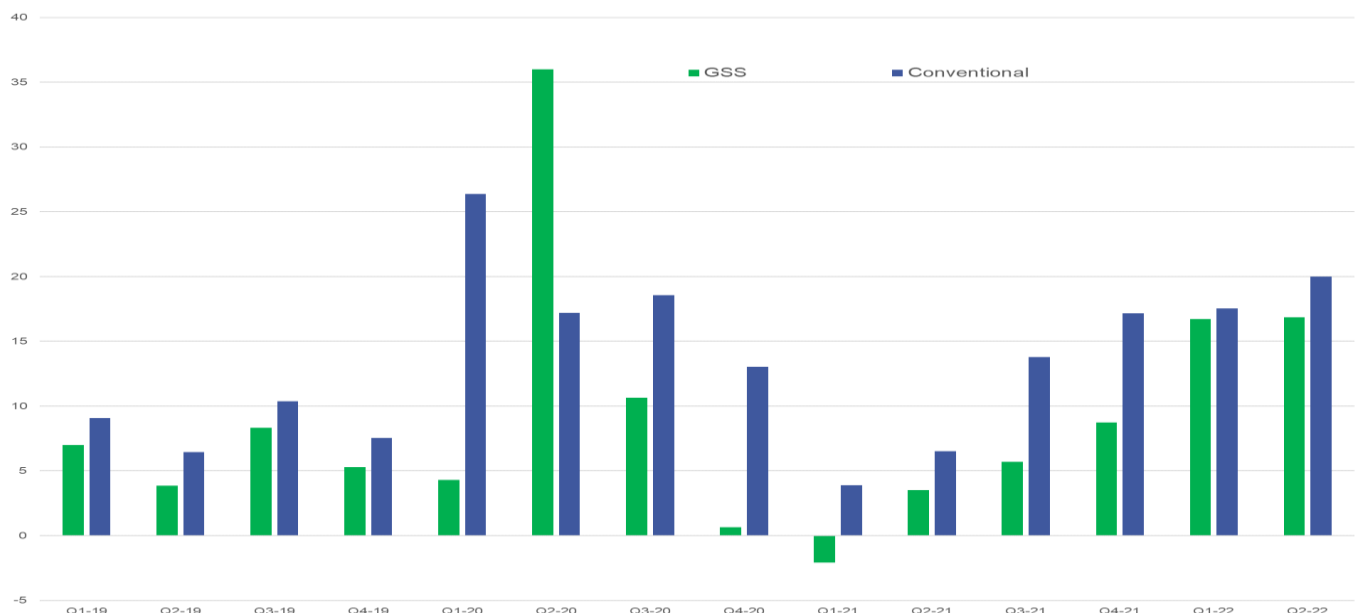
G22: Spread – IPT: G&S vs Conventional Bonds



Sources: Bloomberg, Natixis

Sources: Bloomberg, Natixis

G23: New issuance premium (NIP): G&S vs Conventional Bonds

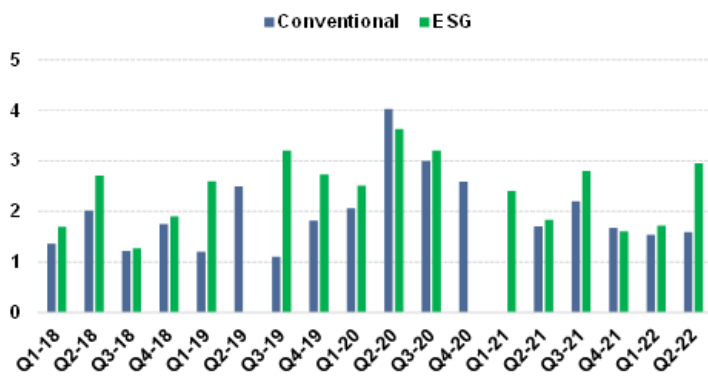


Sources: Bloomberg, Natixis

Focus on €-denominated Covered bonds

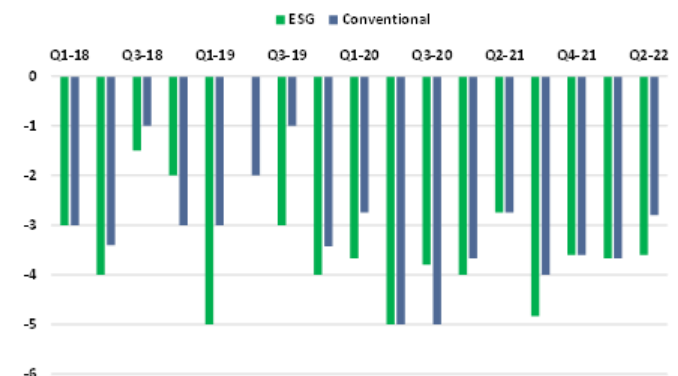
- ESG covered bond issuances reached a record this quarter with a total volume of €7bn, increasing by 56% compared to Q1-2021 and by nearly 80% compared to Q1-2022. Their share in the covered bond market increased to represent 16.9% vs 5% in Q1-22.
- 11 ESG covered bond transactions came into the market this quarter, two of them were inaugural: **Bayern LB** issued its first green Mortgage Pfandbrief with a 10Y maturity, €500m at ms+8bp. and **PKO Bank Hipoteczny** priced its inaugural euro green covered bond : a 3.5Y €500bn at ms+36bp. The net proceeds of the first deal will refinance a railroad project whereas the second transaction will be used to finance and refinance green residential mortgages in Poland.
- By country, the largest **ESG issuers in terms of outstanding issue volume are in France (29%)**, followed by Germany (23%) and Norway (17%). Norway represents 17% of the ESG market while only seizing a 4% market share of the global covered bond market, just as South Korea represents 13% of the ESG market but has only issued ESG covered bonds. As a result, key covered bond players such as Canada are still absent from the ESG segment.
- ESG covered bonds have shown stronger outcomes in the primary executions compared to their conventional peers. With an average subscription ratio of 2.8x, investor demand for ESG covered bonds **strongly strengthened compared to the previous quarter (1.7x)**, while demand for conventional covered bonds stabilized (1.5x). That said, spread compression at launch remained stable compared to the previous quarters for covered bonds (3.7 bp on average) but decreased for conventional covered bonds. Regarding the new issue concession, ESG covered bonds offered on average a similar NIP compared to the previous quarter (c. 3bp on average). Conventional covered bonds however offered a significantly higher NIP (over 4bp on average).
- In terms of performance, **ESG covered bonds (30 days post issuance) performed the same way than conventional covered bonds after launch (0.58bp vs 0.61bp respectively).**

G24: Average BTC: G&S vs Conventional Bonds



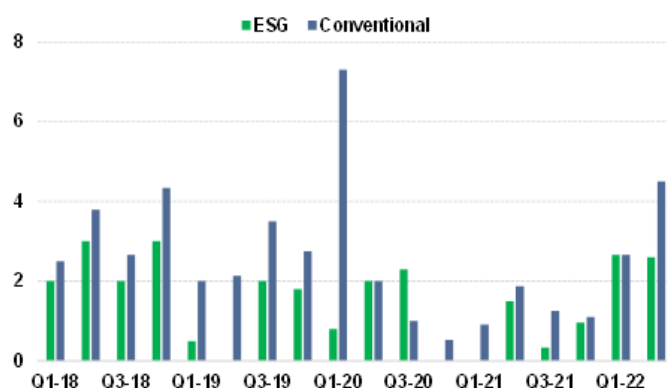
Sources: Bloomberg, Natixis

G25: Spread – IPT: G&S vs Conventional Bonds



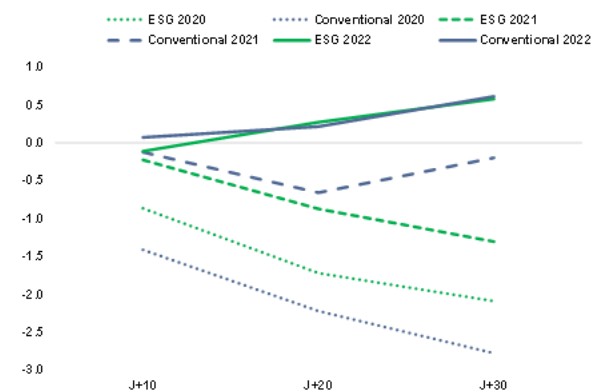
Sources: Bloomberg, Natixis

G26: New issuance premium (NIP): G&S vs Conventional Bonds



Sources: Bloomberg, Natixis

G27: Performance of new issues (1 month): G&S vs Conventional Bonds

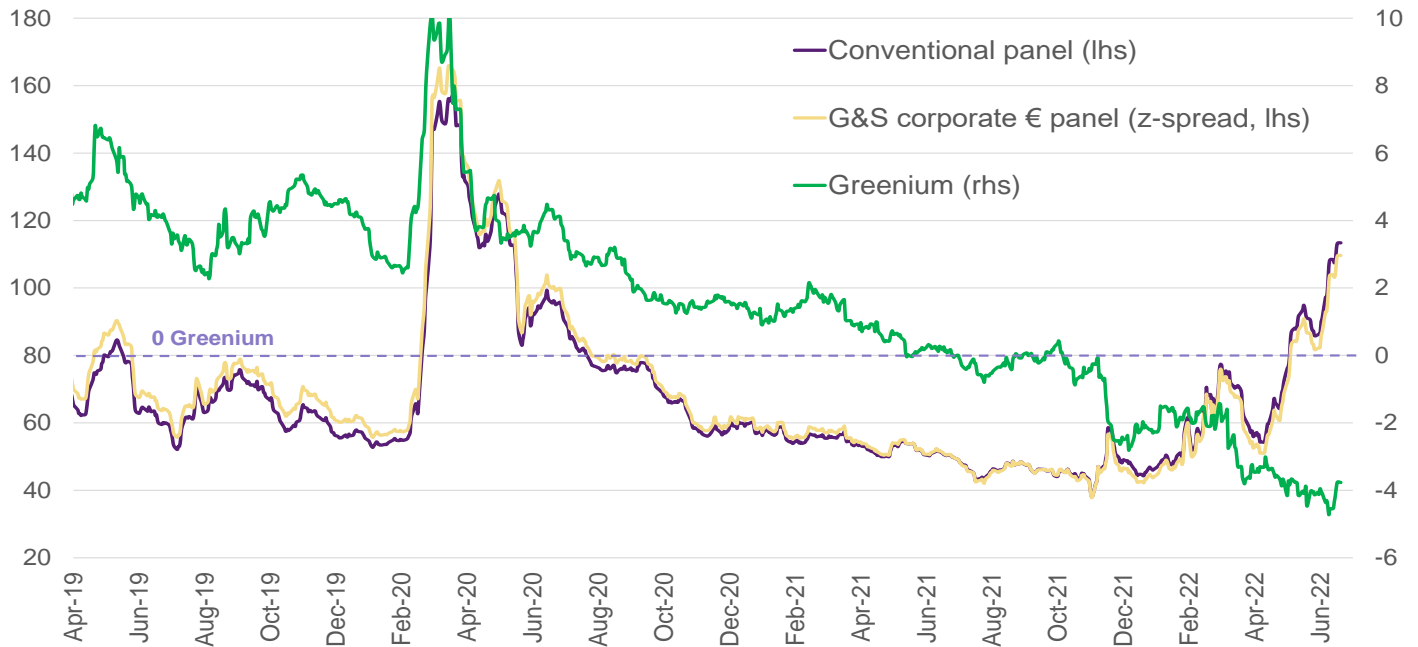


Sources: Bloomberg, Natixis

Focus on Corporate Greenium

- The Greenium has slightly expanded in the € corporate market during Q2-22 (0.5 pb on average), to almost 4 bp, and is close to its record level currently.

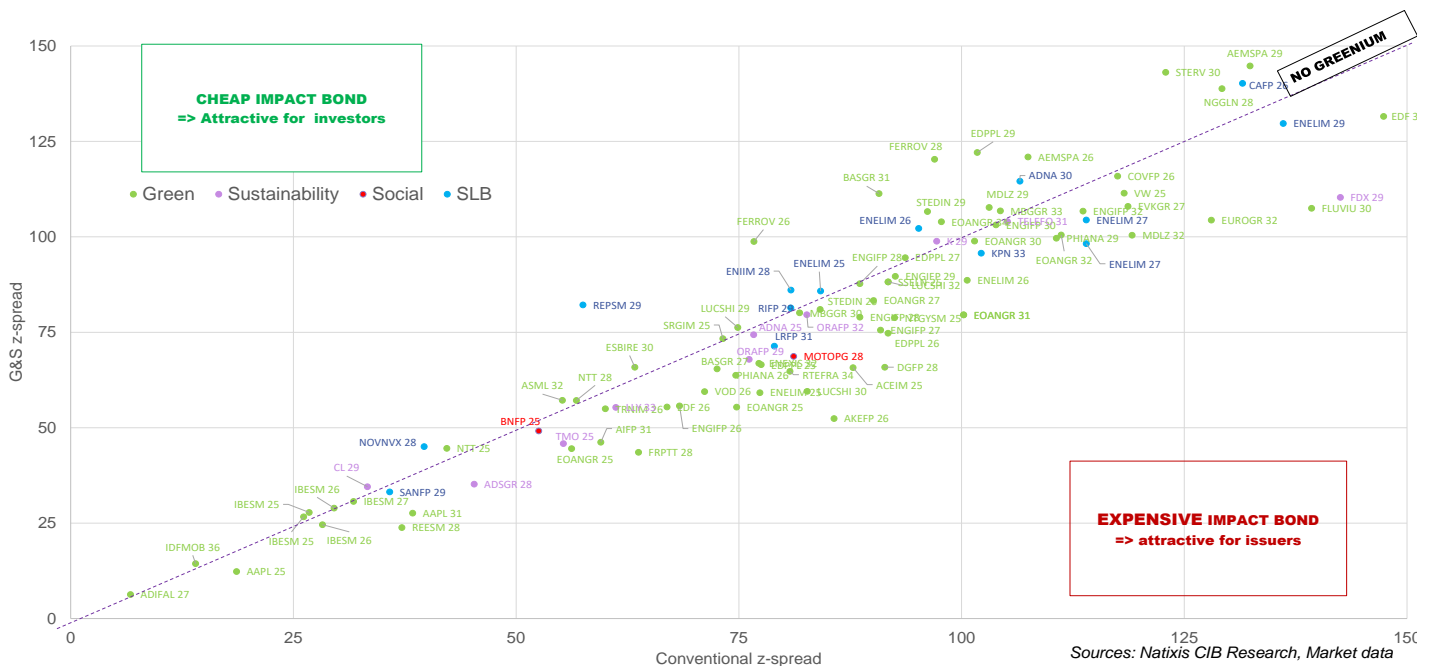
G28: New issuance premium (NIP): G&S vs Conventional Bonds



Sources: Natixis CIB Research, Market data

- 65% of secondary market Greenium are negative (i.e. G&S Bonds trading tighter than their conventional counterparts) for corporate bonds in €. Green, sustainability and Social bonds display Greenium in the range of 6 to 8 bp, while SLBs are actually trading wider than their conventional counterparts (by 2bp on average). This is particularly the case for those SLBs issued by Repsm, Tscoln, Aemspa and Lxsg (see chart below).

G29: Secondary Market Greenium in €-denominated corporate non-financial bonds



Sources: Bloomberg, Natixis

Natixis Research CIB

Head of CIB Research


Jean-François Robin

+33 1 58 55 13 09

jean-francois.robin@natixis.com

REAL ASSETS / ENR

Head of REAL ASSETS / ENR Research- Strategist


Thibaut Cuillière

+33 1 58 55 80 56

thibaut.cuilliere@natixis.com

Commodities

Base & precious metals


Bernard Dahdah

+44 20 321 691 31

bernard.dahdah@natixis.com

Oil, Natural Gas


Joel Hancock

+44 20 321 696 48

joel.hancock@natixis.com

High Yield


Kirill Talai

+33 1 58 55 06 54

kirill.talai@natixis.com

Hospitality


Philippe Suchet

+33 1 58 55 45 03

philippe.suchet@natixis.com

Infrastructure, Green & Hybrids


Ivan Pavlovic

+33 1 58 55 82 86

ivan.pavlovic@natixis.com


Radek Jan

+33 1 58 55 14 68

radek.jan@natixis.com

Infrastructure & Natural resources


Benoît Maynard

+33 1 58 55 09 76

benoit.maynard@natixis.com

Real Estate


Stéphanie Dossmann

+33 1 58 55 14 31

stephanie.dossmann@natixis.com


Jennifer De Almeida

+33 1 58 55 26 18

jennifer.faucon@natixis.com

Tech & data specialist


Micaella Feldstein

+33 1 58 55 80 83

micaella.feldstein@natixis.com


Eric Benoist

+44 20 32 16 93 97

eric.benoist@natixis.com

Sales team France

Institutional investors

+33 1 58 55 80 36

Corporates / BPCE retail network

+33 1 58 55 81 80

Sales team International

Austria/Zurich

+33 1 58 55 81 00

BeSwiLux

+33 1 58 55 83 96

Central Banks

+33 1 58 55 82 61

Germany

+49 69 91507 7300

Hong-Kong

+85 2 3900 84 32

Italy

+39 02 00 66 71 11

Netherlands

+33 1 58 55 08 43

Nordics

+44 203 216 9246

Spain/Portugal

+34 91 791 75 21

Singapore

+65 6228 5629

Tokyo

+81 3 3592 7550

UK & Ireland

+44 203 216 9249

US

+1 212 891 6281

Macro & Financial Institutions Research

Head of Macro & Financial Institutions Research



Nathalie Dezeure
+33 1 58 55 99 93
nathalie.dezeure@natixis.com

Financial Institutions



Bouchra RHABAL
+33 1 58 55 79 93
bouchra.rhabal@natixis.com



Samy Lakhdari
Tel. +33 1 58 55 24 45
samy.lakhdari@natixis.com

Covered Bonds



Jennifer Levy
+33 1 58 55 82 80
jennifer.levy@natixis.com

Macro Economic

Head of Europe Macro Research



Dirk Schumacher
+49 699 7153 354
dirk.schumacher@natixis.com

Spain, Portugal, Greece, Eurozone



Jesus Castillo
+33 1 58 55 99 90
jescastillo@natixis.com

Real Estate



Sylwia Hubar
+33 1 58 55 35 59
sylwia.hubar@natixis.com

France, Belgium, Eurozone



Véronique Janod
+33 1 58 55 34 28
veronique.janod@natixis.com

Eastern Europe, Middle East and Africa



Lysu Paez Cortez
+33 1 58 55 43 22
lysu.paezcortez@natixis.com

Solutions Research

Head of Solutions Research



Cyril Regnat
+33 1 58 55 82 20
cyril.regnat@natixis.com

Credit



Inna Mufteeva
+33 1 58 55 52 04
inna.mufteeva@natixis.com



Florent Pochon
+33 1 58 55 32 81
florent.pochon@natixis.com



Emilie Tetard
+33 1 58 19 98 15
emilie.tetard@natixis.com

Investment Strategies & Cross Asset

Forex



Nordine Naam
+33 1 58 55 14 95
nordine.naam@natixis.com



Celine Clari
+33 1 58 55 82 50
celine.clari@natixis.com



Hong My Nguyen
+33 1 58 55 07 51
hongmy.nguyen@natixis.com

Green & Sustainable

Rates

USD Derivatives / Vol / Stress Test



Guillaume Martin
+33 1 58 55 38 79
guillaume.martin@natixis.com

Disclaimer

This marketing communication and the information contained in this publication and any attachment thereto is exclusively intended for a client base consisting of professionals, eligible counterparties and qualified investors. This document and any attachment thereto are strictly confidential and cannot be divulged to a third party without the prior written consent of Natixis. If you are not the intended recipient of this document and/or the attachments, please delete them and immediately notify the sender.

Reference prices are based on closing prices (if mentioned in this document).

Distribution, possession or delivery of this document in, to or from certain jurisdictions may be restricted or prohibited by law. Recipients of this document are required to inform themselves of and comply with all such restrictions or prohibitions. Neither Natixis, nor any of its affiliates, directors, employees, agents or advisers or any other person may be deemed liable to any person in relation to the distribution, possession or delivery of this document in, to or from any jurisdiction.

This document has been developed by our economists. It does not constitute a financial analysis and has not been developed in accordance with legal requirements designed to promote the independence of investment research. Accordingly, there are no prohibitions on dealing ahead of its dissemination.

This document and all attachments are communicated to each recipient for information purposes only and do not constitute a personalized investment recommendation. They are intended for general distribution and the products or services described herein do not take into account any specific investment objective, financial situation or particular need of any recipient. This document and any attachment thereto shall not be construed as an offer nor a solicitation for any purchase, sale or subscription. Under no circumstances should this document be considered as an official confirmation of a transaction to any person or entity.

This document and any attachment thereto are based on public information and shall not be used nor considered as an undertaking from Natixis.

Natixis has neither verified nor carried out independent analysis of the information contained in this document. Accordingly, no representation, warranty or undertaking, either express or implied, is made to the recipients of this document as to or in relation to the relevance, accuracy or completeness of this document or as to the reasonableness of any assumption contained in this document. Information does not take into account specific tax rules or accounting methods applicable to counterparties, clients or potential clients of Natixis. Therefore, Natixis shall not be liable for differences, if any, between its own valuations and those valuations provided by third parties; as such differences may arise as a result of the application and implementation of alternative accounting methods, tax rules or valuation models. The statements, assumptions and opinions contained in this document may be changed or may be withdrawn by Natixis at any time without notice.

Prices and margins are indicative only and are subject to change at any time without notice depending on, inter alia, market conditions. Past performances and simulations of past performances are not a reliable indicator and therefore do not anticipate any future results. The information contained in this document may include results of analyses from a quantitative model, which represent potential future events that may or may not be realized and is not a complete analysis of every material fact representing any product. Information may be changed or may be withdrawn by Natixis at any time without notice.

The statements, assumptions and forecasts contained in this document reflect the judgment of its author(s), unless otherwise specified, and do not reflect the judgment of any other person or of Natixis. The information contained in this document should not be assumed to have been updated at any time subsequent to the date shown on the first page of this document and the delivery of this document does not constitute a representation by any person that such information will be updated at any time after the date of this document.

Natixis shall not be liable for any financial loss or any decision taken on the basis of the information disclosed in this presentation and Natixis does not provide any advice, including in case of investment services. In any event, you should request for any internal and/or external advice that you consider necessary or desirable to obtain, including from any financial, legal, tax or accounting adviser, or any other specialist, in order to verify in particular that the transaction (as the case may be) described in this document complies with your objectives and constraints and to obtain an independent valuation of the transaction, its risk factors and rewards.

All of the views expressed in this report accurately reflect the author's personal views regarding any and all of the subject securities or issuers. No part of author compensation was, is or will be, directly or indirectly related to the specific recommendations or views expressed in this report. The personal views of authors may differ from one another. Natixis, its subsidiaries and affiliates may have issued or may issue reports that are inconsistent with, and/or reach different conclusions from, the information presented herein.

[Natixis may have Conflicts of Interest : Natixis may from time to time, as principal or agent, be involved in a wide range of activities globally, have positions in, or may buy or sell, or act as market maker in any securities, currencies, financial instruments or other assets which are the underlying of the instruments to which this presentation relates. Natixis activities related to those instruments may have an impact on the price of the relevant underlying asset and may give rise to conflicting interests or duties. Natixis may provide services to any member of the same group as the recipient of this presentation on or any other entity or person (a Third Party), engage in any transaction (on its own account or otherwise) with the recipient of the presentation or a Third Party, or act in relation to any matter for itself or any Third Party, notwithstanding that such services, transactions or actions may be adverse to the recipient of the information or any member of its group, and Natixis may retain for its own benefit any related remuneration or profit. In addition, Natixis may, whether by virtue of the types of relationships described in this paragraph or otherwise, from time to time be in possession of information in relation to a particular instrument that is or may be material in the context of that instrument and that may or may not be publicly available or known to you. Providing to you an indicative price quotation or other information with respect to any such instrument does not create any obligation on the part of Natixis to disclose to you any such information (whether or not confidential).]

The stocks/companies mentioned might be subject to specific disclaimers. Please click on the following link to consult them: <https://www.research.natixis.com/GlobalResearchWeb/main/globalresearch/DisclaimersSpecifiques>

Natixis is supervised by the European Central bank (ECB).

Natixis is authorized in France by the Autorité de Contrôle Prudentiel et de Régulation (ACPR) as a Bank -Investment Services Provider and subject to its supervision.

Natixis is regulated by the Autorité des Marchés Financiers in respect of its investment services activities.

Natixis is authorized by the ACPR in France and regulated by the Financial Conduct Authority (FCA) and the Prudential Regulation Authority in the United Kingdom. Details on the extent of regulation by the FCA and the Prudential Regulation Authority are available from Natixis' branch in London upon request.

In Germany, NATIXIS is authorized by the ACPR as a bank – investment services provider and is subject to its supervision. NATIXIS Zweigniederlassung Deutschland is subject to a limited form of regulation by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) with regards to the conduct of its business in Germany under the right of establishment there. The transfer / distribution of this document in Germany is performed by / under the responsibility of NATIXIS Zweigniederlassung Deutschland.

Natixis is authorized by the ACPR and regulated by Bank of Spain and the CNMV (Comisión Nacional del Mercado de Valores) for the conduct of its business under the right of establishment in Spain.

Natixis is authorized by the ACPR and regulated by Bank of Italy and the CONSOB (Commissione Nazionale per le Società e la Borsa) for the conduct of its business under the right of establishment in Italy.

Natixis, a foreign bank and broker-dealer, makes this report available solely for distribution in the United States to major U.S. institutional investors as defined in Rule 15a-6 under the U.S. securities Exchange Act of 1934. This document shall not be distributed to any other persons in the United States. All major U.S. institutional investors receiving this document shall not distribute the original nor a copy thereof to any other person in the United States. Natixis Securities Americas LLC, a U.S. registered broker-dealer and member of FINRA, is a subsidiary of Natixis. Natixis Securities Americas LLC did not participate in the preparation of this report and as such assumes no responsibility for its content. This report has been prepared and reviewed by authors employed by Natixis, who are not associated persons of Natixis Securities Americas LLC and are not registered or qualified as research analysts with FINRA, and are not subject to the rules of the FINRA. In order to receive any additional information about or to effect a transaction in any security or financial instrument mentioned herein, please contact your usual registered representative at Natixis Securities Americas LLC, by email or by mail at 1251 Avenue of the Americas, New York, NY 10020. The stocks mentioned might be subject to specific disclaimers. Please click on the following link to consult them: <http://research.intranet/GlobalResearchWeb/main/globalresearch/DisclaimersSpecifiques>

In Canada, Natixis operates through Natixis Canada Branch which is supervised and regulated by the Office of the Superintendent of Financial Institutions (OSFI) as a Foreign Bank Branch (Schedule 3– Lending only) . Natixis Securities Americas LLC is not a registered broker-dealer in any Canadian province but operates under the International Dealer Exemption in each province. NATIXIS is not a registered broker-dealer in any Canadian province and operates under the International Dealer Exemption in Quebec and Ontario. Any securities transaction or other offer, sale, or solicitation will be structured to be in compliance with such exemption.

Natixis Japan Securities Co., Ltd. (NJS) is a Financial Instruments Business Operator (Director General of Kanto Local Finance Bureau (Kinsho) No. 2527 and is supervised by the Financial Services Agency. NJS is a member of the Japan Securities Dealers Association and Type II Financial Instruments Firms Association. This document is intended solely for distribution to Professional Investors as defined in Article 2.31 of the Financial Instruments and Exchange Act. All of the views expressed in this report accurately reflect the author's personal views regarding any and all of the subject securities or issuers. No part of author compensation was, is or will be, directly or indirectly related to the specific recommendations or views expressed in this report. (I/WE, AUTHOR(S), WHO WROTE THIS REPORT HEREBY CERTIFY THAT THE VIEWS EXPRESSED IN THIS REPORT ACCURATELY REFLECT OUR(MY) PERSONAL VIEWS ABOUT THE SUBJECT COMPANY OR COMPANIES AND ITS OR THEIR SECURITIES, AND THAT NO PART OF OUR COMPENSATION WAS, IS OR WILL BE, DIRECTLY OR INDIRECTLY, RELATED TO THE SPECIFIC RECOMMENDATIONS OR VIEWS EXPRESSED IN THIS REPORT. The personal views of authors may differ from one another. Natixis, its subsidiaries and affiliates may have issued or may issue reports that are inconsistent with, and/or reach different conclusions from, the information presented herein.

In Hong Kong, this document is for distribution to professional investors only (as defined in the Securities and Futures Ordinance (Cap.571) of Hong Kong and any rules made under that Ordinance).

Natixis Singapore branch is regulated by the Monetary Authority of Singapore. This document is intended solely for distribution to Institutional Investors, Accredited Investors and Expert Investors as defined in Section 4A of the Securities and Futures Act of Singapore.

In Mainland China, Natixis Shanghai branch and Natixis Beijing branch are regulated in the PRC by China Banking and Insurance Regulatory Commission, the People's Bank of China, and the State Administration of Foreign Exchange for the engagement of banking business. This document is intended solely for distribution to Professional Investors who are authorized to engage in the purchase of Product of the type being offered or sold. PRC professional investors are responsible for obtaining all relevant approvals/licenses, verification and/or registrations themselves from relevant governmental authorities (including but not limited to China Banking and Insurance Regulatory Commission, the People's Bank of China, State Administration of Foreign Exchange and/or China Securities Regulatory Commission), and complying with all relevant PRC regulations, including, but not limited to, all relevant foreign exchange regulations and/or foreign investment regulations.

In Taiwan, Natixis Taipei Branch is regulated by the Taiwan Financial Supervisory Commission. This document is intended solely for distribution to professional investors in Taiwan for reference only.

In South Korea, this research material has been provided to you without charge for your convenience only. All information contained in this material is factual information and does not reflect any opinion or judgment by Natixis. The information contained in this research material should not be construed as offer, marketing, solicitation or investment advice with respect to any financial investment products mentioned in this material.

In Australia, Natixis has a wholly owned subsidiary, Natixis Australia Pty Limited ("NAPL"). NAPL is registered with the Australian Securities & Investments Commission and holds an Australian Financial Services License (No. 317114) which enables NAPL to conduct its financial services business in Australia with "wholesale" clients. Details of the AFSL are available upon request.

Natixis S.A. is not an Authorised Deposit-Taking Institution under the Australian Banking Act 1959, nor is it regulated by the Australian Prudential Regulation Authority. Any references made to banking in the document refer to Natixis activities outside of Australia.

Natixis is authorized by the ACPR and regulated by the Dubai Financial Services Authority (DFSA) for the conduct of its business in and from the Dubai International Financial Centre (DIFC). The document is being made available to the recipient with the understanding that it meets the DFSA definition of a Professional Client; the recipient is otherwise required to inform Natixis if this is not the case and return the document. The recipient also acknowledges and understands that neither the document nor its contents have been approved, licensed by or registered with any regulatory body or governmental agency in the GCC or Lebanon.

In Oman, Natixis neither has a registered business presence nor a representative office in Oman and does not undertake banking business or provide financial services in Oman. Consequently, Natixis is not regulated by either the Central Bank of Oman or Oman's Capital Market Authority.

This document has been prepared by Natixis

The information contained in this document is for discussion purposes only and neither constitutes an offer of securities in Oman as contemplated by the Commercial Companies Law of Oman (Royal Decree 4/74) or the Capital Market Law of Oman (Royal Decree 80/98), nor does it constitute an offer to sell, or the solicitation of any offer to buy non-Omani securities in Oman as contemplated by Article 139 of the Executive Regulations to the Capital Market Law (issued vide CMA Decision 1/2009). Natixis does not solicit business in Oman and the only circumstances in which Natixis sends information or material describing financial products or financial services to recipients in Oman, is where such information or material has been requested from Natixis and by receiving this document, the person or entity to whom it has been dispatched by Natixis understands, acknowledges and agrees that this document has not been approved by the CBO, the CMA or any other regulatory body or authority in Oman.

Natixis does not market, offer, sell or distribute any financial or investment products or services in Oman and no subscription to any securities, products or financial services may or will be consummated within Oman.

Nothing contained in this document is intended to constitute Omani investment, legal, tax, accounting or other professional advice.

In Qatar, the information contained in this document has been compiled in good faith with all reasonable care and attention and, to the best of our knowledge and belief, is correct at the time of publication and does not omit any data available to us that is material to the correctness of such information. Any opinions expressed herein have been formed in good faith on the relevant facts available at the time of its formation.