

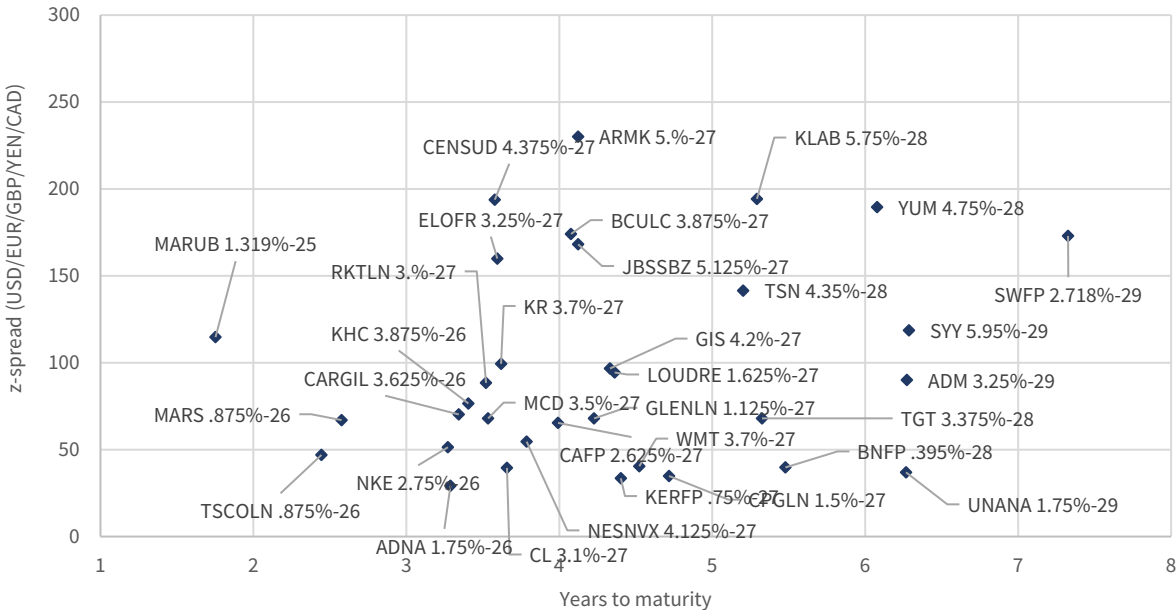
RDCP: Deforestation exposure in liquid credit portfolios

Stéphanie Mielnik, CFA (*), Ulf Erlandsson

This paper introduces a universe of credits, the Representative Deforestation Credit Portfolio (RDCP), deemed relevant for liquid credit portfolios seeking to manage deforestation exposure. The task of analysing nature loss in general, and deforestation in particular, from a fixed income portfolio management perspective can quickly become overwhelming. An investor has to decide on what type of exposures are: (1) relevant (“does an issuer’s activities matter in terms of deforestation?”), (2) whether the issuers are significant from a fixed income perspective (“is it something that is significant to my portfolio?”), and (3) whether the issuer is a constructive or destructive force in the context of deforestation (“what is the impact and reputational upside/downside from being invested in the issuer”).

The RDCP has been set up to provide guidelines to the first two questions (“important deforestation exposures in a general credit portfolio”), and lead on further guidance on the last question (“good or bad?”) over time. AFII analysis will be targeted towards that end, as well as combining the RDCP with other AFII tools, such as counterparty selection mechanisms (‘The Box’), sustainability-linked bonds (SLBs, CORL) as well as model portfolio implementations (to be further disclosed in 2024).

Figure 1. Representative Deforestation Credit Portfolio (RDCP). The RDCP consists of representative intermediate bonds of deforestation relevant corporate issues. Spreads are on local currency basis, mostly USD and EUR. Pricing as of 18 Dec 2023. Source: AFII, Bloomberg.



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 (*) Anthropocene Fixed Income Institute (www.anthropocenefii.org), Author for contacts: sbm@anthropocenefii.org

Introduction

Investors' focus on deforestation and nature-loss is growing¹, and so is regulatory focus²: the purpose of the RDCP is to allow investors to be ahead of that curve rather than being reactive to new developments.

There are only a few investment products broadly available to market participants that are addressing deforestation explicitly. Among the public initiatives, the Collier FAIRR Protein Producer Index is the main benchmark for tracking listed global meat, dairy and aquaculture companies on their environmental performance.³ However, many companies involved in the sector are privately held and only engageable through fixed income markets.⁴ Furthermore, earlier this year, Storebrand Asset Management and UNFCCC released an approach to create deforestation-free investment portfolios.⁵

To our knowledge, there are currently no corporate fixed income indices designed to explicitly track financial performance of companies most exposed to deforestation risk in their supply chains. Such exercises quickly run into methodological questions on data, but also on perceived impact. At the core stands the question of whether exposure is the same as (negative) impact. It is straightforward to design an index with little negative impact, but also very little exposure. Rather than pursuing a benchmark of 'good' or 'bad' exposures, the RDCP has been created as a basis for extended analysis and evaluation of the companies and securities that – based on the AFII Deforestation Score⁶ – are most relevant to global investors, in terms of deforestation exposure. It bears repeating, the focus of the RDCP is companies' exposure to deforestation risk rather than simply targeting poorly performing companies. It should be seen as a first step towards understanding the dynamics of exposure, which then can lead into a more sophisticated leaders vs laggards tiering.

The extent of a company's exposure to deforestation can vary based on its position within the global food market supply chains. As an illustrative example, downstream companies like JBS or Cargill, which are involved in trading and production, have a more direct connection to activities contributing to deforestation compared to upstream retailers like supermarkets.⁷ However, retailers also play an important role in setting ambitious sourcing policies aiming for zero-deforestation. This is why the RDCP includes companies belonging to various sectors related to both upstream and downstream, offering visibility to the full spectrum of deforestation exposure.

The subsequent sections detail the process we use to select companies and securities for inclusion in the RDCP. In the first section, we explain AFII's methodology for assessing companies' exposure to deforestation associated with beef, leather, and soy: this is the AFII's Deforestation Score (ADS). The next section provides a comprehensive explanation of how the RDCP is constructed, based on liquidity criteria. We subsequently review the list of companies, making manual adjustments as

¹ [“Exclusive: Investors may exit consumer goods firms over EU deforestation law”](#), Reuters, 14 Jun 2023, [“Storebrand: Creating deforestation-free investment portfolios”](#), Climate Champions, 7 Aug 2022.

² [“EU deforestation law: fire on the horizon for soy traders?”](#), AFII, 13 Sep 2023.

³ [“Collier FAIRR Protein Producer Index”](#). Accessed 16 Oct 2023.

⁴ [“Bond investors can engage as effectively as equity counterparts”](#), ETF Stream, 27 Jul 2023.

⁵ [“Storebrand: Creating deforestation-free investment portfolios”](#), Storebrand, Aug 2022.

⁶ The AFII Deforestation Score, a tailor-made score based on data provided by Forest500, CDP and Trase Finance is described in subsequent section.

⁷ For an example of the intricate links between deforestation, producers and supermarkets, see [“Tesco: a basket of problems for the Amazon”](#), Mighty Earth, 13 Apr 2023.

needed to create a portfolio that is well-balanced between sub-sectors. In the last section, we present an illustrative example of performance analysis for the RDCP and its components.

The RDCP will serve several purposes for AFII’s coverage of deforestation risks in credit:

- A benchmark for performance, both in terms of relative performance of issuers within the RDCP, as well as performance versus the broader credit market.
- A focus list for fundamental deforestation and credit research, as exemplified by the rightmost column of Table 1.
- A distillation of baseline deforestation policies of the larger credits with deforestation exposure.
- An engagement tool for primary market process, to advocate for nature loss mitigation.
- Opportunities for labelled debt bond issuance, such as green bonds or sustainability-linked bond structures,⁸ further outlined in the sections below.⁹
- A baseline universe for tracking bank engagement with deforestation exposed companies, through AFII’s “The Box” methodology.¹⁰

As an example, Table 1 highlights some of the name-specific research on RDCP emanating from AFII to date. Other AFII articles on the deforestation/nature loss space include: [“ICA Gruppen green bond: deforestation risk”](#); [“EU deforestation law: fire on the horizon for soy traders”](#), [“Kunming-Montreal agreements: a bond perspective”](#) and more to be found under the [AFII Nature loss theme](#).

Table 1. RDCP research from AFII as of Nov-23. Source: AFII, Bloomberg.

Issuer name	Rep. bond description	Rep. bond ISIN	Agg. rating	Sub-sector	Research
Minerva	BEEFBZ 4.375%-29	USL6401PAJ23	BB	Packaged Food	“Minerva bond issuance: beef up your due diligence” ; “Marfrig to Minerva asset sale: decoding the wood from the trees”
JBS	JBSSBZ 5.125%-27	USL56608AK55	BBB-	Packaged Food	“The Forensic Carbon Accountant: JBS SLB” ; “JBS: A meaty SLB impact proposal” ; “Pilgrim’s Pride: tender-izing the meat bond market”
Cargill	CARGIL 3.625%-26	US141781BV58	A	Agri. Producers	“Cargill: EUR bond, EU deforestation regulation”
Glencore	GLENLN 1.125%-27	XS2228892860	BBB+	Base Metals	“Glencore: implications for iTraxx investors” ; “Bunge-Viterra merger: an ESG analysis”
ELO / Auchan	ELOFR 3.25%-27	FR0013524865	BBB-	Food & Bev. Whslrs	“Le SLB d’Auchan, il change la vie?”
Carrefour	CAFP 2.625%-27	FR0013505260	BBB+	Food & Drug Stores	“Carrefour SLB: market update”

⁸ [“Agri-food Transition Principles”](#), CBI, 7 Dec 2022.

⁹ The interested reader may fast-forward to Table 9 and Table 10 below for an overview.

¹⁰ [“The Box: algorithmic climate impact for FI markets”](#), AFII, 15 Sep 2021, and [“The Box: a tool for bank influence”](#), AFII, 20 Dec 2023.

The AFII Deforestation Score (ADS)

A starting point for the RDCP is to build a method to decide which issuers are deemed “representative”. The RDCP does not include sovereign bonds, which are to be subjected to a different kind of analysis, and generally covered in other AFII research.¹¹ Furthermore, there will be several credits on the cusp of entering the RDCP, that may be considered relevant, but are not included due to illiquidity or other thresholds not being met.¹² Irrespective of inclusion in the RDCP or not, names with deforestation exposures can be benchmarked both in terms of nature loss performance as well as credit metrics versus the RDCP.

Considering that the deforestation data landscape is currently scarce and patchy, such a method will need to be robust to sparse data sets. While organisations such as Forest500¹³ or Trase Finance¹⁴ provide deforestation data suitable for inclusion in investment strategies, the data coverage is incomplete and not comparable across providers.

Therefore, to compare companies with a single score, the AFII has created its own deforestation score, the ADS, aggregating data from various providers and across different deforestation vectors:

- Relevance (**RS**) in the context of agricultural supply chains (i.e. potential level of impact on deforestation). For instance, a soy producer has a more direct impact on deforestation compared to a retailer, giving them greater influence over the production processes potentially contributing to deforestation.
- Issuers’ public commitments and transparency (**CCT**). Such criteria will help to evaluate the future prospects of a company’s deforestation exposure. For example, a company may be highly exposed to deforestation but is actively implementing a robust strategy to address it, making it less risky from a forward-looking standpoint.
- Financial materiality (**FMS**) to deforestation. This concerns the potential financial consequences of a significant exposure to deforestation risk.

The metrics (further outlined below) is based on three deforestation data providers – Forest500, CDP and Trase - each offering publicly available sets of information about companies’ deforestation exposure. Table 3 summarizes the data sets with further information about the data providers in Appendix A.

Depending on how well they perform, companies receive a score ranging from 1 to 4 points for each pillar (RS/CCT/FMS), in an increasing scale (i.e., 1 point being assigned to the best performers, and 4 for the worst).

¹¹ See “[Offi-Chile the largest sovereign SLB issuer](#)”, AFII, 29 Jun 2023; “[Uruguay SLB: market update](#)”, AFII, 5 Jun 2023; “[Sri Lanka: restructuring with biodiversity links?](#)”, AFII, 10 Feb 2022.

¹² See, for example, “[Pilgrim's Pride: tender-ising the meat bond market](#)”, AFII, 6 Oct 2023.

¹³ Web site: <https://forest500.org/>

¹⁴ Web site: <https://trase.finance/>

Table 2. Cross comparison of deforestation data providers.

		FOREST500	CDP	TRASE
COMMODITIES ASSESSED	Palm oil	X	X	X
	Soy	X	X	X
	Beef	X	X	X
	Leather	X		
	Timber	X	X	
	Pulp and paper	X		
INFORMATION SOURCES		Public information	Questionnaire	Public information
PUBLIC AVAILABILITY		Yes	Partial	Partial
MARKET RECOGNITION		Yes	Yes	Yes
RELEVANCE FACTOR		Companies' commitments	Companies' commitments	Deforestation risk exposure
FRAMEWORK		Afi ¹⁵	Afi	NA
AUDITED DATA		Partial	No	Partial

Relevance score (RS)

The RS is a measure of its potential impact on deforestation where we define a company's relevance in the context of deforestation based on two elements:

- Exposure: this is the actual impact on deforestation in terms of exposure risk to the hectares of deforested areas. This metric is calculated as the sum of each commodity deforestation risk as provided by Trase Finance.
- Flag: Whether the company is flagged by CDP/Forest500 for its exposure to deforestation.

Table 3 (left panel) shows how we map the Exposure and Flag into the 1-to-4-point system.

Company commitment and transparency score (CCT)

Whereas the RS score looks at exposure, it says less about how an issuer's current and future policies with regards to whether their deforestation strategies are aligned with general deforestation mitigation portfolio strategies. To assess this, we deploy two rankings, based on Forest500 and CDP deforestation scores respectively and map those to an overhead CCT score, see Table 3 right panel. Companies reporting under neither framework are being assigned the lowest score.

Table 3. Relevance score (RS, left panel), and Company Commitment and Transparency Score (CCT, right panel).

Data conditions	RS score	Forest500 score	CDP score	CCT score
Exposure > universe's median exposure	4	3/5	A/B	1
CDP score and Forest500 and Exposure < DE universe's median	3	2/5	C	2
Forest500 score or CDP score	2	1/5	D	3
No score	1	0	E/F	4

¹⁵ [Accountability Framework Initiative](#) (Afi) supports companies in setting goals, taking action and tracking progress in ethical supply chains, focused on agricultural and forestry products.

Financial materiality score (FMS)

In September 2022, UNFCCC released a report on the financial implications of land-use transition and more specifically how deforestation may impact the financial performance of investment portfolios.¹⁶

“The analysis finds that incoming policy and demand shifts could drive permanent value loss across the critical, but overlooked, food and agriculture sector. Individual firms at the centre of the global food supply system could lose up to 26% of their value by 2030, with a sector average hit of over 7%.”

The UNFCCC’s analysis evaluates the transition risk across six upstream and downstream sectors linked to the food industry in terms of the estimated net present value (NPV) change between 2020 and 2030. Results are summarised in Figure 2.

Figure 2. Transition risk for companies in the food sector. Source: UNFCCC.

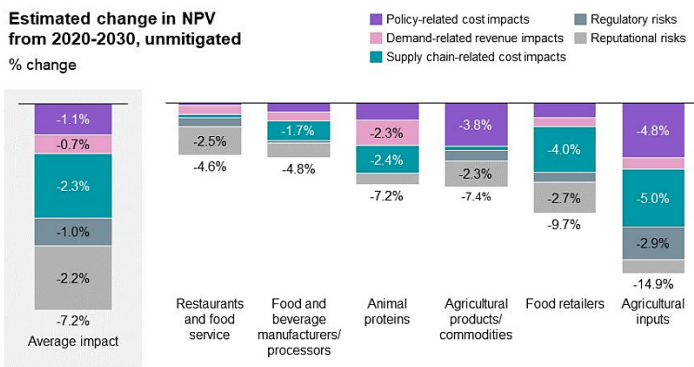


Table 4. Mapping for the Financial Materiality Score (FMS).

Sector	Sector financial risk score
Restaurants and food service	1
Food and beverage	1
Animal proteins	2
Agricultural	2
Food retailers	3
Agricultural inputs	4

Leveraging on the UNFCCC report, we score the financial risk of the companies in our universe on a sector basis along the evidence presented in Figure 2, and with the mapping as shown in Table 6. This means that the Agri input sector scores the highest, 4, whereas downstream companies in the Restaurants and Food and Beverage sectors score a 1.

Aggregating factors into the AFII Deforestation Score (ADS)

The ADS is finally evaluated by adding up companies’ RS, CCT and FMS scores, with the RS score being given twice the weighting to account for the fact that some companies are more exposed to deforestation in their supply chains:

$$ADS = 2 \times RS + CCT + FMS$$

Companies are thus scored out of 16 points with the highest score being given to companies most exposed to/with the highest financial risk linked to deforestation (see Table 7). Admittedly, this is a somewhat subjective weighting and will be subject to revision in future versions.

¹⁶ [“Assessing the financial impact of the land use transition on the food and agriculture sector”](#), UNFCCC, Sept 2022. Further implementations on sectoral scoring is forthcoming, e.g. [“Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy”](#), World Economic Forum, 19 Jan 2020.

Table 5. Companies maximum score per pillar. Source: AFI

Pillar	Commitment area	Maximum points
Relevance Score (RS)	Relevance of the companies within deforestation supply chain	8
Financial Materiality Score (FMS)	Potential company valuation impact of deforestation exposure	4
Companies Commitment Score (CCT)	Public commitments towards ending deforestation in their supply chains	4
TOTAL		16

RDCP construction

The universe of companies from which the RDCP is defined by consultation with partner organisations active in the deforestation space as well as internal analysis, with the starting set of 177 names given in Appendix B. The universe of companies from which the RDCP is defined is arrived at by consultation with partner organisations active in the deforestation space as well as internal analysis, with the starting set of names given in Appendix B. The consultation aims to identify companies that are key market players for target commodities, namely soy, cattle, and leather. The full universe and the subsets of it are continuously reviewed, with the main revision happening on the first quarter of every year. The process for defining the starting universe may be amended in future versions of the index. As of December 2023, there are 167 companies in the starting universe.

Security selection

Companies within the universe can issue a wide variety of fixed income securities, as well as have substantial secondary fixed income exposure through the (bank) loan market. The RDCP combines securities from both emerging and developed markets. Each company is represented by only one security in the RDCP, selected as the perceived most liquid (hard currency, if possible) bond on the intermediate part of the maturity curve, and the senior unsecured part of the capital structure. As below there are several considerations:

Security type: the universe includes bullet or callable fixed-rate securities. Step-up securities such as sustainability-linked bonds and green, social and sustainability (GSS) bonds are eligible.

Maturity: eligible securities must have a maturity of at least three years and less than eight years as measured on the index review date.

Credit rating quality: investment grade, high yield and non-rated securities are eligible. Defaulted bonds are excluded from the investable universe.

Issuer – country of domicile: securities domiciled in both developed markets and emerging markets are eligible.

Sectors: the benchmark relies on the Corporate GICS sectors classification. Eligible securities must be classified as either Food and Beverage, Paper, Supermarkets, Metals and Mining, Retailers, Consumer Cyclical Services, Restaurants, Other Industrial or Consumer Products.

Liquidity: Our liquidity analysis relies on parameters including outstanding debt in hard currencies, whether there is an actively traded credit default swap (CDS), and frequency and size of issuances.

Using these factors for ranking issuers and securities in terms of credit market relevance, we then concurrently apply a ranking using the ADS methodology and apply cut-offs for both factors. This results in a selection of bonds from 35 companies out of the 177 issuers listed in the initial set.

The representative portfolio

Following the above procedure, the current RDCP with its 32 issuers is shown in Table 8, with data added on total debt outstanding, average maturity and aggregate ratings. Furthermore, we flag if the issuer has labelled bonds outstanding (green or sustainability-linked), as such bonds often provide more information and engagement opportunities with the issuer. The specific labelled bonds from the RDCP are provided in Table 9 and Table 10.

Figure 4 breaks down the distribution of the portfolio in terms of sectors and rating distribution. Clearly, the RDCP has a high exposure to various parts of the food-value chain, and from a ratings perspective, it is predominantly investment grade, with almost half the index in the broad BBB rating bucket. Figure 1 in the beginning provides a scatter plot of the representative bonds for the RDCP.

In Figure 3, we construct a basket of CDS for those issuers in the RDCP where the instruments are traded, and compare it with a benchmark CDS index, created as a weighted combination (to correspond to the RDCP weights) of the iTraxx Main, Xover, Japan and the CDX IG, high-yield and emerging-market indices. As shown in the graph, the correlation between the RDCP and the benchmark basket was quite high in the period 2019-2021, but there was a fair amount of divergence in 2022-23, with the RDCP outperforming substantially. This was likely to be driven by sector differences between the RDCP, but a more specific analysis will be provided as part of future research. Single-name CDS spreads are also provided in Figure 5 (further down), showing little evidence of any large RDCP idiosyncratic shocks to drive a divergence from the benchmark basket.

Figure 3. Relative performance of a basket of traded RDCP credits versus a similar weighted portfolio of iTraxx Main/Xover, CDX.IG and CDX.HY, iTraxx Japan and CDX.EM; all in generalized series (2019-2023). Source: Bloomberg, AFII.

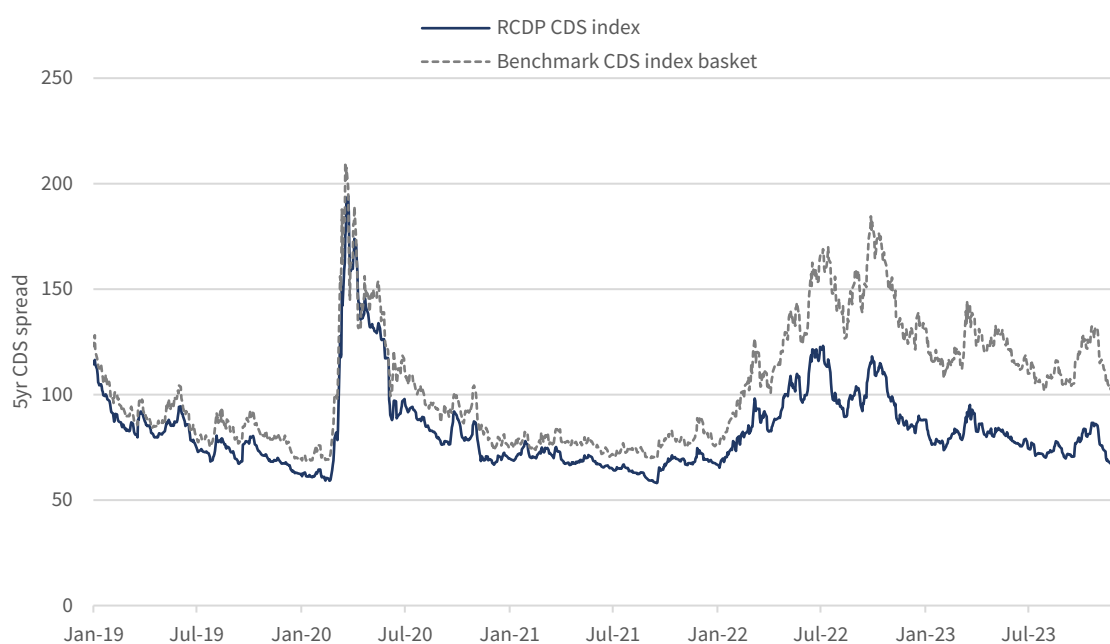


Table 6. RDCP based on ADS score and AFII's liquidity review. Source: Bloomberg, AFII.

Issuer name	Rep. bond description	Rep. bond ISIN	Debt (USDbn) / # of issues	Debt avg. maturity	Home currency	Agg. rating	Sub-sector	ADS	GSSS+
Frigo.Concepcion	FRICON 7.7%-27	USP4R54KAA49	0.3 / 1	4.6	PYG	B	Agri. Producers	10	
Klabin	KLAB 5.75%-28	USA35155AA77	2.2 / 5	11.3	EUR	BB+	Paper	14	+
Louis Dreyfus	LOUDRE 1.625%-	XS2332552541	1.3 / 4	3.0	EUR	BBB-	Agri. Prod.	14	+
Minerva	BEEFBZ 4.375%-29	USL6401PAJ23	2.5 / 4	7.9	EUR	BB	Packaged Food	9	
JBS	JBSSBZ 5.125%-27	USL56608AK55	9.8 / 31	12.2	USD	BBB-	Packaged Food	8	+
Archer-Daniels	ADM 3.25%-29	US039482AB02	8.5 / 23	13.4	USD	A	Agri. Prod.	12	+
Cargill	CARGIL 3.625%-26	US141781BV58	13.1 / 49	10.0	USD	A	Agri. Producers	11	
Tesco	TSCOLN .875%-26	XS2086868010	4.6 / 18	6.8	GBP	BBB-	Food & Drug	11	+
Sodexo	SWFP 2.718%-29	USU8336LAB46	1.3 / 11	3.6	USD	BBB+	Food Services	7	
Glencore	GLENLN 1.125%-	XS2228892860	2.7 / 35	6.1	EUR	BBB+	Base Metals	10	
Kroger	KR 3.7%-27	US501044DJ76	9.8 / 20	13.0	USD	BBB	Food & Drug	10	
Target	TGT 3.375%-28	US87612EBH80	14.3 / 20	11.3	USD	A	Mass Merchants	10	
Ahold Delhaize	ADNA 1.75%-26	XS2150015555	4.3 / 13	4.7	EUR	BBB	Food & Drug	10	+
Kraft Heinz	KHC 3.875%-26	US50077LBC90	19.5 / 32	13.1	USD	BBB-	Packaged Food	8	
Sysco	SY 5.95%-29	US871829BL07	10.6 / 20	13.0	USD	BBB	Food & Bev.	6	+
Tyson Foods	TSN 4.35%-28	US902494BK88	7.7 / 10	10.8	USD	BBB	Packaged Food	10	
ELO / Auchan	ELOFR 3.25%-27	FR0013524865	5.1 / 10	2.9	EUR	BBB-	Food & Bev.	9	
General Mills	GIS 4.2%-27	US370334CG79	12.1 / 22	7.1	USD	BBB	Packaged Food	9	+
Compass	CPGLN 1.5%-27	XS1876069185	1.9 / 10	3.9	EUR	A-	Food Services	9	+
Carrefour	CAFP 2.625%-27	FR0013505260	8.3 / 19	3.6	EUR	BBB+	Food & Drug	9	+
Walmart	WMT 3.7%-27	US931142EE96	40.5 / 46	10.7	USD	AA	Food & Drug	11	+
Nestle	NESNVX 4.125%-27	USU74078CS01	30. 0 / 80	7.3	USD	AA-	Packaged Food	7	
Cencosud	CENSUD 4.375%-	USP2205JAQ33	2.6 / 14	8.6	CLP	BBB-	Food & Drug	8	
Brands Int/BK	BCULC 3.875%-27	US68245XAH26	6.4 / 5	5.2	CAD	BB	Food Services	8	
Kering	KERFP .75%-27	FR0013512407	10.8 / 16	5.6	EUR	A	Apparel,	8	
Marubeni	MARUB 1.319%-25	XS2226703655	3.4 / 26	7.1	JPY	BBB	Food & Bev.	7	+
Mars	MARS .875%-26	US571676AJ44	10.0 / 26	14.1	USD	A	Packaged Food	7	
McDonald's	MCD 3.5%-27	US58013MFP41	39.1 / 59	10.5	USD	BBB+	Restaurants	7	
Yum!	YUM 4.75%-28	USU9T71RAB76	4.6 / 7	8.0	USD	BB-	Restaurants	7	
Reckitt Benckiser	RKTLN 3.0%-27	USG7420TAE67	7.1 / 11	5.4	GBP	A-	Home Products	7	
Nike	NKE 2.75%-26	US654106AJ22	9.0 / 9	12.8	USD	A+	Apparel,	7	
Danone	BNFP .395%-28	FR0013517026	13.7 / 14	3.8	EUR	BBB+	Packaged Food	7	
Unilever	UNANA 1.75%-29	XS2147133578	12.8 / 43	6.0	EUR	A+	Personal care	5	
Aramark	ARMK 5.0%-27	USU0389LAE12	3.3 / 4	2.2	USD	B+	Food Services	7	
Colgate-Palmolive	CL 3.1%-27	US194162AN32	7.7 / 25	9.9	USD	AA-	Personal care	6	+

Figure 4. (Left) Sector weightings in the RDCP benchmark, (Right) Rating distr. of the RDCP. Source: Bloomberg, AFII.

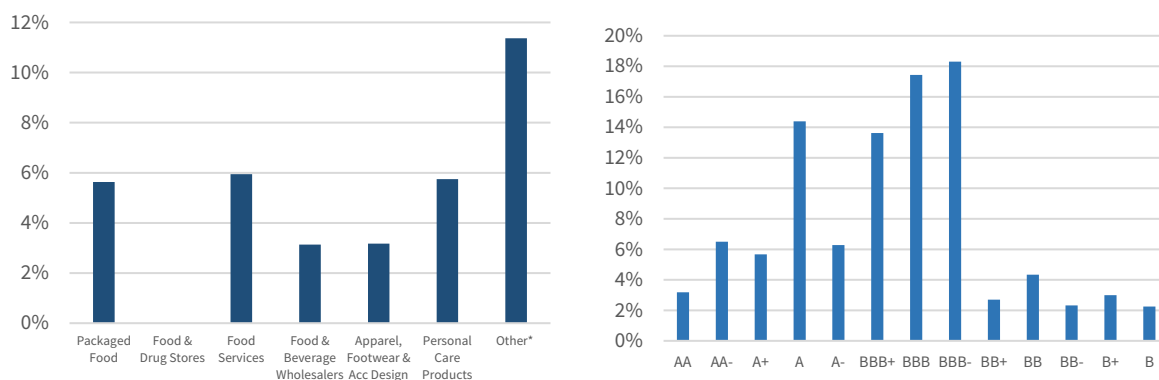


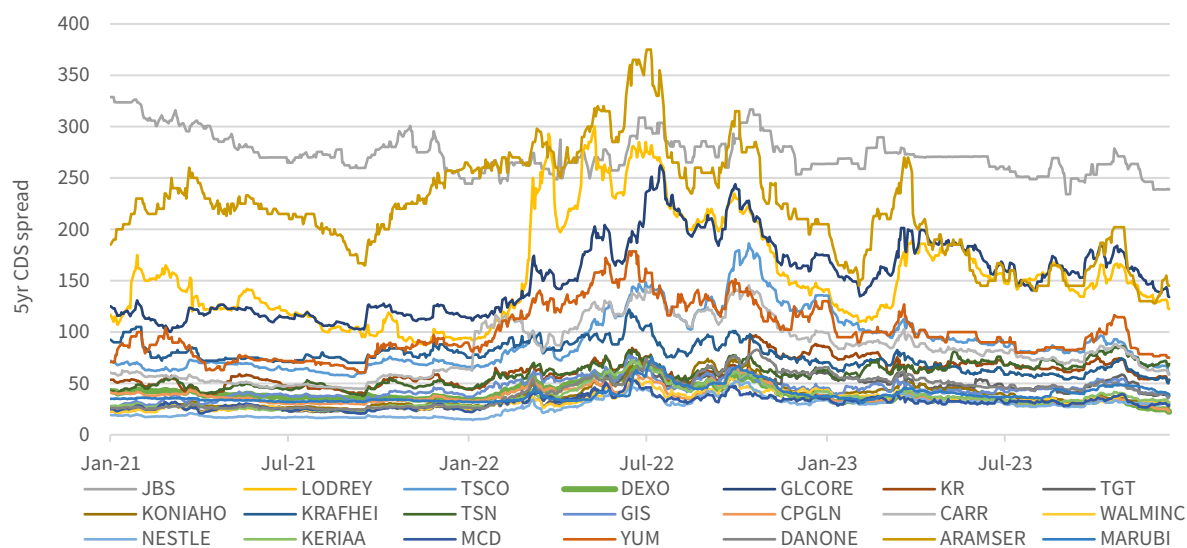
Table 7. List of green and sustainable bonds issued by RDCP companies. Sources: Bloomberg, AFII

Company name	ISIN	Currency	Amt. outst. (\$bn)	Use of proceeds
ARCHER-DANIELS-MIDLAND CO	US039482AD67	USD	0.75	Sustainable aquaculture and animal husbandry, sustainable agriculture, green buildings, energy efficiency, renewable energy, clean transportation, water, waste management, pollution prevention and control, social projects
AHOLD DELHAIZE	XS2018636600	EUR	0.60	Sustainable sourcing, reduction of carbon emissions, food waster, healthy eating education
SYSCO CORP	US871829BK24	USD	0.50	Renewable energy, energy efficiency, clean transportation, waste reduction, water, biodiversity conservation, food waster, social projects
COMPASS GROUP PLC	XS2528582377 XS2528582450	EUR/GBP	0.50/0.25	Sustainable sourcing, socially conscious sourcing, clean transportation, renewable energy, plant-based products, regenerative food production, Food Waste, packaging, healthy eating education
WALMART INC	US931142ET65	USD	2	Renewable energy, green buildings, clean transportation, zero waste, circular economy, water, habitat restoration and conservation
MARUBENI CORP	XS2387660280	USD	0.50	Renewable energy, sustainable land management, water, circular economy
COLGATE-PALMOLIVE CO	XS2405875480	EUR	0.30	Circular economy, pollution prevention, energy efficiency, renewable energy, diversity, education, and wellbeing

Table 8. List of sustainability-linked bonds issued by companies within RDCP. Sources: Bloomberg, AFII

Company name	ISIN	Currency	Amount outstanding (\$nn)	KPIs
KLABIN SA - UNIT	US49836AAB08, US49835LAB71	USD	0.7/0.26	Water consumption, waste reuse, reintroduction and/or reinforcement of wild species into the ecosystem
LOUIS DREYFUS CO BV	XS2531571946	JPY	10	CO2 emissions, electricity consumption, water usage, solid waste
JBS SA	US72147KAF57, USL5S59NAA30, US72147KAF57	USD	1.0/0.31 /1.0.0	Scope 1 and 2 GHG emissions
TESCO PLC	XS2289877941, XS2403381069	EUR/GBP	0.75/0.40	Scope 1 and 2 GHG emissions
KONINKLIJKE AHOLD DELHAIZE N	XS2317288301	USD	0.60	Scope 1 and 2 GHG emissions, Food waste
GENERAL MILLS INC	US370334CQ51	USD	0.50	Scope 1 and 2 GHG emissions
CARREFOUR SA	FR001400D0F9, FR0014009DZ6, FR0014009E07	EUR	0.85/0.75 /0.75	Scope 1 and 2 GHG emissions, packaging avoided, Food waste

Figure 5. CDS spreads for RDCP issuers where CDS is available, 2021-2023. Source: AFII, Bloomberg.



Conclusion

While the data landscape in terms of nature loss and deforestation is nowhere near a complete picture, investors are likely to need to start applying deforestation measures in their portfolios, nonetheless. The RDCP described in this article has been constructed as a first measure for doing so. It will serve as a baseline for (corporate) issuer-specific research from AFII to further the understanding of fixed income exposures and impact/engagement opportunities within the space.

Biodiversity, nature-loss and deforestation is a quickly evolving field, meaning that systematic efforts at including them in fixed income portfolio will need to be more flexible and dynamic than traditional index and benchmark construction frameworks. The RDCP is expected to evolve in line with the changing (financial and physical) landscape.

The RDCP does not deal with sovereign and sub-sovereign issuers which is a topic that should be treated separately. Currently, there is no systematic methodology available to combining ‘footprints’ of companies and states in a consistent way. It is advised that sovereign issuers are treated separately, for example, the recent CORL proposal¹⁷ from AFII explicitly looks at country or regional level environmental resilience as a metric to base bond structures and the implied credit rating changes.

¹⁷ [“Contingent Resilience-Linked \(CORL\) bonds: combining public and private capital for resilience”](#), AFII, 31 Oct 2023.

Appendix A – An overview of main data providers

Forest 500

Forest 500 select the 350 companies that are most exposed to tropical deforestation, as well as the 150 financial institutions providing the most finance to these 350 companies, with these financial institutions having the greatest power to affect change through the supply chain. Companies and financial institutions are assessed against four categories: Overall approach, content of commitments, social commitments / considerations, and reporting and implementation. Categories 2-4 are repeated for commitments relating to specific commodities, these commodities being **palm oil, soy, beef, leather, timber**, and **pulp and paper**. Reporting and implementation is the category holding the most weight, reflecting the importance of action over promises. The process yields a score out of 100, which is further segmented into percentile blocks from 0-5, enabling cross-comparison with CDP scores. The Forest 500 questionnaire is consistent with the Accountability Framework initiative (AFi).

CDP

CDP Forest scores provide an indication of the level of action taken by a company in measuring and managing their deforestation risks. The forest questionnaire that CDP uses considers deforestation risks linked to four commodities: **timber, cattle, soy**, and **palm oil**. Companies are scored on a scale from F through A for each commodity, based on the points scored throughout the questionnaire. These Levels are F (Failure to Disclose) D (Disclosure) C (Awareness) B (Management) and A (Leadership). Each question within the questionnaire scores points for 1 or more of levels D through A, and to process from one overall grade to the next, a minimum threshold of points on the previous level must be attained. To score an A or a B, companies must show awareness of their collective impacts on deforestation, as well as any appropriate actions companies take to reduce these impacts. The CDP Forest questionnaire is consistent with the AFi.

Trase Finance

Trase utilises a broad range of data ranging from commodity trade flow data to satellite imagery to assess deforestation linked to key commodities, and then the allocated exposure to the deforestation from these key commodities amongst the actors involved in their trade. The key commodities Trase considers are **Beef, Soy**, and **Palm Oil**, focusing on the key producing regions of Argentina, Brazil, Indonesia, and Paraguay. The companies Trase focuses on are allocated a level of commodity deforestation exposure in hectares for each commodity within each region, measured in hectares of land converted from its primary natural state to a land use associated with the production of a specific commodity.

Cross Comparison

All three data providers are designed to allow investors, companies, and governments to manage their exposure to deforestation risk, however they approach this in different, often complementary ways. CDP and Forest 500 both rate participants, either on the level and implementation of their commitments to prevent deforestation in the case of Forest 500, or on their disclosure, awareness, and management of deforestation risk in the case of CDP. Both adhere to the guidelines and principles of the AFi in order to support commodity production that does not damage natural ecosystems. Trase on the other hand gives an estimate of the area of deforested land in hectares that a given entity is exposed to through their supply chain for each of the key commodities.

Both Trase and Forest 500 use publicly available data to assign their metrics or ratings, which differs from CDP, whose approach is to ask entities on behalf of investors and customers to disclose, and if they decline, they are scored an F - the lowest rating. This means that whilst Trase and Forest 500 ratings and metrics are based on information and commitments from company websites, as well as public data such as shipping information and production areas, CDP ratings are based on self-disclosed data from the companies themselves. Whilst CDP scores are quality checked to ensure that standards are accurate and consistent, the information provided by companies responding to the CDP is not verified. This is reflective of the fact that CDP scores are not intended as a measurement of a company's level of sustainability, but are more an indication of how well a company assesses and manages its impact on deforestation.

Appendix B – Starting universe of companies

Company name	Company name	Company name	Company name
ABP Food Group	COFCO Joycome Foods Ltd	Intervlees NV	Nutriad International NV
Agra Agroindustrial de Alimentos SA	Colgate-Palmolive Co	J Sainsbury PLC	Picard Surgeles SAS
Agrex do Brasil SA	Compass Group PLC	JA Zen-noh Meat Foods KK	Pilgrim's Pride Ltd
Agricultores Federados Argentinos Sociedad Cooperativa Ltda	Conceria NUTI IVO - SpA	Japan Oil Gas and Metals National Corp	Pou Chen Corp
Agropecuaria Santa Barbara Xinguara SA	Conceria Priante SpA	JBS SA	Reckitt Benckiser Group PLC
Albertsons Cos Inc	Coeperatieve Inkoop. Superunie BA CV	JD.com Inc	Restaurant Brands International Inc
Aldi Stores Ltd	Cooperativa Multiactiva Neuland Ltda	Jiusan Group Dalian Bean Technology Co Ltd	REWE Group
Alibaba Group Holding Ltd	Cooperl-Hunaudaye	Jumbo Supermarkten BV	REWE-Zentral AG
Almacenes Exitto SA	Costco Wholesale Corp	Kering SA	Rino Mastrotto Group SpA
Amaggi Exportacao e Importacao Ltda	Curtume Viposa SA Industria e Comercio	Kerry Group PLC	Royal Agrifirm Group
Amazon.com Inc	Danone SA	Koninklijke Ahold Delhaize NV	Sadesa SA
Aramark	Darden Restaurants Inc	Koninklijke FrieslandCampina NV	Sapore SA
Archer-Daniels-Midland Co	De Heus Beheer BV	Kraft Heinz Foods Co	Schwarz Group
Arezzo Industria e Comercio SA	De Heus Group	Kroger Co/The	Seachill Ltd
Arla Foods amba	Doctor's Associates Inc	Lampel SpA	Seara Alimentos Ltda
ASDA Group Ltd	Eagle Ottawa LLC	Land O' Lakes Inc	Shanghai Esenagro Products & Technology Development Co Ltd
Asociacion de Cooperativas Argentinas Coop Ltda	Edeka Zentrale AG & Co KG	Lenta Plc	SHV Holdings NV
Auchan Retail International SA	Ferrero International SA	Les Mousquetaires SAS	Sinograin Oils Co Ltd
Avendra LLC	ForFarmers NV	Lidl Ltd	Sociedad Cooperativa Colonizadora Chortitzer Komitee Ltda
Barra Mansa Comercio de Carnes E Derivados Ltda	Fortune Ng Fung Food Hebei Co Ltd	Loblaw Cos Ltd	Sodexo SA
Beijing Xibei Restaurant Management Co Ltd	Frigol Foods Participacoes SA	Louis Dreyfus	SPAR Group Inc
BEL SA	Frigorifico Concepcion SA	Makro Atacadista SA	SPAR International B.V.
Better Beef Ltd	Fuga Couros SA	Marfrig Global Foods SA	Sysco Corp
Bimbo Foods Inc	Gavilon Grain LLC	Marks & Spencer Group PLC	Target Corp
Brazil Fast Food Corp	General Mills Inc	Mars Inc	Tesco PLC
BRF SA	Givaudan SA	Marubeni Corp	TransGourmet Holding AG
Bunge Brasil SA	Glanbia PLC	Mastrotto Brasil S/A	Tyson Foods Inc
Bunge Ltd	Glencore PLC	McDonald's Corp	Unilever PLC
Burger King Holdings Inc	Groupe Lactalis SADIR	Meat Import Zandbergen Brothers BV	Vale Grande Industria e Comercio de Alimentos S/A
C&J Clark International Ltd	Grupo Andre Maggi Part.	METRO AG	Vancouros Comercio de Couros Ltda
Caramuru Alimentos SA	Grupo Bimbo SAB de CV	Midori Anzen Co Ltd	VF Corp
Cargill Inc	Guangdong Haid Group Co Ltd	Migros Group Ltd	Vicentin SAIC
Carrefour SA	Guangdong Hengxing Feedstuff Industry Co Ltd	Minerva SA/Brazil	Vomar Voordeelmark BV
Casino Guichard Perrachon SA	Guangzhou Yuetai Group Co Ltd	Molinos Agro SA	Waitrose Ltd
Cencosud SA	Hilton Food Group PLC	Muyuan Foods Co Ltd	Walmart Brasil Ltda
Chanel Ltd	Hyatt Hotels Corp	Nando's Chickenland Malaysia Sdn bhd	Walmart Inc
Charoen Pokphand Foods PCL	Ibrakom FZCO	National Federation of Agricultural Cooperative Associations	Wens Foodstuffs Group Co Ltd
China Agri-Industries Holdings Ltd	ICA Gruppen AB	Nestle Holdings Inc	WH Group Ltd
China Foods Ltd	Imcopa - Importacao Exportacao e Industria de Oleos SA	New Hope Liuhe Co Ltd	Wm Morrison Supermarkets PLC
Cia Brasileira de Distribuicao	Ingka Holding BV	NIKE Inc	X5 Retail Group NV
CJ Selecta SA	Inner Mongolia Kerchin Cattle Industry Co Ltd	NorgesGruppen ASA	Yum! Brands Inc
COFCO Corp	Inter IKEA Centre Group A/S	Norvida AB	

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