

# Does Greenwashing Pay Off? An Investigation to the Relationship between Greenwashing and Cost of Debt



UNIVERSITY OF EDINBURGH  
Business School

*Nazim Hussain, University of Groningen*  
*Shuo Wang, University of Edinburgh*  
*Qiang Wu, PolyU HK*  
*Colin Cheng Zeng, PolyU HK*

# Snapshot of the Paper

- **Research question:** *Can debtholders detect and respond to the borrowing firms' greenwashing?*
- We develop a measure of corporate **greenwashing**, capturing the disparity between the borrowing firm's symbolic and substantial environmental activities;
- Increasing one standard deviation of the captured greenwashing is associated with a rise in the cost of public bonds by **seven basis points**, equivalent to an extra financing cost of \$0.36 million per year;
- The effect is more pronounced in the borrowing firms operating in more environmentally sensitive industries, affiliated with more sensitive credit ratings, and associated with a higher level of information asymmetry between insiders and outsiders;
- The positive relationship between greenwashing and the cost of debt is warranted via two channels: a high probability of credit rating diversions and a higher probability of environmentally regulative punishments.
- First to quantify the relationship between corporate greenwashing and the firm's cost of debt.

# Background and Motivation (1)

## Corporate Greenwashing:

- ✓ “The selective disclosure of positive information about a company’s environmental performance, without full disclosure of negative information on these dimensions, to create an overly positive corporate image.” (Lyon and Maxwell, 2011)
- ✓ Greenwashing scandals: Volkswagen, BP, HSBC, etc.
- ✓ The International Consumer Protection Enforcement Network (ICPEN) found that 40% of firms engage in greenwashing.



## Background and Motivation (2)

### Consequences of Greenwashing on Debt Financing:

- ✓The debt market is also the most crucial financing resource for companies' green transformation to deal with the climate risk;
- ✓From the debtholders' perspective, disentangling substantial green efforts from symbolic greenwashing is important.



- ✓Green bond issuance magnitude from COP 23 to 25 (2017 to 2019).

# Background and Motivation (3)

## Regulation on Greenwashing in the U.S.:

- ✓ Federal framework: Section 5 of the Federal Trade Commission Act (FTCA) in 1970 and FTC's Green Guides in 1992;
- ✓ State-level framework: mini-FTCAs: only a few states;
- ✓ FTC enforcement on green marketing campaigns: lax.

# Literature Review (1)

- **Greenwashing: causes and consequences**
- **Determinants of greenwashing:**
  - ✓ Potential conflicts between long-term sustainability and short-term operating performance (Friedman, 1970; Cho et al., 2015);
  - ✓ External drivers: investor demand, lax regulation, competitive pressure, absence of analyst following etc. (Delmas and Burbano, 2011; García-Sánchez et al., 2021; Nardi, 2022);
  - ✓ Internal drivers: corporate governance, incentive structure, organization inertia etc. (Delmas, M. A., and Montes-Sancho, 2010; Sauerwald and Su, 2019; )
- **Consequences of greenwashing:**
  - ✓ Customer confidence reduction (Schuler and Cording, 2006);
  - ✓ Media critics (Du, 2015; Berrone et al., 2017);
  - ✓ CSR rating decline (Doh et al., 2010)
  - ✓ Liability of foreignness (Tashman et al., 2019)
  - ✓ **Capital market (Hedge fund performance: Liang et al. 2021)**

# Literature Review (2)



- Debt financing and ESG (particularly the “E”):
- Debt financing and environmental performance:
  - ✓ Climate risk results in further deterioration of the reputation and legitimacy of the borrowing firms (Sharfman and Fernando, 2008; Hong and Kacperczyk, 2009; Eliwa et al., 2019; Painter, 2020; Nguyen et al., 2020);
- Debt financing and environmental disclosure:
  - ✓ Debtholders require disclosure to evaluate the borrowing firm’s environmental performance (Dhaliwal et al., 2011a, 2011b, 2012; Matsumura et al., 2014; Lys et al., 2015);
  - ✓ Firms increase their environmental-related disclosure; however, quantity does not equate to quality (Pinnuck et al., 2021; Hawn and Ioannou, 2016);
  - ✓ Can debtholders recognize greenwashing from the borrowing firms’ environmental disclosure?

# Hypotheses Development

*H1: There is a positive relationship between the cost of debt and corporate greenwashing.*

- Debtholders identify the suspected greenwashing firms when they spot excessive **symbolic** relative to **substantial** environmental actions from the borrowing firm's CSR disclosure;
- Marquis et al., 2016: redundant disclosures increase the information acquiring and processing cost of the debt investors and enlarge the information opaqueness around the issuer (**Information risk**);
- MacLean and Behman, 2010: unverifiable environmental disclosures reduce the issuer's credibility in addressing environmental risk (**Legitimacy risk**).



# Sample Construction

- FISD: U.S. public bond issues and credit ratings
  - Compustat and CRSP: financial and market data
  - I/B/E/S: Analyst forecast
  - ASSET4: ESG Data to construct greenwashing
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- **Final sample:**
  - Period: 2003-2017
  - Public bond sample: 3810 issues from 592 firms

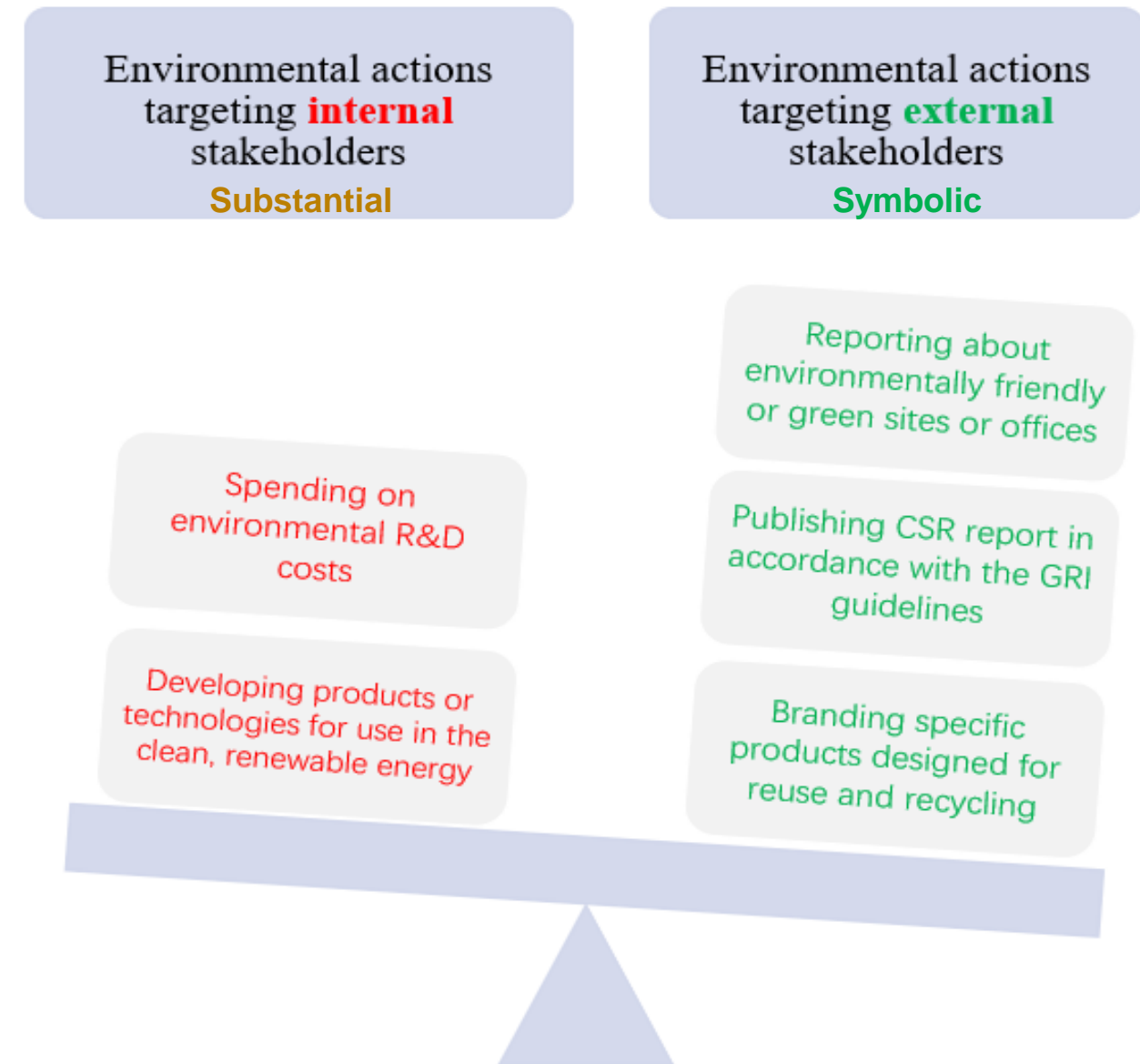
# The Measure of Greenwashing (1)

## • Measuring Greenwashing:

- ✓ the disparity between the borrowing firm's **symbolic** relative to **substantial** environmental actions, identified from CSR-related disclosure (Freeman et al., 2010; Hawn and Ioannou, 2016);
- ✓ **Substantial** environmental actions are “the changes in core practices, norms, structures and long-term investments” that firms undertake to deal with the environmental risk that threatens the **internal stakeholders**, such as employees, managers, and owners;
- ✓ **Symbolic** environmental actions refer to how firms communicate and describe their internal actions to **external stakeholders**;
- ✓ **Both substantial and symbolic actions generate social endorsements and legitimacy for the firms; however, the misalignment indicates the underlying firm's tendency to brag about its de facto environmental performance, i.e., greenwashing.**

## The Measure of Greenwashing (2)

- ✓ We follow the idea of Hawn and Ioannou (2016) but focus on the environmental pillar of the Asset4's ESG data items;
- ✓ We collect and aggregate 22 **substantial** and 23 **symbolic** environmental indexes that range between 0 and 1. Then we normalize them separately and deflate them by their firm size to make a comparison;
- ✓ The measure of greenwashing,  $E_I\_Gap$ , captures the imbalance between the borrowing firm's **symbolic** and **substantial** environmental actions.



$$\begin{aligned} \text{BondSpread}_{i,t} = & a_0 + a_1 \mathbf{E\_I\_Gap}_{i,t-1} + a_2 \text{Size}_{i,t-1} + a_3 \text{ROA}_{i,t-1} + a_4 \text{MB}_{i,t-1} \leftarrow \\ & + a_5 \text{Lev}_{i,t-1} + a_6 \text{Cash}_{i,t-1} + a_7 \text{Evol}_{i,t-1} + a_8 \text{CSR\_Big4}_{i,t-1} \leftarrow \\ & + a_9 \text{BondSize}_{i,t} + a_{10} \text{BondLength}_{i,t} + a_{11} \text{Lnnumcov}_{i,t} + a_{12} \text{BondRating}_{i,t} \leftarrow \\ & + \text{Industry Dummies} + \text{Year Dummies} + \varepsilon_{i,t} \quad (1) \leftarrow \end{aligned}$$

- *BondSpread*: the difference between the corporate bond yield at issuance and a Treasury bond yield with comparable maturity;
- Following prior literature (e.g., Hasan et al., 2017), we control security-, firm-, and industry-level characteristics relevant to the borrower's credit risk;
- Our specification is robust to alternative industry classification and extra control variables.

# Main Results

<i>Dependent variable = BondSpread</i>				
	Expected sign	(1)	(2)	(3)
<i>E_I_GAP</i>	+	<b>0.1974***</b> <b>(5.59)</b>	<b>0.1705***</b> <b>(5.46)</b>	<b>0.1136***</b> <b>(4.23)</b>
<i>Size</i>	-	-0.0037*** (-19.58)	-0.0010*** (-3.91)	-0.0005** (-2.19)
<i>ROA</i>	-	-0.0611*** (-13.39)	-0.0209*** (-4.53)	-0.0238*** (-5.75)
<i>MB</i>	-	-0.0002*** (-4.72)	-0.0001*** (-4.26)	-0.0000* (-1.65)
<i>Lev</i>	+	0.0148*** (8.36)	0.0011 (0.77)	0.0062*** (4.28)
<i>Cash</i>	+/-	0.0064*** (4.13)	0.0077*** (5.62)	0.0124*** (8.24)
<i>Evol</i>	+	0.0003*** (5.05)	0.0002*** (4.48)	0.0002*** (4.03)
<i>CSR_Big4</i>	-	-0.0012** (-2.30)	-0.0016*** (-3.69)	-0.0004 (-1.04)
<i>BondSize</i>	+/-		0.0042*** (10.30)	0.0028*** (7.92)
<i>BondLength</i>	+		0.0011*** (4.75)	0.0015*** (7.23)
<i>Lnumcov</i>	-		-0.0011*** (-4.36)	-0.0016*** (-6.73)
<i>Rating_Issue</i>	-		-0.0029*** (-24.55)	-0.0030*** (-26.88)
<i>Constant</i>	?	0.0554*** (26.74)	0.0439*** (18.52)	0.0417*** (18.33)
Industry FE		No	No	Yes
Year FE		No	No	Yes
N		3810	3810	3810
Adj R <sup>2</sup>		0.2713	0.4669	0.6330
<b>Change of spread in basis points by increasing 1 SD of the <i>E_I_GAP</i> from its mean level</b>				
		14.69	12.69	<b>7.31</b>

- > Economic magnitude: increasing one standard deviation of the greenwashing is associated with an increase of the annual public debt cost by 0.36 million.

# Alternative Greenwashing Measures

- *Mislead*: the number of controversies published in the media linked to the firm's marketing practices (Fletcher et al., 2022);
- *Responsible*: whether the borrowing firm claims to have or mentions processes in place to maintain responsible marketing practices (Fletcher et al., 2022);
- *Env\_D\_P\_Gap*: the difference between the firm's environmental disclosure score and environmental performance score (Sauerwald and Su, 2019; Sanchez et al., 2020).

	(1)	(2)	(3)
<i>Mislead</i>	<b>0.0013***</b>		
	<b>(5.22)</b>		
<i>Responsible</i>		<b>-0.0023***</b>	
		<b>(-2.90)</b>	
<i>Env_D_P_Gap</i>			<b>0.0165*</b>
			<b>(1.74)</b>
Control variables	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	3810	3810	2481
Adj R <sup>2</sup>	0.6318	0.6312	0.6193
<b>Marginal analysis: change of spread in basis points</b>			
	6.13	-23.33	4.25

# Robustness Tests

- Propensity score matching (PSM);
- Entropy balancing;
- 2SLS estimation using two instrumental variables:
  - ✓ Whether the issuer is headquartered in a blue state (Deng et al., 2013; Ge and Liu, 2015);
  - ✓ Industry average of the corporate greenwashing (DiMaggio and Powell, 1983; Tan et al., 2020);
- Using the FTC's regulative intervention as a quasi-exogenous shock.

# Cross-sectional Analyses on Public Bonds

- The positive relationship between greenwashing and the cost of public bonds is more pronounced in the borrowers:

✓ Whose issuer-level credit rating is close to the boundary of investment and speculative grade (Kisgen, 2009; Kisgen and Strahan, 2010; Alissa et al., 2013; Jung et al., 2013);

✓ Operating in the environmentally sensitive industries (Cho and Patten, 2007; Ge and Liu, 2015; Hawn and Ioannou, 2016);

✓ Whose information opaqueness is high (Anderson et al., 2009).

	(1)	(2)	(3)
$E\_I\_GAP$	0.0215	0.0803***	-0.2182***
$Sensitive\ Rating$	(0.78)	(2.84)	(-3.06)
$E\_I\_GAP * Sensitive\ Rating$	-0.0025***		
	(-5.42)		
$Sensitive\ Rating$			
$E\_I\_GAP * Sensitive\ Industry$	0.1778***		
	(3.70)		
$Sensitive\ Industry$			
$E\_I\_GAP * Sensitive\ Industry$			
$Info\ Asym$			
$E\_I\_GAP * Info\ Asym$			
Control Variables	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	3810	3810	3610
Adj R2	0.6380	0.6398	0.6625



# Channel Analysis: Credit Rating Disagreements

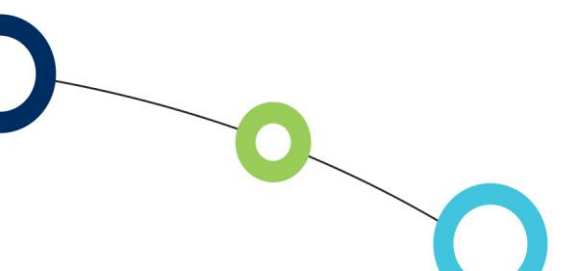
- › Finally, we examine whether greenwashing enlarges the credit rating agencies' (CRAs) dispersions and rating disagreements;
- › The cost of public bond financing is considerably determined by the underlying firm's credit rating (Alissa et al., 2013). However, CRAs may vary in their rating methodologies and opinions, leading to rating splits;
- › Rating splits increase the information uncertainty surrounding the borrower and enlarge the bond spread that investors charge (Livingston and Zhou, 2007, 2010; Bonsall IV and Miller, 2017);
- › CRAs' may require more subjectivity and adjustments to analyse environmental disclosures, which are voluntary and lack uniform reporting standards.

Dep Var = <i>Dummy (Rating Split)</i>		(1)
<i>E_I_GAP</i>		7.5380***
		(2.59)
<i>Follow</i>		-0.0954
		(-1.55)
<i>Dispersion</i>		0.6127***
		(4.13)
<i>LnMVE</i>		-0.0269
		(-0.81)
<i>MeanMB</i>		-0.0017
		(-0.33)
<i>MeanTang</i>		-0.3637**
		(-2.53)
<i>BondLength</i>		0.0422
		(1.22)
<i>R144</i>		0.2559***
		(3.25)
<i>MeanRating</i>		-0.0921**
		(-2.52)
Industry FE		Yes
Year FE		Yes
N		2755
Pseudo R <sup>2</sup>		0.0581

# Is the Extra Cost of Bonds Warranted? Future Environmental-relative Punishment

	Dependent variable = Ln (1+Penalty)			Dependent variable = Prob(Penalty)		
	One year	Two years	Three years	One year	Two years	Three years
	(1)	(2)	(3)	(4)	(5)	(6)
E_I_GAP	<b>4.1655***</b>	<b>6.0596***</b>	<b>10.2310***</b>	<b>14.9781***</b>	<b>16.3099***</b>	<b>20.4232***</b>
	<b>(2.64)</b>	<b>(3.11)</b>	<b>(4.28)</b>	<b>(2.76)</b>	<b>(2.86)</b>	<b>(3.45)</b>
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	3810	3810	3810	3810	3810	3810
Adj (Pseudo) R <sup>2</sup>	0.1079	0.1618	0.2127	0.2088	0.2226	0.2486

The dependent variable of the first three columns is the log of one plus the amount of environmental-related penalties (Zaman et al., 2021) charged by the U.S. regulators three years after the bond issue, whereas the dependent variable of the other three columns is the probability of being litigated by the U.S. regulator in next three years.



# Conclusion

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To pursue sustainable development in the long run, firms require financial support from debtholders to execute green transformation;

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However, firms may engage in greenwashing to mislead debtholders to obtain short-term benefits;

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Whether debtholders can detect and punish borrowers' greenwashing concerns the resource allocation of the economic and the justice of the society;

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We document solid evidence that sophisticated investors in the public bond market and CRAs can decipher greenwashing.



# Additional Tables (1)



## ASSET4 Data Items regarding Internal Environmental Actions<sup>↵</sup>

Item No. <sup>↵</sup>	Name <sup>↵</sup>	Description <sup>↵</sup>		
1 <sup>↵</sup>	Value - Product Innovation/Policy <sup>↵</sup>	Does the company have an environmental product innovation policy (eco-design, life cycle assessment, dematerialization)? <sup>↵</sup>	12 <sup>↵</sup>	Value - Resource Reduction/Improvements <sup>↵</sup> Does the company set specific objectives to be achieved on resource efficiency? AND Does the company comment on the results of previously set objectives? <sup>↵</sup>
2 <sup>↵</sup>	Emission Reduction Objectives/ Targets Emissions Reduction <sup>↵</sup>	Has the company set targets or objectives to be achieved on emissions reduction? <sup>↵</sup>	13 <sup>↵</sup>	Value - Resource Reduction/Energy Use <sup>↵</sup> Total direct and indirect energy consumption in gigajoules divided by net sales or revenue in US dollars. <sup>↵</sup>
3 <sup>↵</sup>	Value - Emission Reduction/Policy <sup>↵</sup>	Does the company have a policy for reducing environmental emissions or its impacts on biodiversity? AND Does the company have a policy for maintaining an environmental management system? <sup>↵</sup>	14 <sup>↵</sup>	Value - Resource Reduction/Green Buildings <sup>↵</sup> Does the company have environmentally friendly or green sites or offices? <sup>↵</sup>
4 <sup>↵</sup>	Value - Emission Reduction/Monitoring <sup>↵</sup>	Does the company monitor its emission reduction performance? <sup>↵</sup>	15 <sup>↵</sup>	Value - Resource Reduction/Water Use <sup>↵</sup> Total water withdrawal in cubic meters divided by net sales or revenue in US dollars. <sup>↵</sup>
5 <sup>↵</sup>	Value - Emission Reduction/Improvements <sup>↵</sup>	Does the company set specific objectives to be achieved on emission reduction? <sup>↵</sup>	16 <sup>↵</sup>	Value - Resource Reduction/Environmental Supply Chain Management <sup>↵</sup> Does the company use environmental criteria (ISO 14000, energy consumption, etc.) in the selection process of its suppliers or sourcing partners? AND Does the company report or show to be ready to end a partnership with a sourcing partner, if environmental criteria are not met? <sup>↵</sup>
6 <sup>↵</sup>	Value - Emission Reduction/Climate Change Risks and Opportunities <sup>↵</sup>	Is the company aware that climate change can represent commercial risks and/or opportunities? <sup>↵</sup>	17 <sup>↵</sup>	Renewable Energy Use <sup>↵</sup> Does the company make use of renewable energy? <sup>↵</sup>
7 <sup>↵</sup>	Value - Product Innovation/Environmental R&D Expenditures <sup>↵</sup>	Total amount of environmental R&D costs (without clean up and remediation costs) divided by net sales or revenue in US dollars. <sup>↵</sup>	18 <sup>↵</sup>	Resource Efficiency Processes/ Policy Energy Efficiency <sup>↵</sup> Does the company have a policy to improve its energy efficiency? <sup>↵</sup>
8 <sup>↵</sup>	Value - Product Innovation/Renewable/Clean Energy Products <sup>↵</sup>	Does the company develop products or technologies for use in the clean, renewable energy (such as wind, solar, hydro and geo-thermal and biomass power)? <sup>↵</sup>	19 <sup>↵</sup>	Resource Efficiency Processes/ Policy Water Efficiency <sup>↵</sup> Does the company have a policy to improve its water efficiency? <sup>↵</sup>
9 <sup>↵</sup>	Value - Product Innovation/Environmental Project Financing <sup>↵</sup>	Is the company a signatory of the Equator Principles (commitment to manage environmental issues in project financing)? OR Does the company claim to evaluate projects on the basis of environmental or biodiversity risks as well? <sup>↵</sup>	20 <sup>↵</sup>	Water Technology <sup>↵</sup> Does the company develop products or technologies that are used for water treatment, purification or that improve water use efficiency? <sup>↵</sup>
10 <sup>↵</sup>	Value - Product Innovation/Sustainable Building Products <sup>↵</sup>	Does the company develop products and services that improve the energy efficiency of buildings? <sup>↵</sup>	21 <sup>↵</sup>	Emission Reduction Processes/ Policy Emissions Reduction <sup>↵</sup> Does the company have a policy to improve emissions reduction? <sup>↵</sup>
11 <sup>↵</sup>	Value - Resource Reduction/Policy <sup>↵</sup>	Does the company have a policy for reducing the use of natural resources? AND Does the company have a policy to lessen the environmental impact of its supply chain? <sup>↵</sup>	22 <sup>↵</sup>	Emission Reduction Policy Elements/ environment Management systems <sup>↵</sup> Does the company have a policy to maintain an environmental management system? <sup>↵</sup>

# Additional Tables (2)



ASSET 4 Data Items regarding External Environmental Actions<sup>4</sup>

Item No. <sup>4</sup>	Name <sup>4</sup>	Description <sup>4</sup>		
1 <sup>4</sup>	Value - Emission Reduction/Implementation <sup>4</sup>	Does the company describe the implementation of its emission reduction policy through a public commitment from a senior management or board member? AND Does the company describe the implementation of its emission reduction policy through the processes in place? <sup>4</sup>	11 <sup>4</sup>	Value - Emission Reduction/Environmental Expenditures <sup>4</sup> Does the company report on its environmental expenditures or does the company report to make proactive environmental investments to reduce future risks or increase future opportunities? <sup>4</sup>
2 <sup>4</sup>	Green Buildings <sup>4</sup>	Does the company report about environmentally friendly or green sites or offices? <sup>4</sup>	12 <sup>4</sup>	Value - Product Innovation/Environmental Products <sup>4</sup> Does the company report on at least one product line or service that is designed to have positive effects on the environment or which is environmentally labelled and marketed? <sup>4</sup>
3 <sup>4</sup>	Value - Emission Reduction/Biodiversity Impact <sup>4</sup>	Does the company report on initiatives to protect, restore or reduce its impact on native ecosystems and species, biodiversity, protected and sensitive areas? <sup>4</sup>	13 <sup>4</sup>	Value - Product Innovation/Environmental Asset Management <sup>4</sup> Does the company report on assets under management which employ environmental screening criteria or environmental factors in the investment selection process? <sup>4</sup>
4 <sup>4</sup>	Value - Emission Reduction/NOx and SOx Emissions Reduction <sup>4</sup>	Does the company report on initiatives to reduce, reuse, recycle, substitute, or phase out SOx (sulphur oxides) or NOx (nitrogen oxides) emissions? <sup>4</sup>	14 <sup>4</sup>	Value - Product Innovation/Eco-Design Products <sup>4</sup> Does the company report on specific products which are designed for reuse, recycling or the reduction of environmental impacts? <sup>4</sup>
5 <sup>4</sup>	Value - Emission Reduction/VOC Emissions Reduction <sup>4</sup>	Does the company report on initiatives to reduce, substitute, or phase out volatile organic compounds (VOC) or particulate matter less than ten microns in diameter (PM10)? <sup>4</sup>	15 <sup>4</sup>	Value - Product Innovation/Organic Products <sup>4</sup> Does the company report or show initiatives to produce or promote organic food or other products? <sup>4</sup>
6 <sup>4</sup>	Value - Emission Reduction/Waste Reduction <sup>4</sup>	Does the company report on initiatives to recycle, reduce, reuse, substitute, treat or phase out total waste, hazardous waste or wastewater? <sup>4</sup>	16 <sup>4</sup>	Value - Product Innovation/Product Impact Minimization <sup>4</sup> Does the company reports about take-back procedures and recycling programmes to reduce the potential risks of products entering the environment? OR Does the company report about product features and applications or services that will promote responsible, efficient, cost-effective and environmentally preferable use? <sup>4</sup>
7 <sup>4</sup>	Value - Emission Reduction/Innovative Production <sup>4</sup>	Does the company report on the concentration of production locations in order to limit the environmental impact during the production process? OR Does the company report on its participation in any emissions trading initiative? OR Does the company report on new production techniques to improve the global environmental impact (all emissions) during the production process? <sup>4</sup>	17 <sup>4</sup>	Value - Resource Reduction/Toxic Chemicals <sup>4</sup> Does the company report on initiatives to reduce, reuse, substitute or phase out toxic chemicals or substances? <sup>4</sup>
8 <sup>4</sup>	Value - Emission Reduction/Environmental Partnerships <sup>4</sup>	Does the company report on partnerships or initiatives with specialized NGOs, industry organizations, governmental or supra-governmental organizations that focus on improving environmental issues? <sup>4</sup>	18 <sup>4</sup>	Value - Resource Reduction/Energy Efficiency Initiatives <sup>4</sup> Does the company report on initiatives to use renewable energy sources? AND Does the company report on initiatives to increase its energy efficiency overall? <sup>4</sup>
9 <sup>4</sup>	Value - Emission Reduction/Environmental Restoration Initiatives <sup>4</sup>	Does the company report or provide information on company-generated initiatives to restore the environment? <sup>4</sup>	19 <sup>4</sup>	Value - Resource Reduction/Land Use <sup>4</sup> Does the company report on initiatives to reduce the environmental impact on land owned, leased or managed for production activities or extractive use? <sup>4</sup>
10 <sup>4</sup>	Value - Emission Reduction/Transportation Impact Reduction <sup>4</sup>	Does the company report on initiatives to reduce the environmental impact of transportation of its products or its staff? <sup>4</sup>	20 <sup>4</sup>	Toxic Substances Reduction Initiatives <sup>4</sup> Does the company report on initiatives to reduce, reuse, substitute or phase out toxic chemicals or substances? <sup>4</sup>
			21 <sup>4</sup>	VOC Emissions Reduction Initiatives <sup>4</sup> Does the company report on initiatives to reduce, substitute, or phase out volatile organic compounds (VOC)? <sup>4</sup>
			22 <sup>4</sup>	Value - Emission Reduction/CO2 Reduction <sup>4</sup> Does the company show an initiative to reduce, reuse, recycle, substitute, phased out or compensate CO2 equivalents in the production process? <sup>4</sup>
			23 <sup>4</sup>	GRI Report Guidelines <sup>4</sup> Is the company's sustainability report published in accordance with the GRI guidelines? <sup>4</sup>