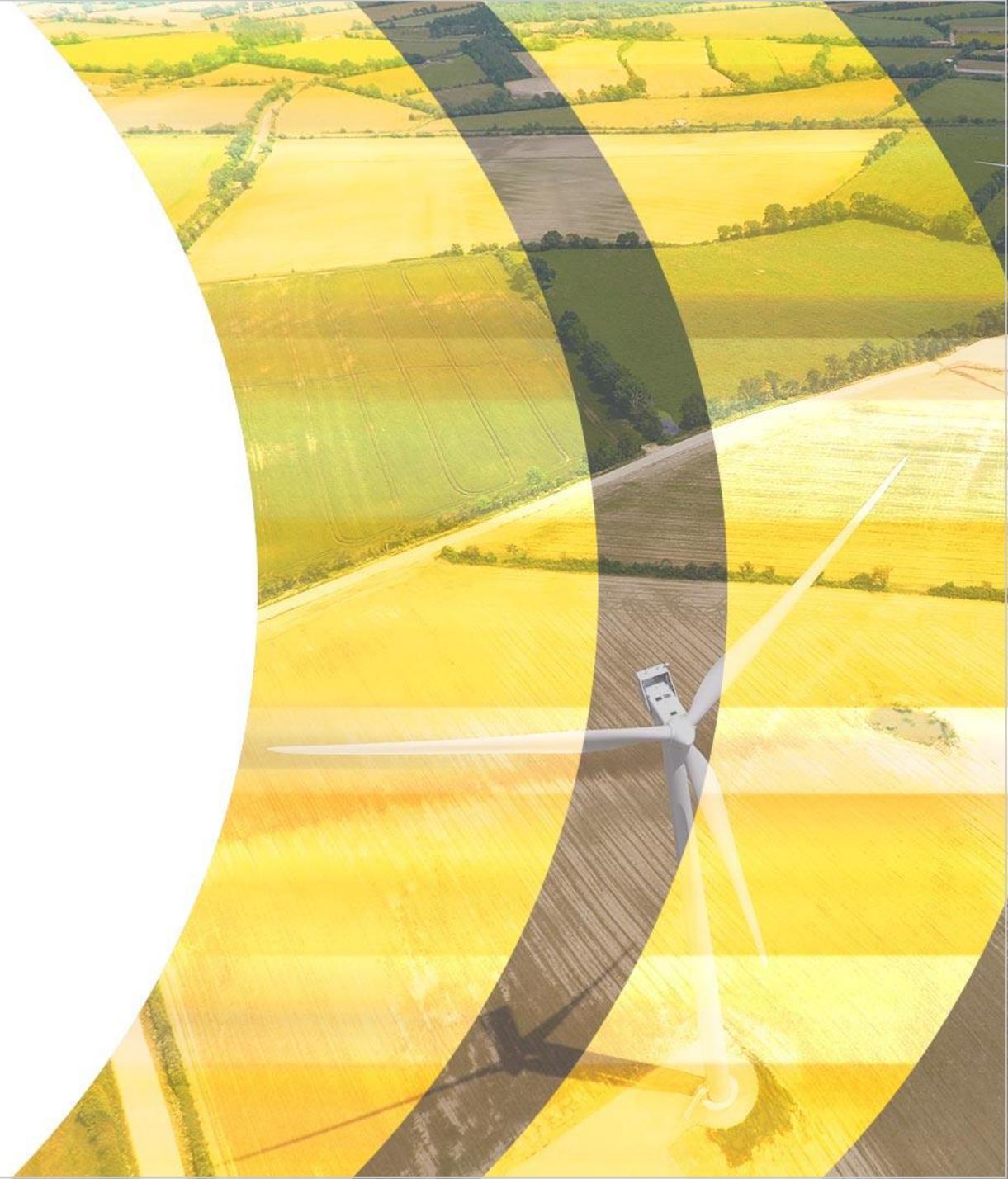

RISK RATING PRESENTATIONS:

ESG in the Mining Supply-Chain

Michael Proulx

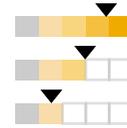
Director, Mining Research

May 2020



Sustainalytics' ESG Risk Rating

Sustainalytics' ESG Risk Ratings measure companies' **exposure** to and **management** of **material ESG issues**.



The rating measures and adds up the unmanaged risks of a company vis-à-vis a set of ESG issues that are considered **material** from a financial perspective.



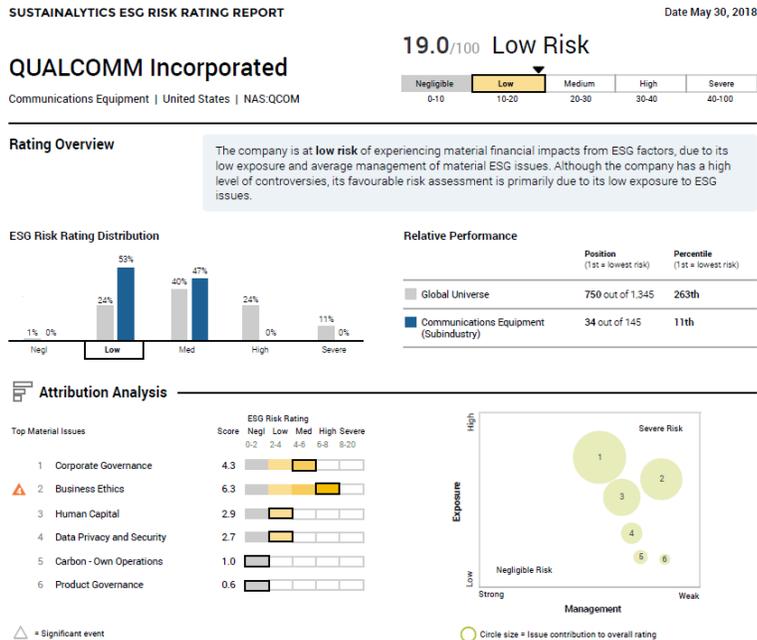
Companies are exposed to different ESG issues to different degrees. Their **exposure** is driven by sub-industry and company-specific factors.



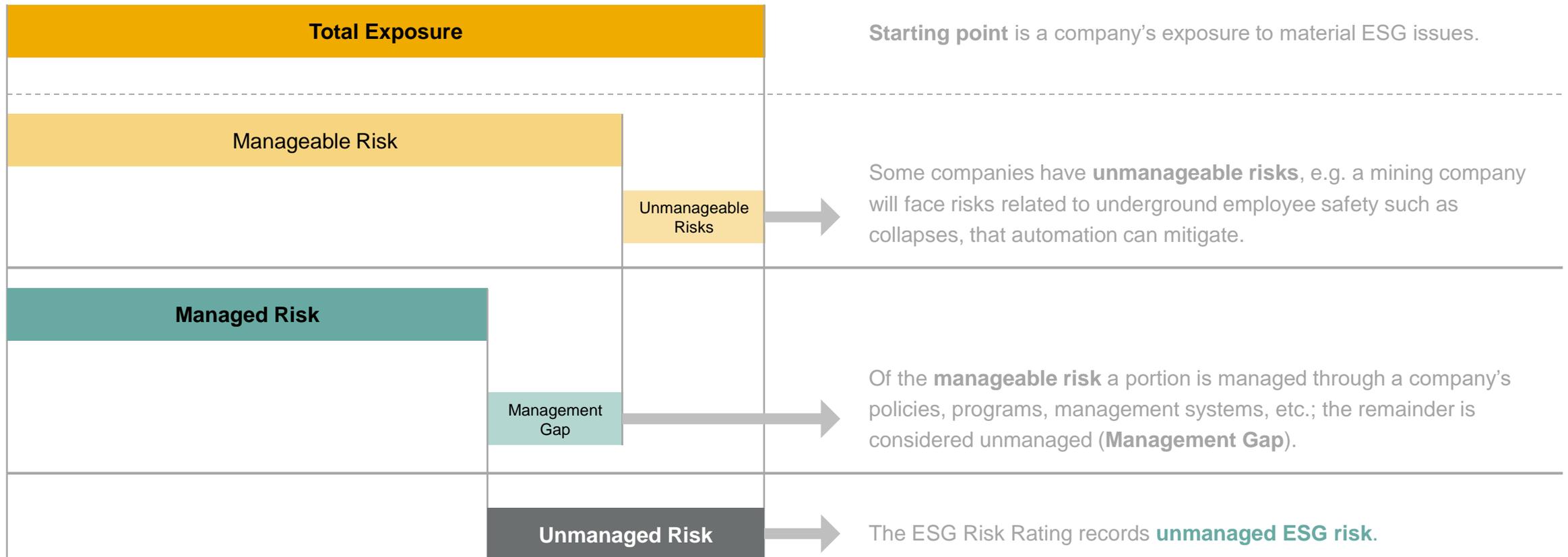
An ESG issue is considered material, if the company is sufficiently exposed to this issue. **Corporate Governance** is considered to be material for all companies.



Companies are allocated across **five risk rating categories** (negligible, low, medium, high, and severe risk).



How Does the ESG Risk Rating Work?



Centerra Gold Inc.

36.2 High Risk

Gold | Canada | TSE:CG



Rating Overview

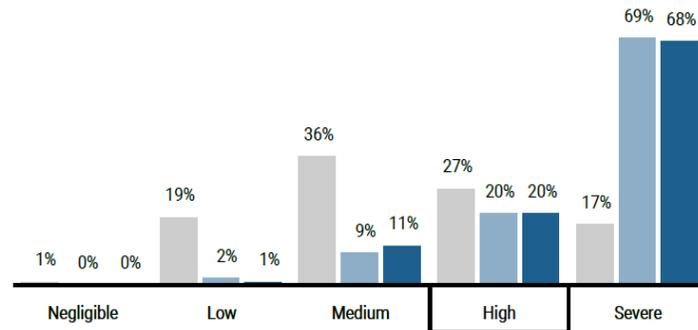
The company is at high risk of experiencing material financial impacts from ESG factors, due to its high exposure and strong management of material ESG issues. Notably, its overall risk is higher since it is materially exposed to more ESG issues than most companies in our universe. Despite its strong management policies and programmes, the company has experienced a high level of controversies.

Momentum Score: -2.0

Stable

The company's risk score has not changed significantly in the past year, and its risk category has remained stable.

ESG Risk Rating Distribution

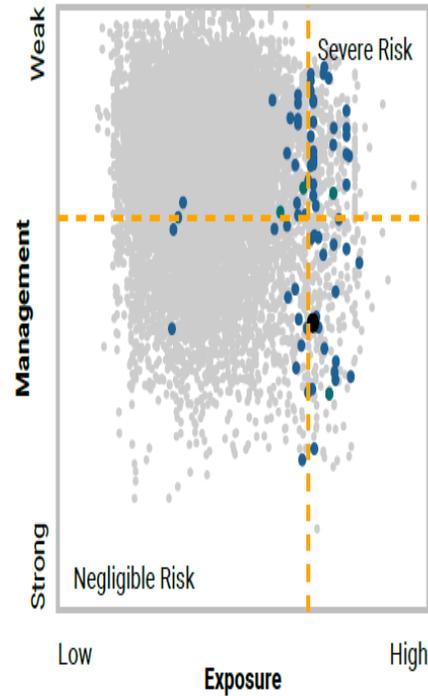


Relative Performance

	Rank (1 st = lowest risk)	Percentile (1 st = lowest risk)
Global Universe	9050 out of 12080	75th
Precious Metals (Industry Group)	25 out of 103	24th
Gold (Subindustry)	20 out of 75	26th



Risk Analysis



- Global Universe
- Gold (Subindustry)
- Centerra Gold Inc.
- Peers
- + SubIndustryAvg.

Peers (Market cap \$2.2 - \$3.5bn)

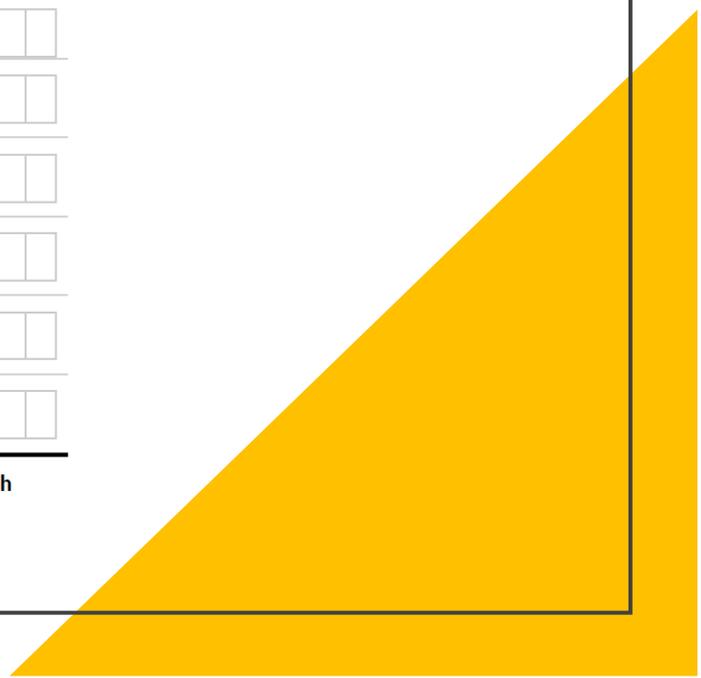
	ESG Risk Rating	Exposure	Management
1. Yamana Gold Inc	30.7 High	73.3 High	64.1 Strong
2. Centerra Gold Inc.	36.2 High	68.9 High	52.4 Strong
3. Saracen Mineral Holdings Ltd.	41.5 Severe	60.1 High	34.0 Average
4. NovaGold Resources Inc.	48.2 Severe	66.3 High	30.0 Average
5. Compañía de Minas Buenaventura S.A.A.	53.6 Severe	74.4 High	30.9 Average



Attribution Details

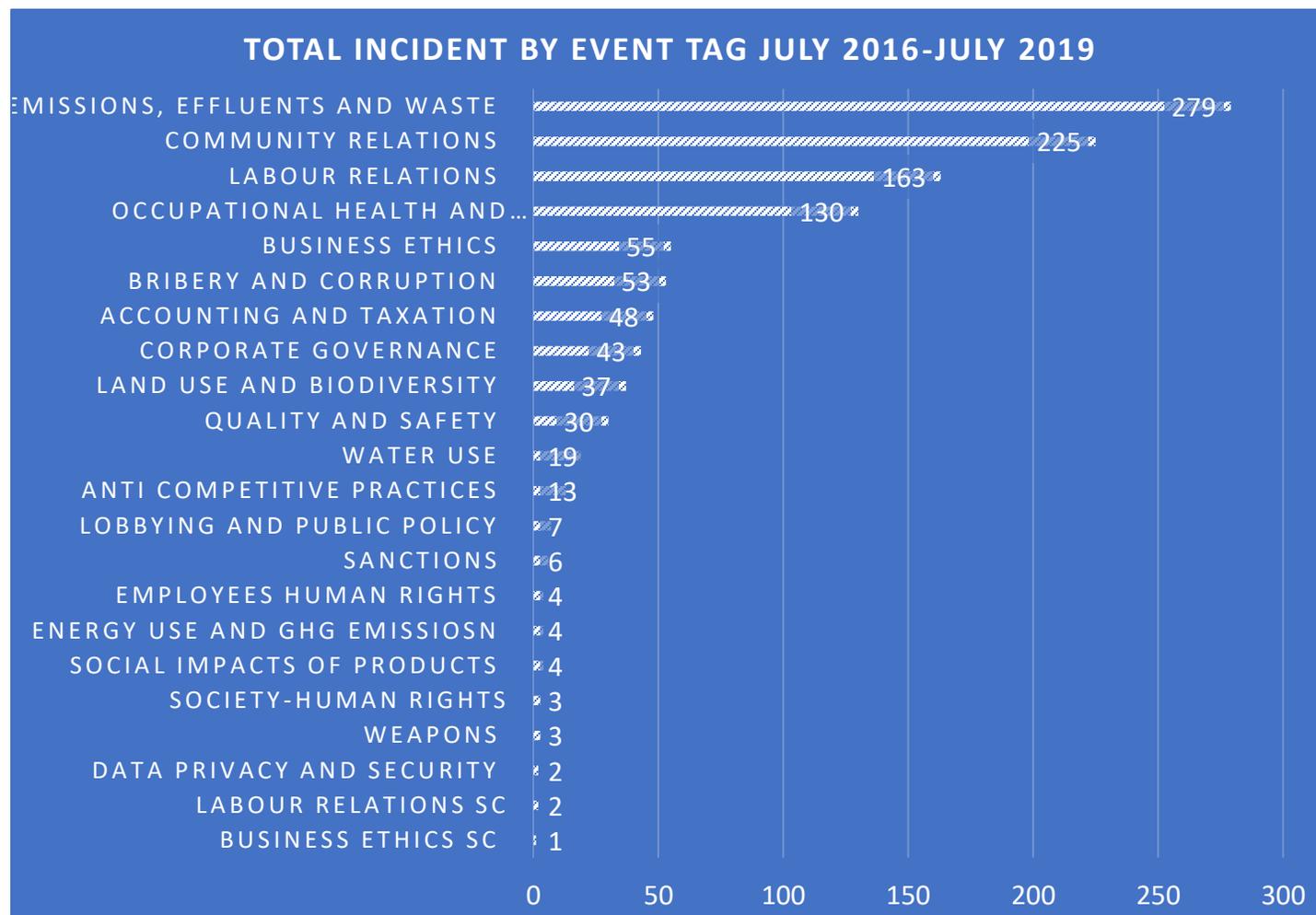
Issue Name	Contribution to						ESG Risk Rating	Risk Category
	ESG Risk Rating	Subindustry Exposure	Company Exposure	Manageable Risk Factor	Management Score	Management Weight		
Corporate Governance	11.2%	9.0	9.0	100%	55.0	14.4 %	4.1	
Resource Use	18.6%	8.0	10.0	80%	40.8	12.8 %	6.7	
Emissions, Effluents and Waste	15.2%	10.0	9.0	90%	43.0	13.0 %	5.5	
Occupational Health and Safety	14.0%	9.0	8.1	90%	41.5	11.7 %	5.1	
Community Relations	13.9%	10.0	10.0	90%	54.9	14.4 %	5.1	
Carbon -Own Operations	11.1%	6.0	5.4	80%	31.9	6.9 %	4.0	
Human Capital	7.4%	5.0	4.5	95%	42.3	6.9 %	2.7	
Bribery and Corruption	4.0%	6.0	7.5	95%	85.0	11.4 %	1.4	
Land Use and Biodiversity	2.8%	3.0	2.7	100%	62.7	4.3 %	1.0	
Business Ethics	1.8%	3.0	2.7	95%	80.0	4.1 %	0.6	
Overall	100.0%	69.0	68.9	90.5 %	52.4	100.0%	36.2	High

=Significant event



Exposure and Events

- ***Emissions, Effluents and Waste is the top Material ESG Issue for the sector, by Event frequency.***
- ***Community Relations, Labour Relations and Occupational Health & Safety events are also important.***
- ***Bribery and Corruption and Business Ethics (Anti-competitive Practices, Accounting and Taxation) events also feature prominently.***



Sustainalytics' ESG supply-chain impacts

- **Water Use – SC**

Incidents relating to the volume of water used directly or indirectly for producing/manufacturing or for supporting activities, for projects or activities in water scarce locations. It does not involve disputes over water rights, but it does include criticisms over water usage.

- **EEW – SC**

Incidents relating to a company's poor management and disposal on land of hazardous waste, radioactive waste, e-waste, toxic waste, and other types of waste that have a potential negative impact on human health and safety or degradation due to use of land.

- **Labour Relations – SC**

Incidents relating to a company's discriminatory actions against employees on the basis of age, gender, race and ethnicity, disability, sexual orientation, caste, religion, national extraction or social origin.

- **Occupational Health & Safety - SC**

Incidents relating to company activities that have a negative impact on worker health and safety, including workplace accidents, fatalities, health hazards, contamination, violent labor actions.

- **Community Relations – SC Water Rights**

Incidents relating to company activities that restrict a community's access to water, including ownership or management of projects that divert water supply away from local use. It concerns any type of dispute between communities and companies with regard to water usage.



For more information, please contact:

Michael Proulx

Director

Mining Research

647 264 3775

Michael.Proulx@sustainalytics.com

www.sustainalytics.com

Mining and Uncertainty: Scenarios

This is a standardized 2 x 2 scenario tool.

The x-axis starts left with adherence to ESG compliance as referenced in permitting and local regulations.

The y-axis considers the likelihood of a stressed supply-chain to a healthy supply-chain over some time frame.

Place a value on each end of the axes that sum to 100%.

Let's suggest the 80-20 rule for the x-axis, 80 on the left-end.

For the y-axis I cite Unilever's S-C concern, 35-65 with 35 at the top.

The % by vector 1,2,3,4 clockwise t-l are:

28%, 7%, 13%, 52%.



SUMMARY AUDIT REPORT

TRANSPORTATION PROTOCOL

Name of Cyanide Transportation Facility: Boroo Supply Chain

Name of Facility Owner/Operator: Boroo Gold Company Ltd

Name of Responsible Manager: John Kazakoff, President

BGC purchases cyanide from Anqing Shuguang Chemical Co. Ltd. as solid briquettes packed in 1,000 kg Intermediate Bulk Containers (IBCs). At the Chinese border town of Erlian, the IBC's are stored in a national hazardous goods warehouse and transferred into dedicated shipping containers owned by BGC and then trucked by Shuguang across the border to Zamiin-Uud where the containers are loaded onto railcars for transport to the Wood Marshalling Yard in Ulaanbaatar, Mongolia.

At Ulaanbaator, the shipment is transferred onto trucks and transported by road to the Boroo Mine site. BGC takes ownership of the cyanide when the containers are transferred onto the railcars at Zamiin-Uud. The Boroo Supply Chain includes all shipping and handling from the unloading of Shuguang's trucks at the Zamiin-Uud railway to delivery of the cyanide shipment at the mine, a distance of approximately 720 km.

BGC contracts Mongolistics Worldwide Co., Ltd. as the local freight forwarding agency. BGC retains overall responsibility for managing the cyanide shipment from Zamiin-Uud to the mine site. This verification audit is limited to the 720km section of the cyanide supply route covering the Boroo Supply Chain between Zamiin-Uud and the Boroo Mine as shown on the map.

