

# **SUSTAINABLE MINING AND GEOINFORMATION**

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**Week – 12**

## **Lecture 56: Sustainability Reporting for Mining Industry**

Welcome, students, to our NPTEL course on Sustainable Mining and Geoinformation. Today is lecture number 56, and the title of today's lecture is Sustainability Reporting for the Mining and Metals Industry. In today's topic, we will discuss the United Nations Sustainable Development Goals (UNSDG), then ESG disclosure by listed companies as required by the Securities and Exchange Board of India (SEBI), BSE, etc. Then we will talk about Sustainability Reporting for the Mining Sector, the Mining and Metal sector, and important social and environmental category parameters. Then, different Sustainability Reporting Frameworks. We will particularly talk about one specific framework, that is, the GRI Framework. So, to start with, as we all know, awareness of sustainable development is increasing in the Mining and Metal sector. We know that Environmental Impact Assessment, Environmental Management Plan, and Mine Closure Planning are now mandatory requirements, statutory requirements that companies have to comply with. Apart from that, we have corporate social responsibility or district mineral foundation; these are statutory mechanisms, legal mechanisms to share benefits with society by mining companies. Now, you know, since 2015 when the United Nations adopted the Sustainable Development Goals (SDGs),

### Mining and Sustainability

- Awareness of "SD" increasing in Mining Industry.
- EIA/EMP and Mine Closure Planning are now part of Mine Regulations.
- CSR and DMF has also regulatory mandate for Indian mines.
- Reporting about **SDGs and ESGs** becoming important for MI, regulators, investors and civil society.
- Sustainable MI will lead to better economic and environmental performance for mines, and benefits to community.
- Sustainability reporting a critical part of SD.
- Sustainability reporting provides information on environmental, social, economic, governance, and performance measures of mining industry.
- This may be used for comparative evaluation of SD among Mines.



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### CONCEPTS COVERED

- UN Sustainable Development Goals
- ESG disclosure by listed company
- Sustainability reporting for Mining Sector
- Important social and environmental parameters
- Different SR frameworks



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it is becoming a requirement for companies to show how they are contributing to fulfilling the Sustainable Development Goals, so it is becoming important. In addition to that, now we have what we call ESG (Environmental, Social, and Governance) Disclosures. They are also becoming important to the mining industry, since regulators are also asking for SDG and ESG compliance. Investors are also wanting mining companies to fulfill SDG and ESG disclosures, and more importantly, civil society and environmental activists are also demanding that mining companies provide a report that gives information about sustainable development goals and ESG compliance, and the steps taken by mining companies towards these important sustainable features. Now, all these things and our definition of sustainable development or mining sustainability are becoming very important since a sustainable mining industry, will lead to better economic performance of the industry. It will lead to better environmental performance of the mining industry. And at the same time, it will bring benefits to the community, to the society in which mining companies operate.

So, as part of the sustainable development of the mining industry, reporting on what is being done towards sustainability is called sustainability reporting. So, sustainability reporting is becoming very important, and it is a critical part of sustainable development actions towards sustainable development. Sustainability reporting, basically the report that the company will bring out, will provide information on Environmental, Social, and Economic governance, and also the different performance measures of the mining and metal industry in these domains. So, this is a tool that will provide all the information about the economic conditions of the mine. About the economic performance, environmental performance, social performance, and governance performance. These reports may be used among mining companies for the evaluation of sustainable development in the mining industry. So, you know that IBM has a star rating system, and they give four-star and five-star ratings. That is a sustainability reporting as well as an evaluation format. We will talk about the star rating also for the mining industry in the next class. I was talking about the United Nations Sustainable Development Goals. You all know Professor Behera has already discussed these sustainable development goals, that there are 17 Sustainable Development Goals,



which has been adopted by the United Nations, and we have to achieve these 17 sustainable development goals. Most of the 17 development goals are directly or indirectly related to link to the mining and metal industry. Some goals, particularly clean energy, the elimination of poverty, hunger, and the creation of Wealth, are directly linked to the mining industry. Some other goals are indirectly linked to the mining industry. Our country has committed to achieving these 17 sustainable development goals by 2030. Many of the goals have to be achieved by 2030. So, for example, Poverty Reduction, Zero Hunger, Good Health and Well-being, Quality education for all, Gender equality, provision of clean water and Sanitation for all, Providing Affordable and Clean energy

for all, providing decent work and Economic growth to all people, Industry innovation and Infrastructure development to reduce inequality and for a sustainable urban community, responsible consumption and production, taking climate action to abate climate change. Then protect the aquatic environment, protect the terrestrial environment, and achieve peace, justice, and strong institutional support, partnership among different countries. These are the 17 different goals, and the company, in their sustainable reporting, will also have to mention what actions they have taken towards achieving these goals, particularly those which are very relevant to the mining industry.

They also have to give some information. Another important sustainability topic, which is now also becoming very important, is the Environment, Social, and Governance (ESG), ESG issues in the mining industry. So, there are 3 components: one is the Environment, the second is the Social, and the third is the Governance. So environment means what are the ecosystem services, biodiversity, air, noise, energy, waste tailings, water management, climate change, greenhouse gas emissions, hazardous material, and mine closure. These are the environmental issues in the mining sector. In the social sector, human rights issues, land use, change of land use, resettlement, land acquisition, labor practices, Vulnerable groups, gender issues, gender rights, health and safety of the worker and the community, mine closure, and their after uses. So, these are the different social impacts of mining and what actions the mine is taking for the betterment of society. Governance is basically the institutional mechanism, legal mechanism through which we will enforce the environmental protection measures. The legal and institutional mechanisms through which you will implement the social improvement measures. Particularly, the guidelines, protocols, and institutional departments that the company has to set up; further, the ethical issues, like steps against bribes, steps against corruption, and transparency in executing the project. All these are known as governance.

**ESG Issues in Mining**

Environment	Social	Governance
<ul style="list-style-type: none"><li>• <b>Environment:</b> Ecosystem services, biodiversity, air, noise, energy, mine waste and tailings, water management climate change (carbon footprint, greenhouse gas), hazardous materials, mine closure</li></ul>	<ul style="list-style-type: none"><li>• <b>Social:</b> Human rights, land use, resettling, labour practices, vulnerable groups, gender, health and safety of workers and the community, artisanal miners, mine closure/ after usage</li></ul>	<ul style="list-style-type: none"><li>• <b>Governance:</b> Legal compliance, ethics, anti-bribery and corruption (ABC), transparency</li><li>• Voluntary ESG reporting by listed companies by SEBI; may be made mandatory in near future.</li></ul>

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Now the as per the Ministry of Corporate Affairs (MCA) and also the Securities Exchange Board of India (SEBI), have mandated that all listed companies through the SEBI or through the MCA, they have to make disclosure about the ESG issues. Now it is voluntary, it is not mandatory, but they are encouraging that more and more companies, including the mining company, should give ESG disclosure. If you see, most of the ESG issues are also covered in the sustainable development. Sustainable development talks of the Environment, Society, and Economy. These are also the aspects of ESG. There is an overlap between SD and ESG. So, when we give the sustainability reporting, many ESG reports are also being done automatically. So, keeping this in the background, sustainable reporting is becoming very, very important. So, in the mining companies across the world, sustainability reporting is becoming important, and many mining companies are doing sustainability reporting. There are different frameworks and standards at present throughout the world. There is not a single standard, but if we look at the sustainable reporting as of today, more emphasis is being given on the financial performance, financial transparency, and accountability, and less on environmental, social, and governance performance. But since the focus on ESG is also growing.

**Sustainability Reporting**

- Sustainability reporting for mining across world are following diverse reporting frameworks, and standards.
- Generally more emphasis on financial transparency, accountability and less on environmental and social and governance performance.
- ESG disclosures by mining companies is growing.
- Large international mining companies are reporting on environmental and social performance.
- Stakeholders are also demanding information on environmental and social impacts of mining at the mine-site level with local context.
- Governments can guide mining companies on important sustainability issues and indicators to be reported.
- UNEP compiled several SR frameworks/ standards, identified critical economic, environmental and social impact category for reporting.

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Now, many companies, many international companies, are giving focus to reporting on their environmental and social performance. Now, different stakeholders, particularly the investors, the civil society, and in some cases, where is government regulators, are all encouraging the mining company to also make a disclosure on the environmental and social performance. They are demanding more information on the environmental impact, on the protection measures taken for the environment, on the social impact, and on the measures taken to provide socio-economic benefits to the community. The government also has an important role in making sure that the company makes sustainable reporting, and the government can provide the framework through which the sustainable reporting

can be done. Now, the United Nations Environment Program has compiled several sustainable reporting frameworks or standards, and they have identified critical Economic, Environmental, and Social impact categories, which will be used in the sustainable development reporting by these companies. The UNEP in their report in 2020, has identified the different impact categories in the environment domain as well as in the social domain.

Environmental Issues for SR	
Environmental Impact	Examples of Indicators
Impact on biodiversity	<ul style="list-style-type: none"> <li>- Number/percentage of sites with biodiversity management plans,</li> <li>- Description of significant impacts on biodiversity</li> <li>- Amount of land disturbed or rehabilitated</li> <li>- Information on the use of biodiversity offsets</li> </ul>
GHG Emissions and Energy use	<ul style="list-style-type: none"> <li>- Amount of CO<sub>2</sub>e GHG emissions and mitigation measures</li> <li>- Energy consumption and reductions</li> </ul>
Water Management	<ul style="list-style-type: none"> <li>- Amount of water withdrawal by source</li> <li>- Water sources significantly affected by withdrawal of water</li> </ul>
Waste and hazardous materials (tailings management)	<ul style="list-style-type: none"> <li>- Total weight of waste and their disposal method</li> <li>- Total number and type of significant spills</li> <li>- Processes in place to manage risks associated with waste rock, tailings, sludges and other residues</li> <li>- Amount of release of heavy metals/toxins into the local environment</li> </ul>

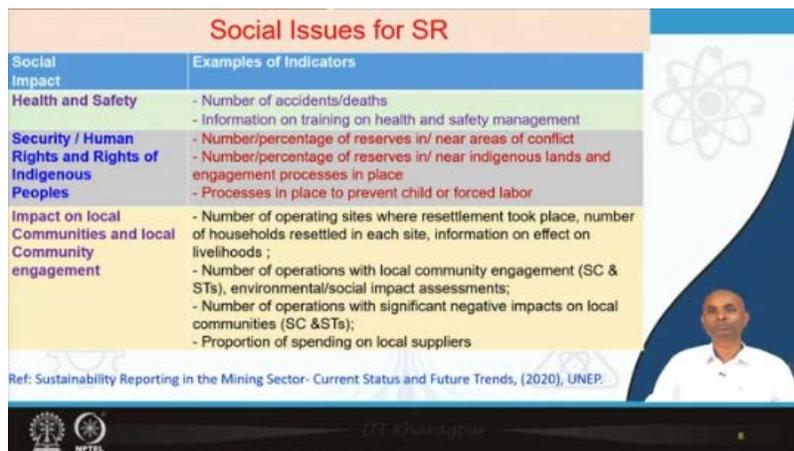
Ref: Sustainability Reporting in the Mining Sector- Current Status and Future Trends, (2020), UNEP.

Particularly important environmental impact categories are impact on biodiversity, greenhouse gas emission and energy use, water use and water management, waste and hazardous material management. These are the main impact categories, and among these impact categories, there are many indicators that are also being listed. These indicators will be used in the Sustainable Reporting. So, for example, in biodiversity, the number of sites where a Biodiversity Management Plan has been prepared by the company. What is the impact of the mining on the biodiversity, what is the amount of land that is disturbed by the mining, and what is the amount of land that has been reclaimed and rehabilitated? So, this information has to be provided for the biodiversity impact category. Similarly, for the greenhouse gas emission, what is the amount of greenhouse gas emission from the mines? What mitigation measures have been taken to reduce the CO<sub>2</sub> emissions? In the energy category, how much energy is the mining company consuming, and out of that, how much is renewable, how much is non-renewable, and what measures has the mining company taken to reduce energy consumption? And if you reduce the energy consumption, your greenhouse gas emissions will also be reduced. In the water management category, the amount of water withdrawal from the aquifer, from the groundwater, from the surface water, and how much water is used? Then what is the amount of degradation by the mining company to the groundwater resource, and to the surface water resource?

What are the treatment measures that have been taken to protect the water quality? So, these are the water management issues. Waste material: How much waste has been generated? Solid waste, particularly in the mines, overburden, and tailings, and how they are being disposed of or how they are used? Similarly, the number and type of waste spillage. We know that a lot of times, the tailing dam collapses. So, there is a spillage of the tailings, and it damages the land, water, and air. The process to manage the risk with respect to the waste rock, overburdened rock, tailings, sludges, and other waste and effluents. Amount of release of heavy metals, toxins from the solid liquid waste to the water body, and to the land. So, these are the environmental impact categories, and these are the different indicators that should be used in the sustainable reporting. Similarly, in the social impact category, the category is health and safety, and the indicators are the number of accidents and deaths. The information on training, on health and safety management, and training for the people working in the mines. The second impact category is security, human rights, and the rights of indigenous people. So the number of reserves, the number of mines in the area of conflict, and the number of reserves near indigenous land where the indigenous community is living.

Social Issues for SR	
Social Impact	Examples of Indicators
Health and Safety	<ul style="list-style-type: none"> <li>- Number of accidents/deaths</li> <li>- Information on training on health and safety management</li> </ul>
Security / Human Rights and Rights of Indigenous Peoples	<ul style="list-style-type: none"> <li>- Number/percentage of reserves in/ near areas of conflict</li> <li>- Number/percentage of reserves in/ near indigenous lands and engagement processes in place</li> <li>- Processes in place to prevent child or forced labor</li> </ul>
Impact on local Communities and local Community engagement	<ul style="list-style-type: none"> <li>- Number of operating sites where resettlement took place, number of households resettled in each site, information on effect on livelihoods ;</li> <li>- Number of operations with local community engagement (SC &amp; STs), environmental/social impact assessments;</li> <li>- Number of operations with significant negative impacts on local communities (SC &amp; STs);</li> <li>- Proportion of spending on local suppliers</li> </ul>

Ref: Sustainability Reporting in the Mining Sector- Current Status and Future Trends, (2020), UNEP.



So, a process is in place to prevent child or forced labor. So, these are some of the indicators. The third category in the social category is impact on the local community and local community engagement. So, the number of mines where resettlement took place, the number of households resettled in each mine, and information on the effect on the livelihood of the affected community. How are you engaging with the local community, particularly vulnerable society, SC, and STs? The environmental and social impact assessment of a number of mines has a significant negative impact on the local community. We know that when you have a mine in the scheduled area, tribal people are affected. So, whether your mine is in the scheduled area, what is the impact on the tribal

people? These are some of the social impact issues and social impact indicators. Now, this is the background. Now, there are different sustainable reporting frameworks available in the literature. I have reported three reporting frameworks that are directly relevant to mining. But apart from these, there are quite a few others also. These frameworks are used by the industry in general. Three reporting frameworks, the Global Reporting Initiative (GRI), the Sustainability Accounting Standards Board (SASB), they have standards for metals and the mining sector, and the Responsible Mining Foundation (RMF), also have a reporting framework for the mining sector. First thing is the Global Reporting Initiative.

**Sustainability Reporting Frameworks**

**Global Reporting Initiative (GRI)**  
GRI Standards is the leading framework for corporate sustainability reporting of large companies. A special guidance document for the mining and metals sector, 'GRI's Mining and Metals Sector Disclosures' document has been developed. The performance indicators in the Mining and Metals Sector Disclosures were mandatory in the previous GRI G4 Reporting Guidelines but are not required under the GRI Standards.

**Sustainability Accounting Standards Board (SASB) - Metals and Mining**  
The Sustainability Accounting Standards Board (SASB) has developed 77 industry specific sustainability reporting standards, published in 2018. One of SASB's standard is the Metals and Mining Sustainability Accounting Standard.

**Responsible Mining Foundation (RMF)**  
The Responsible Mining Index Framework of RMF provides a comprehensive reference of the major aspects of responsible mining which is based on society expectations of large-scale mining companies. The framework includes information on 43 topics and provides indicators and metrics to determine RMI based on mining company policies and practices on these topics.

Ref: Sustainability Reporting in the Mining Sector- Current Status and Future Trends, (2020), UNEP.

ICMM

Now, the Global Reporting Initiative standard is the leading framework for corporate sustainability reporting of many large companies. Worldwide, many large companies are following this GRI standard for sustainability, reporting particularly the ICMM company. We have discussed the ICMM (International Council of Mining and Metals). Many large mining companies are members of the ICMM, and as mandated by the ICMM, they are following the GRI Sustainability Reporting Format. Now, the GRI has developed a particular disclosure for the mining and metal company that is known as the G4 reporting guidelines. So, the mining companies can follow the GRI reporting format, particularly the GRI G4 reporting guidelines for mining and metals. We will discuss this one, the GRI G4 mining metals or disclosures format, also. The Second format that is available for the mining and metal company. It is the Sustainability Accounting Standards Board (SASB). The Sustainability Accounting Standards Board has developed 77 industry-specific sustainability reporting standards, and they also have a format for the mining and metals sector - Metals and mining sustainability accounting standard. This was developed in 2018, and GRI was developed in 2013. SASB also updates the format from time to time. The third important format for sustainability reporting is the Responsible Mining

Foundation (RMF). The RMF has developed the Responsible Mining Index Framework (RMIF).

This RMIF provides a comprehensive reference of the major aspects of responsible mining, which is based on society's expectations of a large-scale mining company. The framework includes information on 43 topics, and it provides and suggests indicator-sustainability indicators and metrics to determine the Responsible Mining Index, based on the policy followed by the company and the sustainability practices followed by the company. So, this RMI considers both the policy of the mining company, Corporate Sustainability Policy, and the sustainability practices executed by the mining company at the mine site. So, these are the three sustainability reporting frameworks, and today we will talk about the GRI G4 format. GRI mining and metal sector supplement G4 guidelines. So, in the G4 guidelines, there are two types of disclosure, one is the general and standard disclosure. And there is the Specific Standard Disclosure. So, the general standard disclosure will talk about the general information about the company, the company profile, strategy and analysis, organization profile, the stakeholder engagement, the governance, ethics, and integrity. All general information about the company, including information related to these issues, is mentioned in the general standard disclosure. And then we have specific standard disclosures, which pertain to economic, environmental, and social categories.

GRI Mining & Metals Sector Supplement- G4 Guidelines		
<b>CATEGORY: GENERAL STANDARD DISCLOSURE</b>		
<ul style="list-style-type: none"> <li>• Strategy and Analysis</li> <li>• Organizational Profile</li> <li>• Identified Material Aspects and Boundaries</li> <li>• Stakeholder Engagement</li> </ul>	<ul style="list-style-type: none"> <li>• Report Profile</li> <li>• Governance</li> <li>• Ethics and Integrity</li> </ul>	
<b>SPECIFIC STANDARD DISCLOSURES</b>		
<b>Category</b>	<b>Economic</b>	<b>Environmental</b>
Aspects	<b>Economic Performance</b> <b>Market Presence</b> Indirect Economic Impacts Procurement Practices	<b>Materials , Energy, Water</b> <b>Biodiversity</b> <b>Emissions</b> <b>Effluents and Waste</b> Products and Services Compliance Supplier Environmental Assessment Environmental Grievance Mechanisms

Ref: GRI- G4 Mining and Metals Sector Disclosures (2013)

So, for example, in the economic categories, the aspects are: economic performance of the company, market presence of the company, indirect economic impact by the company, procurement practices, supply chain, and sourcing. All this information pertains to economic aspects, economic information. In the environmental category, we have material use, energy consumption, water consumption, water pollution, impact on

biodiversity, greenhouse gas emissions, effluent emissions, wastewater discharge, environmental compliance, and environmental grievance mechanisms. All this information will be part of the environmental disclosure. In the social category, you have the subcategories: labor practices and decent work environment, human rights issues, social issues, and product responsibility. See this GRI standard; particularly, these standards are being followed by large companies across the world, particularly all the ICMM companies—they operate in different countries and continents. For them, following something in a uniform way is very important. That is why these social standards are very important. In the labor practices and decent work category, you have employment, labor-management relationships, occupational health and safety, training, education for workers, worker diversity and equal opportunities, remuneration, gender-specific remuneration, equality or equity between men and women. The labor practice grievance mechanism—all these are part of labor practices.

**GRI Mining & Metals Sector Supplement- G4 Guidelines**

**SPECIFIC STANDARD DISCLOSURES : SOCIAL CATEGORY**

Sub-category	Labor Practices and Decent Work	Human Rights	Society	Product Responsibility
<b>ASPECTS</b>	<ul style="list-style-type: none"> <li>Employment ;</li> <li>Labor/Management Relations</li> <li>Occupational Health and Safety</li> <li>Training / Education ;</li> <li>Diversity and Equal Opportunity ;</li> <li>Remuneration for Women and Men;</li> <li>Supplier Assessment for Labor Practices</li> <li>Labor Practices Grievance Mechanisms</li> </ul>	<ul style="list-style-type: none"> <li>Investment ;</li> <li>Non-discrimination;</li> <li>Freedom of Association and Collective Bargaining;</li> <li>Child Labor ;</li> <li>Forced Labor;</li> <li>Security Practices ;</li> <li>Indigenous Rights Assessment ;</li> <li>Supplier Human Rights Assessment ;</li> <li>Human Rights Grievance Mechanisms</li> </ul>	<ul style="list-style-type: none"> <li><b>Local Communities</b></li> <li>Anti-corruption</li> <li>Public Policy;</li> <li>Anti-competitive Behavior ;</li> <li><b>Compliance</b></li> <li>Supplier Assessment for Impacts on Society ;</li> <li>Grievance Mechanisms for Impacts on Society;</li> <li>Emergency Preparedness ;</li> <li>Artisanal and Small-scale mining ;</li> <li>Resettlement</li> <li>Closure Planning</li> </ul>	<ul style="list-style-type: none"> <li>Customer Health and Safety ;</li> <li>Product and Service Labeling ;</li> <li>Marketing Communications</li> <li>Customer Privacy Compliance</li> <li><b>Materials Stewardship</b></li> </ul>

Ref: GRI- G4 Mining and Metals Sector Disclosures (2013). 13

In the human rights subcategory: non-discrimination, freedom of association, measures against child labor, measures against forced labor, social security, indigenous people's rights, human rights assessments, any grievances regarding human rights, and how they are addressed—these are the indicators. In the social category: anti-corruption public policies, anti-competitive behavior, impact on society, any social grievance mechanisms, emergency preparedness, measures for artisanal and small-scale mining, resettlement issues, mine closure planning issues—these are the social aspects. In the product responsibility category—a unique category by GRI—customer health and safety, any product we use, and its impact on customer health and safety. There may be toxicity issues. What is the impact on the customer? Then, product and service labeling regarding safety, marketing communication about the product, privacy issues, customer privacy issues. All these are specific standard disclosures under the social category. In the

economic disclosure, you have the direct economic value generated by the company and distributed among society. In the environmental disclosure materials, what percentage of the material is used for recycling? What percentage of recycled material is used? In biodiversity: ecosystem services, climate change issues, measures for climate mitigation, water treatment, soil conservation, soil reclamation, and air quality protection.

GRI Mining & Metals Sector Supplement- G4 Guidelines	
CATEGORY: ECONOMIC DISCLOSURE	
ECONOMIC PERFORMANCE	Direct Economic Value Generated And Distributed
MARKET PRESENCE	Proportion Of Senior Management Hired From Local Community
CATEGORY: ENVIRONMENTAL DISCLOSURE	
MATERIALS	Percentage Of Materials Used That are Recycled Input Materials
BIODIVERSITY	<ul style="list-style-type: none"> <li>Ecosystem, goods and services they provide (climate regulation, water purification, soil production, air quality regulation);</li> <li>Report whether and how biodiversity offsets have been used as part of the overall policy and approach to habitat protection and restoration.</li> <li>Description of Significant Impacts of Activities, Products, and Services on Biodiversity in Protected Areas and Areas of High Biodiversity Value Outside Protected Areas.</li> <li>Amount Of Land (Owned Or Leased, And Managed For Production Activities Or Extractive Use) Disturbed Or Rehabilitated.</li> <li>Number Of Sites Requiring Biodiversity Management Plans; Number Of Those Sites With Plans In Place.</li> </ul>
Ref: GRI- G4 Mining and Metals Sector Disclosures (2013).	

All the usual environmental issues we have already discussed in the ICMM sustainable development principles. Almost all of this information must be provided regarding the environment category. So, materials, biodiversity. Similarly, emissions: the different amounts of emissions, measures taken to reduce NOx, SOx, and other greenhouse gas emissions. Effluent and waste emissions: solid, liquid, and gaseous effluents from mining; what protective measures are taken to reduce emissions? Tailings—leaching from tailings. Different types of waste generated and handled: overburden rocks, tailings sludge. All these are part of the GRI disclosure. To summarize today's class, we discussed the UN Sustainable Development Goals (UN SDGs). We talked about ESG—Environmental, Social, and Governance—issues and ESG compliance. We discussed the Sustainable Reporting Framework, three major frameworks: GRI, SASB, and responsible mining. We talked in detail about the G4 mining and metals disclosure. In this class, we discussed sustainable reporting. These are the references.

## GRI Mining & Metals Sector Supplement- G4 Guidelines

**CATEGORY: ENVIRONMENTAL DISCLOSURE**

<b>EMISSIONS</b>	<ul style="list-style-type: none"> <li>- Disclosure on management approach regarding Emissions should include discussion of: management of fugitive emissions such as dust from mining and processing activities or noise and seismic impacts from explosives use through, for example, monitoring activities and compliance with regulatory limits. <ul style="list-style-type: none"> <li>- NOX, SOX, and other significant air emissions.</li> </ul> </li> </ul>
<b>EFFLUENTS AND WASTE</b>	<ul style="list-style-type: none"> <li>-Processes to assess and manage risks associated with overburden, waste rock, tailings, sludges and other residues (for example, structural stability of storage facilities, metal leaching potential, and hazardous properties).</li> <li>-Types of tailings facilities that it owns or operates including riverine, lake and submarine tailings disposal, and the use of lined vs. unlined pits.</li> <li>-Approaches taken to minimize waste and its potential environmental impacts.</li> <li>-Total Weight Of Waste By Type And Disposal Method</li> <li>- Number And Volume Of Significant Spills</li> <li>- Amounts of Overburden, Rock, Tailings, Sludges and their Associated Risks</li> </ul>

Ref: GRI- G4 Mining and Metals Sector Disclosures (2013).



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## SUMMARY

- UN Sustainable Development Goals
- ESG Compliance
- Sustainable Reporting Frameworks
- GRI-G4 Mining and Metals Disclosure



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We will continue this class tomorrow with other kinds of sustainability reporting, as well as talk about ESG, and then we will discuss the evaluation—sustainable development evaluation or sustainability evaluation, particularly for mining. We will also talk about the Indian format of sustainability evaluation, which is the star rating system by the Indian Bureau of Mines, in the next classes. So, I thank you for your patience. Thank you very much.