Today’s Speakers

Dr. Olga Loiseau-Aslanidi
Head of Business Analytics
Olga.Loiseau-Aslanidi@moodys.com

Keeran Gwilliam-Beeharee
Executive Director – Market Access
keeran.gwilliam-beeharee@vigeo-eiris.com

Brenda Solis Gonzalez
Senior Risk Modeller and Data Scientist
Brenda.Solis@moodys.com
Agenda

1. ESG & Climate Risk Assessment
2. Addressing ESG & Climate Risk Data Gaps
3. Illustrative Portfolio Analysis
Levels of ESG and Climate Risk Assessment
How to bridge the disclosure data gaps

Full Portfolio Coverage

Full Assessment
Direct in-depth company assessment using detailed company information
Driven by comprehensive questionnaires with subject matter expert overlay

Predicted Metrics
Quantitative ESG metrics estimate using limited company information
Driven by robust analytical methodologies with possibility to add qualitative overlay
ESG & Climate Risk Assessment
ESG Assessment Scores
» An assessment of how companies are managing their ESG risks and opportunities.
» Multiple layers of granular scoring
» 0 – 100 scoring scale

Energy Transition Scores
» An assessment of how companies are tackling the risks and opportunities tied to the transition to a low carbon economy
» 0 - 100 scoring scale

Physical Risk Management Scores
» An assessment of how companies anticipate, prevent and manage the physical risks of climate change
» 0-100 scoring scale

Carbon Emissions Data
» Scope 1 data (direct)
» Scope 2 data (indirect)
» Scope 3 data (other indirect)
» + modelled data
ESG Scoring - High Level Methodology

A systematic view on three angles of corporate management of ESG risks

- **Global Standards**
  - International Standards and Reference Texts from the UN, OECD, ILO

- **Sector Frameworks**
  - 40 Sector Models

- **Assessment Approach**
  - Leadership
  - Implementation
  - Results

- **ESG Scores**
  - Advanced (60+/100)
  - Robust (50-59/100)
  - Limited (30-49/100)
  - Weak (0-29/100)

- **ESG Reports**

ESG assessment methodology built around international standards and reference texts.
# ESG Scoring – Criteria

<table>
<thead>
<tr>
<th><strong>ESG CRITERIA</strong></th>
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<tbody>
<tr>
<td><strong>Environmental Domain</strong></td>
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<tr>
<td>Environmental Strategy</td>
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<tr>
<td>Pollution Prevention and Control</td>
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<tr>
<td>Green Products and Services</td>
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<tr>
<td>Biodiversity</td>
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<tr>
<td>Water</td>
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<td>Energy</td>
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<td>Atmospheric emissions</td>
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<td>Waste management</td>
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<tr>
<td>Local Pollution (noise/vibration)</td>
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<tr>
<td>Transportation</td>
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<tr>
<td>Impacts of Product Use and Disposal</td>
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</table>

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<thead>
<tr>
<th><strong>Human Rights Domain</strong></th>
<th><strong>Corporate Governance Domain</strong></th>
<th><strong>Community Involvement Domain</strong></th>
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<tbody>
<tr>
<td>Fundamental Human Rights</td>
<td>Board of Directors</td>
<td>Social and Economic Development</td>
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<tr>
<td>Fundamental Labour Rights</td>
<td>Audit and Internal Controls</td>
<td>Societal Impact of Products and Services</td>
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<td>Non Discrimination and Diversity</td>
<td>Shareholders</td>
<td>Philanthropy</td>
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<tr>
<td>Child and Forced Labour</td>
<td>Executive Remuneration</td>
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</table>
ESG Scoring - Criteria Scoring

A systematic view on three angles of corporate management

**Question Type**

- Leadership
- Implementation
- Results

**Question**

- Visibility
- Exhaustiveness
- Ownership
- Means
- Coverage
- Scope
- Indicators
- Stakeholder Feedback
- Controversy Management

**What do we look to measure?**

- How committed is the company. Does it have a strategy, targets and governance oversight?
- What measures has the company put in place to support those commitments and ensure their execution?
- What performance trends are visible, what controversies are visible and how are they managed?

**ESG Scores**

- Leadership: 100
- Implementation: 0
- Results: 0
# ESG Scoring – Case Study

## Water Management Scores – Mining & Metals Europe

### Salzgitter vs. Vallourec

<table>
<thead>
<tr>
<th>Water Score</th>
<th>9/100 [weak]</th>
<th>53/100 [robust]</th>
</tr>
</thead>
</table>

### Leadership

- No public commitment on water consumption
- No public commitment on water emissions
- General commitment on water consumption
- General commitment on water emissions

### Implementation

- No information on systems put in place to manage water
- Information on process optimisations (rainwater collection, pre-treatment facilities, water reuse technologies etc)

### Results

- Partial scope KPI reporting: Positive trend water consumption
- No controversies
- Full scope KPI reporting: Positive trend water consumption
- KPIs on Suspended Solids, Heavy Metals, all trending positive.
- No controversies
The ESG Assessment provides multiple levels of data alongside scorecards at company level.
Energy Transition Assessments

An assessment of how companies are tackling the risks and opportunities tied to the transition to a low carbon economy

What is assessed?
- Green Products
- Transportation
- Energy Consumption
- Use and Disposal of Product and Services
- Energy Production (T&D)
- Access to Energy

Sector Contextualisation
- 40 Sector Models
- Weights from 0-3

Assessment Approach
- Leadership
- Implementation
- Results

Scores
- Advanced (60+/100)
- Robust (50-59/100)
- Limited (30-49/100)
- Weak (0-29/100)

What we identify
- Ambitious strategies, targets and strong performance indicators
- Unclear or no strategies, targets and weak performance indicators

Transition Risks: emerging as we shift to a low carbon economy...
- Reduced Market Demand
- Rising Operating Costs
- Reputational Deterioration
### Case Study Energy Transition Assessments

Tracking and understanding improvement over time

<table>
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<tr>
<th>Title</th>
<th>2013</th>
<th>2015</th>
<th>2017</th>
<th>2019</th>
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<td>Robust</td>
<td>Advanced</td>
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<td><strong>Enel</strong></td>
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<td>Limited</td>
<td>Advanced</td>
<td>Advanced</td>
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<td><strong>Engie</strong></td>
<td>Robust</td>
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<td>Advanced</td>
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<td><strong>SSE</strong></td>
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<td>Robust</td>
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<td><strong>Naturgy Energy Group</strong></td>
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<td>Robust</td>
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<td><strong>RWE</strong></td>
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<td><strong>Centrica</strong></td>
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<td><strong>EnBW</strong></td>
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</table>

**E.ON** - (zoom on renewables strategy)

- Public commitments to develop renewables (Carbon neutral by 2040)
- Current installed renewable capacity disclosed and above sector average
- Ongoing renewable projects disclosed (wind/solar/biomass)
- Current renewable energy generation disclosed and in line with sector average.

**Centrica** - (zoom on renewables strategy)

- Public commitments to develop renewables (general commitment)
- Current installed capacity in renewable sources - not disclosed
- Ongoing renewables development projects - not disclosed
- Current renewable energy generation – not disclosed

Source: V.E Energy Transition Assessment Database
Physical Risk Management Assessments

An assessment of how companies anticipate, prevent and manage the **physical risks** of climate change

### What is assessed?

- **Physical Risks**

### Sector Contextualisation

- **40 Sector Models**
- **Weights from 0-3**

### Assessment Approach

- **Leadership**
- **Implementation**
- **Results**

### Scores

- **Advanced** (60+/100)
- **Robust** (50-59/100)
- **Limited** (30-49/100)
- **Weak** (0-29/100)

### What we identify

- **Strong risk identification and risk management measures**
- **Unclear or no risk identification**

### Physical Risk Impacts:

- Corporate assets
- Costs
- Impact on corporate ability to conduct activities and operations
- Supply Chain

- Climate Change Impact on the company
  - Droughts & Heatwaves
  - Temperature Increase
  - Sea Level Rise
  - Changes in Precipitation Patterns
  - The intensity, frequency and duration of hurricanes
Addressing ESG & Climate Risk Data Gaps
Bridging the ESG & Climate Risk Data Gaps
Applying ESG Score Predictor analytical models

1 Portfolio

2 Analytics

3 Metrics Estimates

Company Location

Company Industry

Company Size

Regional Information

Level 1: Scores
ESG, E, S, G

Level 2: Sub-Scores

Level 3: Criteria

Additional Metrics:
Physical Risk Management Score
Carbon Emissions Data
Energy Transition Score
Leading Features to Estimate Metrics
Using Machine Learning techniques to train the models

Company Size, Location, Industry
- Total assets
- Number of employees
- Turnover, revenues
- Country, region
- Industry classification, NACE 1-4

Macroeconomic Indicators
- GDP, industrial production
- Population
- Unemployment
- Indebtedness
- Foreign direct investments

Physical Risk
- Hurricanes and typhoons risk
- Heat and water stress
- Sea rise and floods
- Extreme precipitations
- Historical exposure to natural catastrophes

Sustainability Indicators
- CO2 emissions per GDP
- Used material within economy
- Share of population living in extreme poverty
- Income share of richest
- Sustainability commitment

Development and Freedom Indicators
- Life expectancy, income index
- Expected years of schooling
- Political rights, civil liberty, electoral process score
- Overall freedom index, corruption perception
ESG Score Example: Interpreting the Metric

Illustration of importance and impact direction for top model features

** Contribution measure for feature importance

*Accumulated Local Effect (ALE) measure for impact direction
ESG Score Example: Heterogeneity by Region

Business Size
- >2.6 Billion USD
- 2.6M – 206 Billion USD
- <2.6 million USD
E Score Example: Heterogeneity by Region

### Business Size
- **>2.6 Billion USD**
- **2.6M – 2.6 Billion USD**
- **<2.6 million USD**
Combining Metrics for More Insight
E Score and Carbon Footprint (Scope 1 + 2) for selected industries

Business Size
- >2.6 Billion USD
- 2.6M – 2.6 Billion USD
- <2.6 million USD
3

Illustrative Portfolio Analysis
Two Illustrative Portfolios

Company composition differs by size, industry and location

**PORTFOLIO A**

- **Location**
  - US (20.31%)
  - Japan (8.28%)
  - China (6.39%)
  - Canada (6.05%)
  - UK (5.68%)
  - India (5.32%)
  - Australia (4.66%)
  - South Korea (4.12%)
  - Taiwan (3.58%)
  - Other (35.60%)

- **Industry**
  - Manufacturing (37%)
  - Financial & insurance (15%)
  - Information & communication (10%)
  - Mining & quarrying (8%)
  - Wholesale & retail trade (7%)
  - Real estate (5%)
  - Other (18%)

**Size**
- Company Turnover mln USD
  - < 1: 2.04%
  - [1-100): 35.11%
  - [100-1,000): 44.12%
  - 1,000+: 18.73%

**PORTFOLIO B**

- **Location**
  - Italy (58%)
  - Spain (42%)

- **Industry**
  - Wholesale & retail trade (28%)
  - Manufacturing (23%)
  - Construction (9%)
  - Accommodation & food service (7%)
  - Transportation & storage (7%)
  - Real estate (6%)
  - Other (20%)

**Size**
- Company Turnover mln USD
  - < 1: 1.59%
  - [1-100): 43.60%
  - [100-1,000): 54.38%
  - 1,000+: 0.43%

Source: Moody’s Market Implied Ratings (MIR)
Source: European Data Warehouse (EDW)
# Portfolio A: Multifaceted ESG and Climate Risk

Metrics in deviations from portfolio average

<table>
<thead>
<tr>
<th>Industries, NACE 1</th>
<th>Exposure</th>
<th>ESG</th>
<th>E</th>
<th>S</th>
<th>G</th>
<th>Physical Risk Management</th>
<th>Energy Transition</th>
<th>Carbon Emissions (Scope 1 +2)</th>
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</thead>
<tbody>
<tr>
<td>Manufacturing</td>
<td>37%</td>
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<tr>
<td>Financial &amp; insurance</td>
<td>15%</td>
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<tr>
<td>Information &amp; communication</td>
<td>10%</td>
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<tr>
<td>Mining &amp; quarrying</td>
<td>8%</td>
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<tr>
<td>Wholesale &amp; retail trade</td>
<td>7%</td>
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<td>Real estate</td>
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<tr>
<td>Professional, scientific &amp; technical</td>
<td>3%</td>
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<tr>
<td>Construction</td>
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<tr>
<td>Administrative &amp; support service</td>
<td>3%</td>
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<td>Transportation &amp; storage</td>
<td>2%</td>
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<td>Electricity, gas, steam &amp; AC supply</td>
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<td>Accommodation &amp; food service</td>
<td>2%</td>
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<tr>
<td>Agriculture, forestry &amp; fishing</td>
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<td>Arts, entertainment &amp; recreation</td>
<td>1%</td>
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<td>Water supply, sewerage &amp; waste mgmt</td>
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Portfolio A: Heterogeneity Across Locations

Deviation of ESG scores from portfolio average, selected countries
Portfolio A: CO₂ Emissions and E Score
Point-in-time and forward-looking view by industries

- Total Portfolio Carbon Emissions (Scope 1 +2)
- E Score - deviation from portfolio average

Total tonnes of CO₂ equivalent Billions
## Portfolio B: Multifaceted ESG and Climate Risk

### Metrics in deviations from portfolio average

<table>
<thead>
<tr>
<th>Industries, NACE 1</th>
<th>Exposure</th>
<th>ESG</th>
<th>E</th>
<th>S</th>
<th>G</th>
<th>Physical Risk Management</th>
<th>Energy Transition</th>
<th>Carbon Emissions (Scope 1 +2)</th>
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<tr>
<td>Wholesale &amp; retail trade</td>
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<td>Manufacturing</td>
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<td>Construction</td>
<td>9%</td>
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<tr>
<td>Accommodation &amp; food service</td>
<td>7%</td>
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<tr>
<td>Transportation &amp; storage</td>
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<tr>
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<td>Information &amp; communication</td>
<td>3%</td>
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<td>Other services</td>
<td>2%</td>
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<td>Arts, entertainment &amp; recreation</td>
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<td>Education</td>
<td>1%</td>
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<td>Water supply, sewerage &amp; waste mgmt</td>
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<td>Agriculture, forestry &amp; fishing</td>
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<td>Financial &amp; insurance</td>
<td>0.21%</td>
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<td>Mining &amp; quarrying</td>
<td>0.01%</td>
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Portfolio B: CO₂ Emissions and E Score
Key Takeaways

ESG and climate risk for identification, quantification and integration

**Bridging Data Gaps**
The assessment of ESG and climate risk management is possible either through direct company assessment or building score estimates if direct assessment is not available.

**Assessment Levels**
Granularity of the assessment vary depending on company type and data availability. Adapted methodologies can be applied for SME or other unlisted companies.

**Assessment Methodologies**
Quantitative models can support portfolio vulnerability assessment and profiling. Especially when the data gaps are present and/or the number of companies in a portfolio is large.
Q&A session