



# Jewelry Development Impact Index: Platinum Mining in South Africa and Sapphire Mining in Madagascar

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# Statement of Work

- Objective: Assess the impact on Human Security of platinum mining in South Africa and sapphire mining in Madagascar
- Improve upon the methodological framework and scoring system for the Jewelry Development Impact Index (JDII)
- Continue research from Fall 2017 and Spring 2018 case-studies
- **Provide the Department of State & the jewelry industry with data on which to base policy actions to protect human security**



Academic Research, News Articles, Multi-  
stakeholders Reports

13 Interviews

**180 Page Report**

**New Index Scoring Methodology**



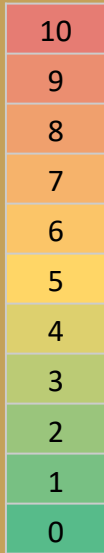
# Outline

- New Framework and Methodology
- Case Study Analysis
  - Mining and Historical Context
  - Risk to Governance
  - Risk to Economy
  - Risk to Environment
  - Risk to Human Health
  - Risk to Human Rights
  - Risk Reduction Recommendations
- Six-Country Comparison
- Mechanisms of Improvement
- Recommendations for Index Development



Smith, Toby (Photographer). 2013. Ilakaka. A group of day-laborers form a human conveyor belt to extract gravel that will be sifted for precious gems. [digital image]. Retrieved from <https://www.tobysmith.com/project/madagascar-illegal-sapphire-mining/>

# New Framework & Methodology



- **Assesses risk**, i.e., the potential for negative externalities, to **human security** posed by precious mineral and gem industries on a scale of 0 (no risk) to 10 (very high risk)
- **Scores countries on five categories** based on set of risk assessment questions
- Aims to provide **objective, transparent, and logical** measurement **applicable to all countries and industries**

# UNDP Categories of Human Security

<b>Governance</b>	<b>Economy</b>	<b>Environment</b>	<b>Health</b>	<b>Human Rights</b>
Accountability/State of Governance	Industry Employment	Environmental Regulatory Stringency and Enforcement	Human Health and Safety Risks	Workers' Rights
Transparency	Fiscal Sustainability	Existence and Extent of Pollution	Food Security	Women's Rights
Corruption Prevention	Beneficiation	Impact on Biodiversity	Water Security	Children's Rights
Industry Regulation	Smuggling and the Informal Economy	Post-Production Planning and Remediation		Indigenous/Ethnic Groups' Rights
Presence of Criminal Non-State Actors and Organizations	Criminal Non-State Actor and Terrorist Funding			Freedom from Violence

# Establishing a Question Set for Scoring

- **Risk reducing** or **risk increasing factors** identified in case studies and interviews
- Each question is worth a **maximum of 1 point**, and a **minimum of 0 points**.
- Example question for **subcategory “Transparency”** under **category “Governance”**:
  - Are there any civil society actors focused on industry issues present?
    - **0.0** = Yes, civil society around these industry issues, and in general, is extremely robust.
    - **0.2** = Yes, civil society around these industry issues is robust.
    - **0.4** = Yes, civil society around these industry issues is present and active.
    - **0.6** = Yes, civil society around these industry issues is present.
    - **0.8** = No, civil society is present in the country, but no actors focus on industry issues.
    - **1.0** = No, there is no civil society in the country.
  - Is the country a signatory to the Extractive Industries Transparency Initiative (EITI)?
    - **0.0** = Yes, the country is a signatory to the EITI.
    - **1.0** = No, the country is not a signatory to the EITI.

# Calculation of Risk Scores

1. The question set is sent to **stakeholder expert**.
2. The stakeholder expert answers the questions in the question set.
3. A **score from 0 to 1** is assigned to each subcategory question based on the response.
4. Calculate the **subcategory scores** (min. 0, max. 1):

$$\text{Subcategory score} = (\text{sum of individual question scores}) / (\text{number of questions in subcategory})$$

1. Calculate the **category scores** (min. 0, max. 10):

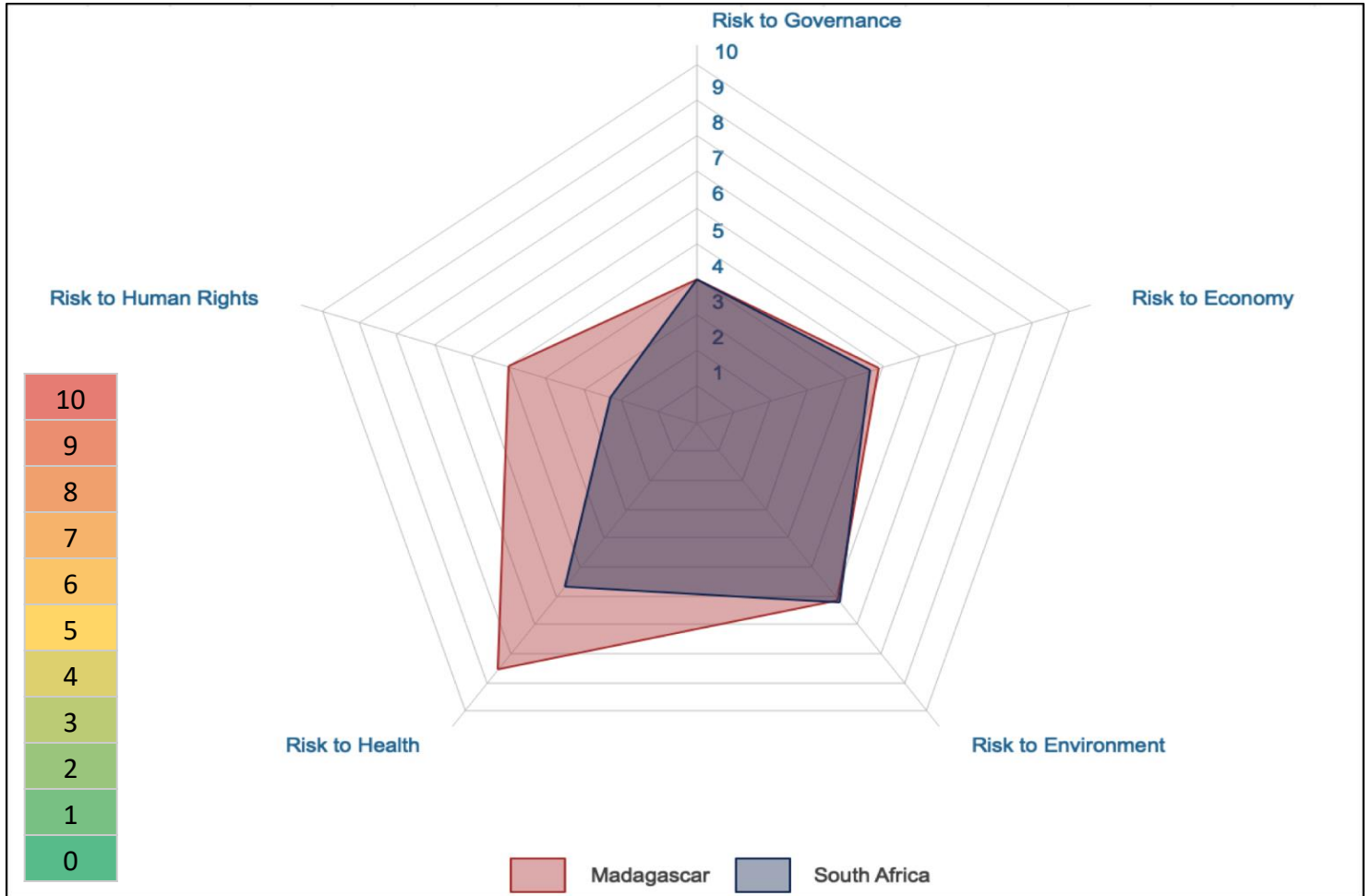
$$\begin{aligned} \text{Category score} &= (\text{sum of subcategory scores}) * (10 / \text{number of subcategories}) \text{ or} \\ &= (\text{average of the subcategory scores}) * 10 \end{aligned}$$

1. Calculate the **country score** (min. 0, max. 10):

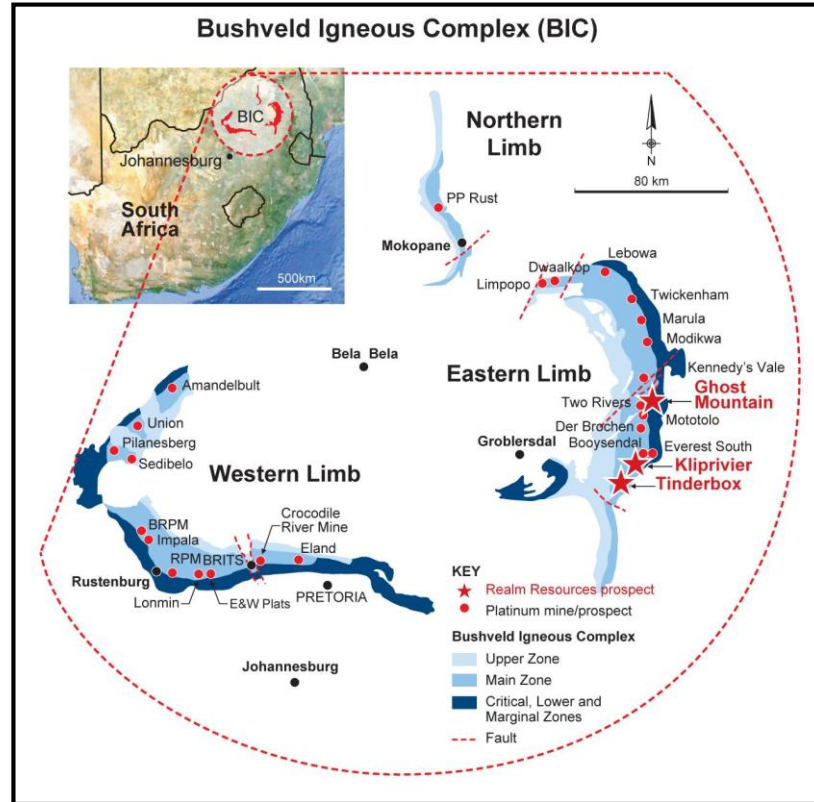
$$\text{Overall score} = (\text{sum of category scores}) / 5$$



# A Comparison



# Mining Regions: South Africa



# Mining Regions: Madagascar



# Historical Context

## South Africa

- Diamond deposits discovered in 1860s
- Largest global reserves of platinum group metals (PGMs) discovered in 1924
- During apartheid, white minority controlled the mining industry
- The historically disadvantaged South Africans have benefited from the resources since 2004→ Mining Charter

## Madagascar

- First sapphire deposits discovered in 1996
- Since 1996, sapphire mining often takes the form of “rushes” that occur regularly every few years
- Economic development surrounding mining areas
- Multiple political crises over the past two decades

# Risk to Governance

10

## South Africa (Score: 4.00/10)

- Enacted the Mining Act (MPRDA 2002)
- Corruption rampant in public sector
- Online mining permit process counter-effective: results in backlogs

9

8

7

6

5

4

## Madagascar (Score 4.02/10)

- Established the Mining Code for industry regulations & requirement
- Corruption through “rent-seeking”
- Process to acquire mining licenses strenuous

3

2

1

0



Larkin, Jason.(Photographer). 2014. Scene from 2014 South African national and provincial elections. Copyright of Jason Larkin from album “Tremors Below.” Used with Permission.

# Risk to Economy

10

## South Africa (Score: 4.66/10)

- 5% of entire labor force employed
- R 0.08 Billion (approx. \$6 Million USD) earned in tax revenue annually
- 80% of the global supply of platinum in South Africa

9

8

7

6

5

4

3

## Madagascar (Score 4.92/10)

- Large source of employment (approx. 1.5 million jobs)
- Largely informal, i.e., unregulated & untaxed
- Lacking value addition capabilities

2

1

0



Larkin, Jason.(Photographer). 2014. Gathering for the Anniversary of the Marikana Massacre.

Copyright of Jason Larkin from album "Tremors Below." Used with Permission.



# Risk to Environment

10

## South Africa (Score: 6.26/10)

- Established environmental regulations
- Regulations not enforced
- Platinum mining in highly biodiverse areas

9

8

7

6

5

## Madagascar (Score: 6.07/10)

- Mining Code includes environmental regulations & requirements
- Overlap of the protection of prohibited mining zones & mining permit zones
- Deforestation & environmental degradation

4

3

2

1

0



Smith, Toby. (Photographer). Mining field  
Madagascar. Retrieved from  
<https://www.tobysmith.com/map/unknown-fields/>.

# Risk to Human Health

10

## South Africa (Score: 5.67/10)

9

- Government enforces the Human and Safety Act

8

7

- Significant health issues

6

- Food and water insecurity

5

4

## Madagascar (Score: 8.58/10)

3

- Lacking health and safety measures

2

- Little access to healthcare

1

0

- Food and water insecurity



Larkin, Jason.(Photographer). 2014. Settlement near platinum mine in Rustenburg. Copyright of Jason Larkin from album "Tremors Below." Used with Permission.



# Risk to Human Rights

10

## South Africa (Score: 2.16/10)

9

- Workers' rights protected by a number of laws and regulations

8

7

- Access to economic opportunities for women

6

5

- Women & children affected by displacement

4

## Madagascar (Score: 5.00/10)

3

- General insecurity & absence of legal protections for workers

2

1

- Women
  - Involved as intermediaries, indirectly, or through beneficiation
  - At risk of exploitation

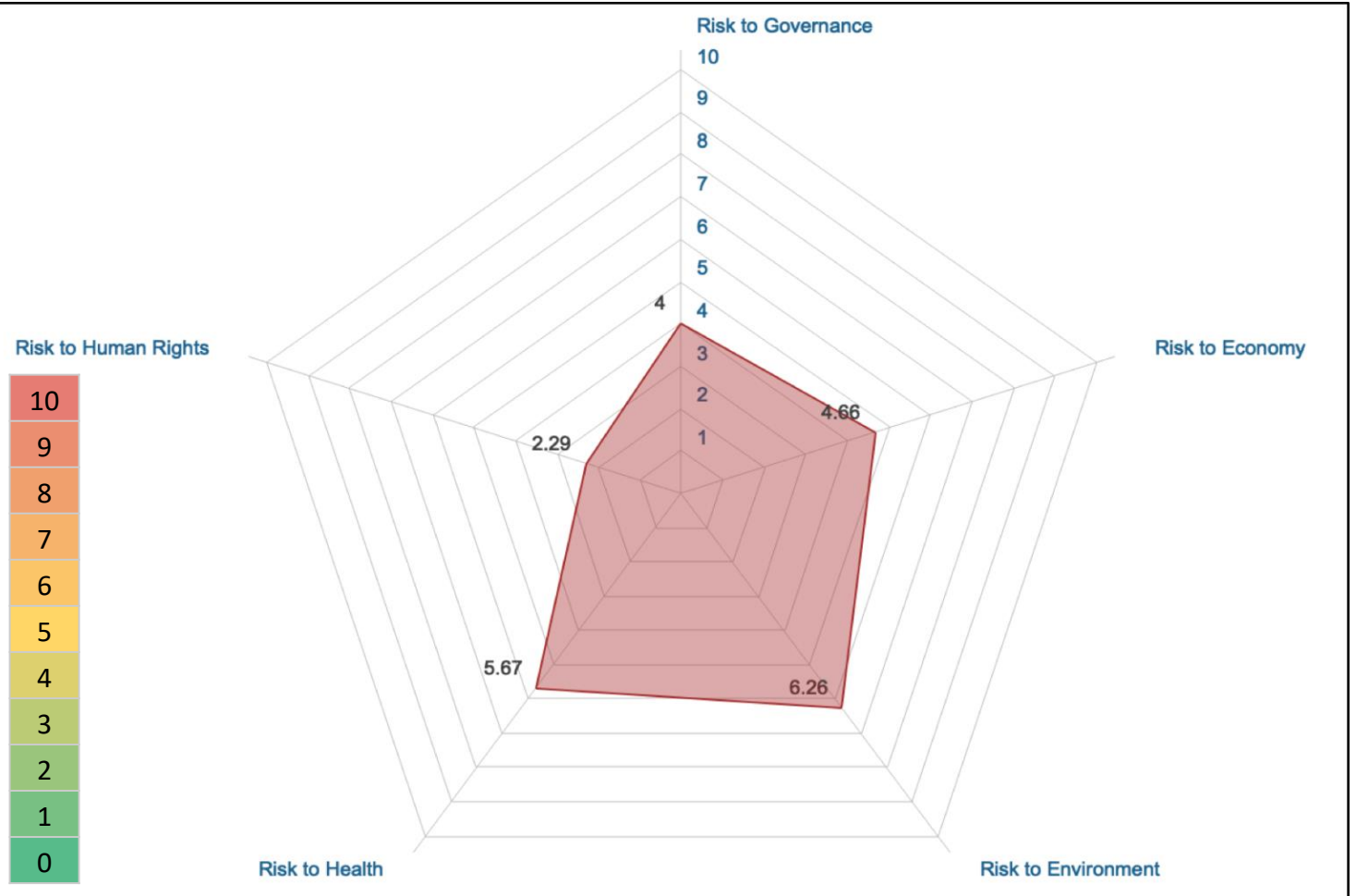
0

- Children participate in mining, but usually not forced; also lack of educational opportunities



Schmidt, R. (Photographer). (2008, September 14). A young miner holds on tight to a rope as he is lowered into a deep hole in the ground in Anzanakaro near Ilakaka, Madagascar on September 14, 2008. Local miners and many of their family members work deep narrow holes where they scrape gravel and sand in search of sapphires. [digital image].

# Risk to Human Security in South Africa



# Risk Reduction Recommendations - South Africa

## **Economy**

- Invest in Blockchain technology to promote transparent & accountable supply chains
- Disrupt or eliminate the informal industry

## **Health**

- Restrict potable water use for mines
- Enforce remediation of previously mined lands

## **Environment**

- Enforce environmental laws
- Create and enforce soil pollution

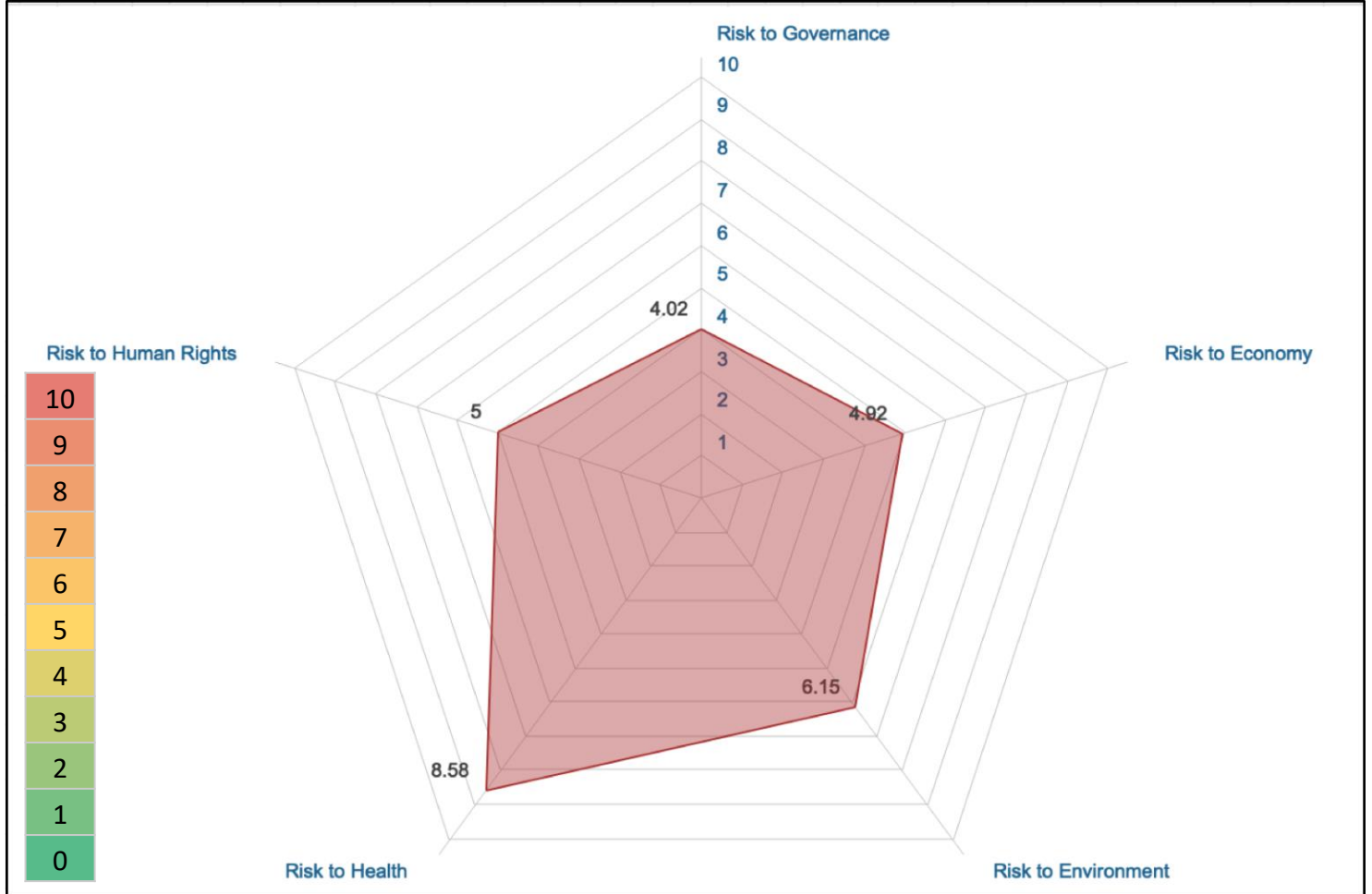
## **Governance**

- Enforce the National Anti-Corruption Strategy
- Build the capacity of DMR staff & simplify the permit process

## **Human Rights**

- Revise the resettlement policy for displaced communities
- Invest in multi-stakeholder discussions to actualize the targets set by the Mining Charter

# Risk to Human Security in Madagascar



# Risk Reduction Recommendations - Madagascar

## **Human Rights**

- Address through policies & training related to health, safety, labor rights
- Apply enforcement of legal protections for workers & vulnerable groups to the sapphire industry

## **Human Health**

- Provide safety gear & information to miners
- Invest in water & sanitation systems

## **Environment**

- Increase government monitoring, especially in protected areas
- Continue research on the overlap of protected areas and mining license distribution

## **Governance**

- Improve accessibility to acquire a mining license
- Improve public access to government information and government officials' finances

## **Economy**

- Resume & expedite processing of mining permits + provide incentives
- Invest in growing beneficiation capabilities

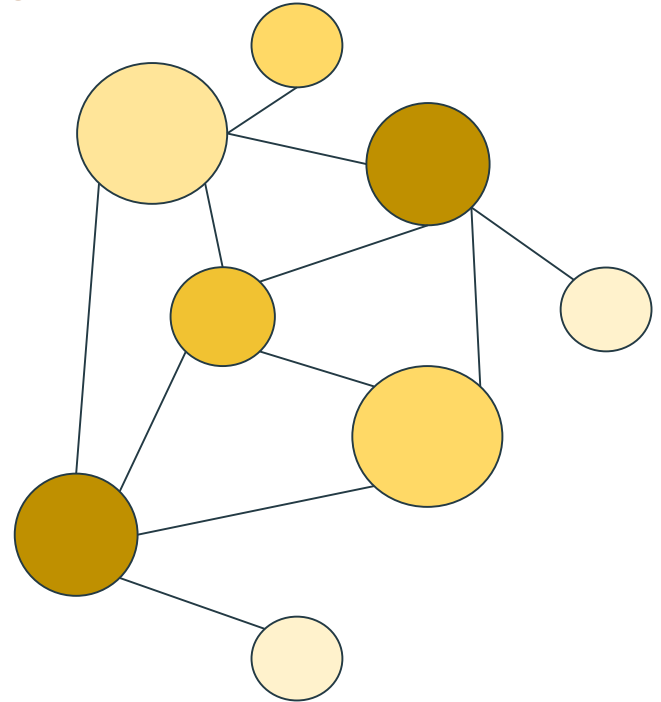
# Six-Country Comparison

- Based on methodology of previous report
- Measures country performance, not risk assessment
- Limitations in scoring mechanism

Country Performance						
Very Weak- 5, Weak- 4, Moderate- 3, Strong-2, Excellent-1						
Category	Myanmar	Afghanistan	Botswana	Peru	South Africa	Madagascar
Governance	2	5	2	3	3	3.9
Economy	3	5	3	4	3	3
Environment	3.5	3.5	1	4.5	3.5	3.5
Health	4	5	4	5	3	4
Human Rights	3	4.5	4.4	5	2	3
Country Score	<b>3.5</b>	<b>4.6</b>	<b>3</b>	<b>4</b>	<b>2.9</b>	<b>3.5</b>

# Mechanisms of Improvement

- Value Chain Governance
- Stakeholder Action:
  - Civil Society and Unions
  - Government
  - Industry Clusters
- Technology → Open Ledger
  - Tracr
  - TrustChain



# Recommendations for Index Development

- Conduct further case studies
- Utilize scoring questions as minimum viable product
- Refine set of scoring questions through
  - Multi-stakeholder feedback and discussion
  - Next set of case studies
  - Feedback from tryout
- Bring in experts in Monitoring & Evaluation/Impact Evaluation