



Jewelry Development Impact Index

Case Study of Amethyst in Brazil
and Tanzanite in Tanzania



Sacha Brenac, Rachael Hilderbrand, Cleo Rogers, Hailee
Shah, Alyssa Tender, and Yujia Wan
Academic Supervisor: Hrach Gregorian, Ph.D.



Introduction

- Statement of Work
- Methodology



Case Study

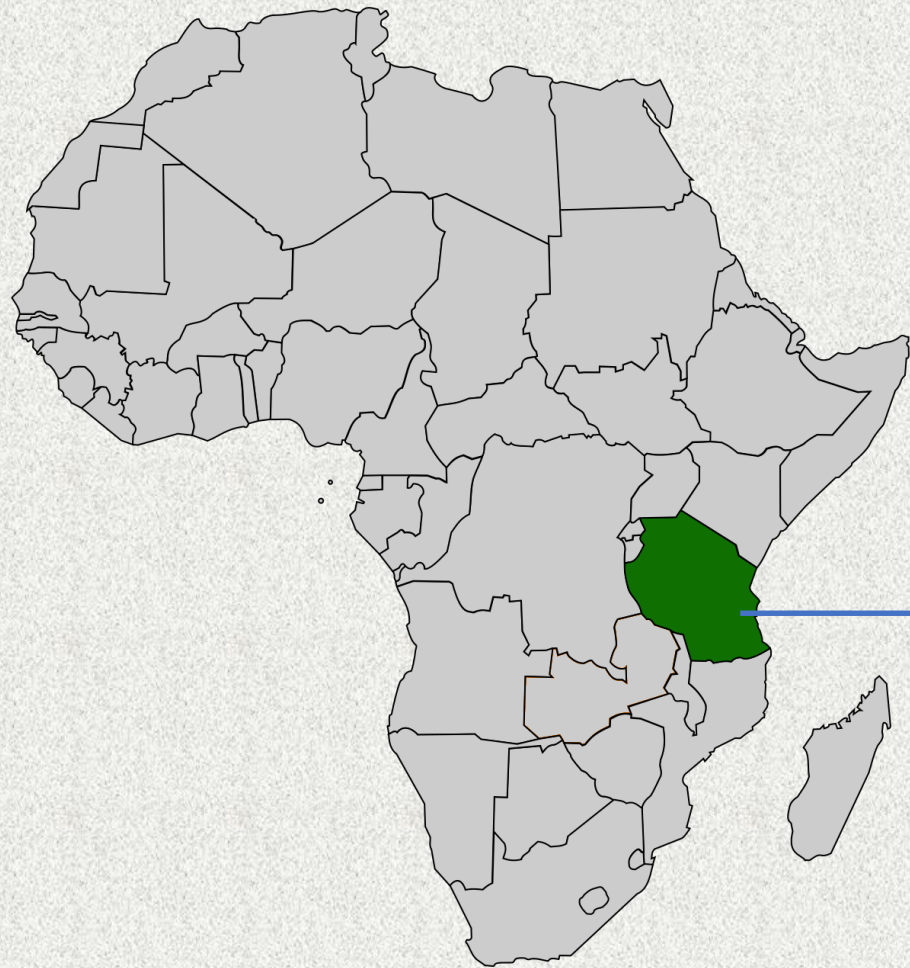
- Tanzanite in Tanzania
- Amethyst/Citrine in Brazil



Comparison

- Human Security Indicator score results
- Country comparison

Statement of Work



Amethyst



Tanzanite

Research Methodology



13 Interviews



Academic Articles



Business Journals

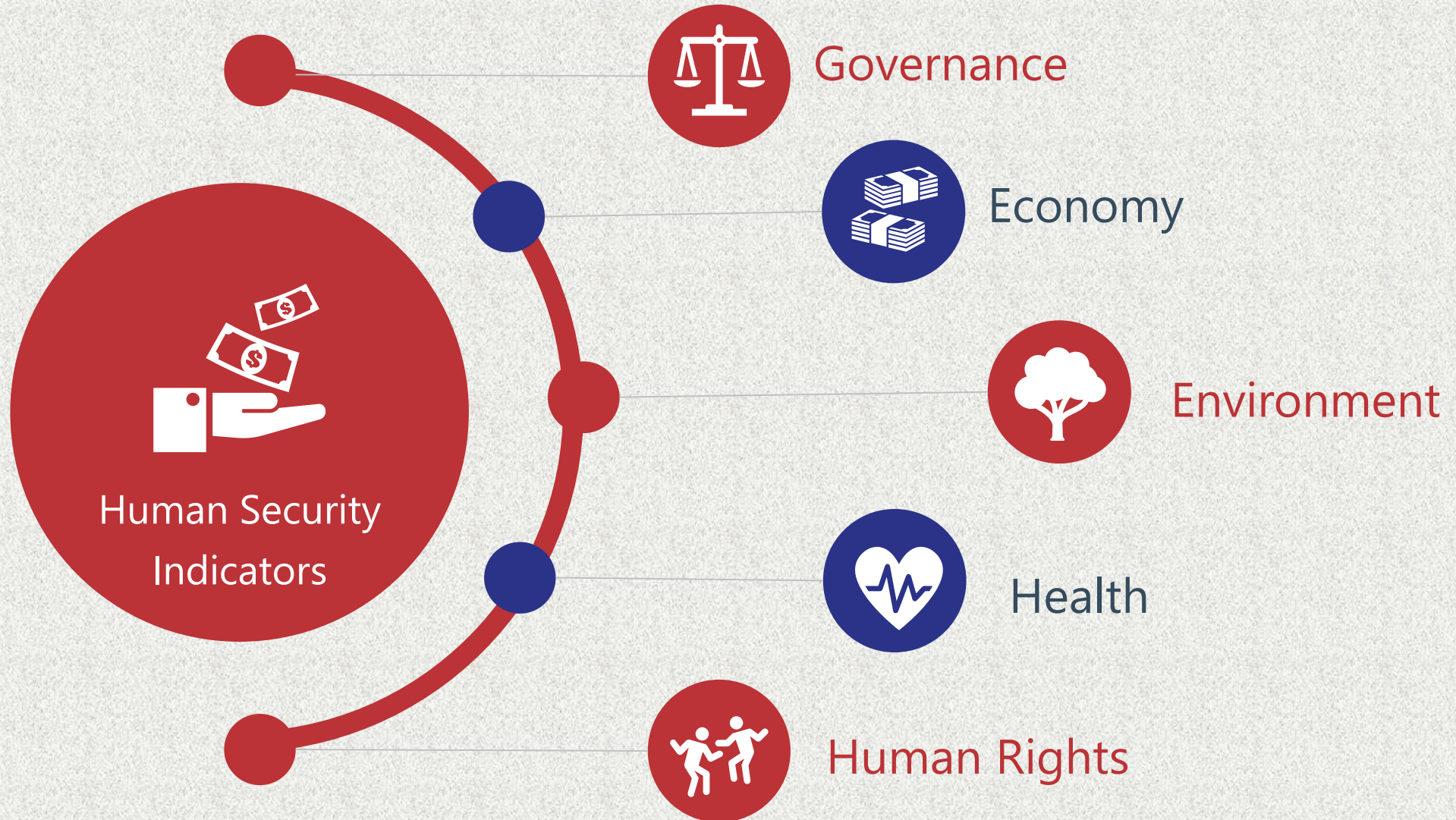


NGO and Government Reports



Non-academic Resources

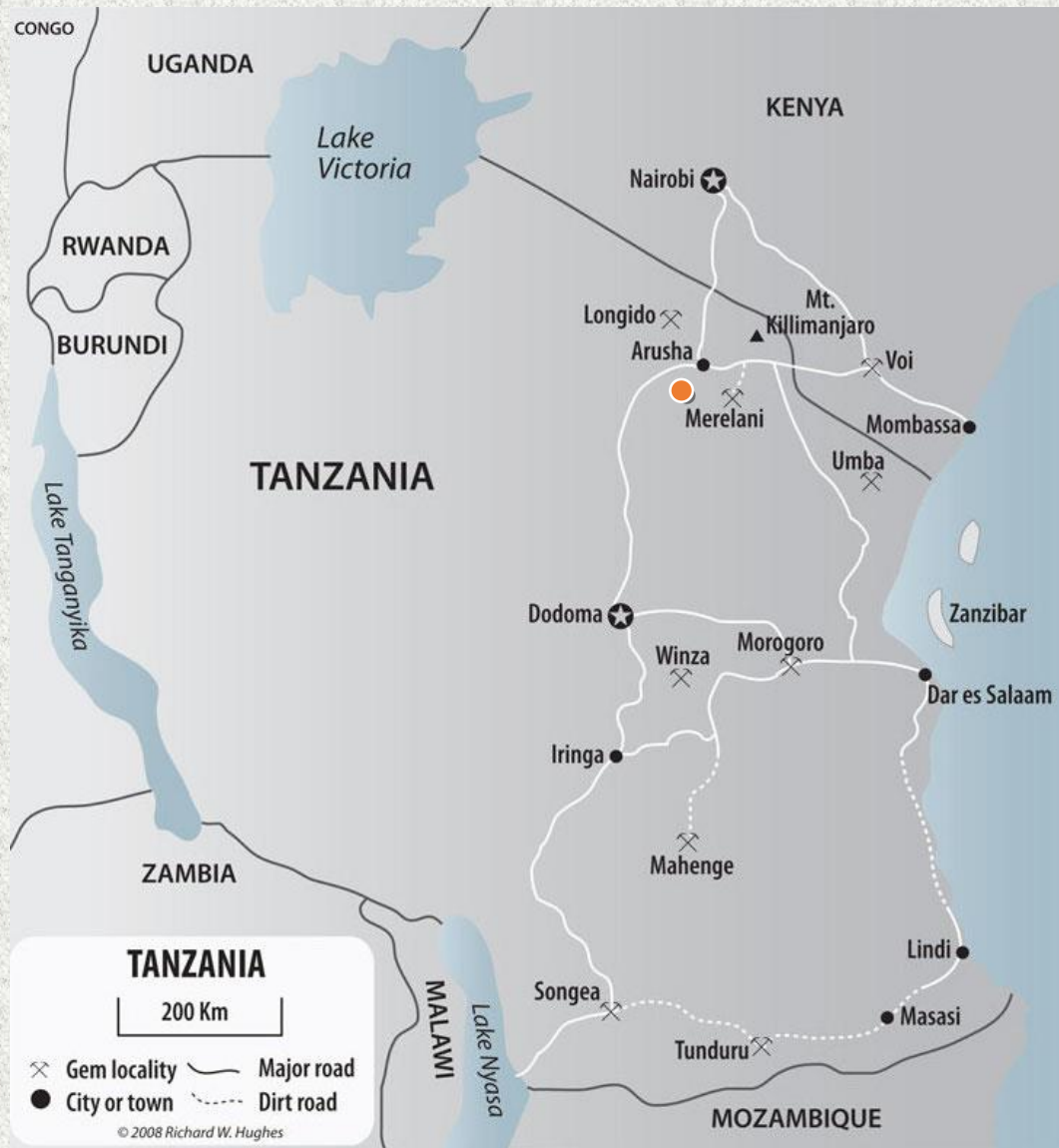
Methodology





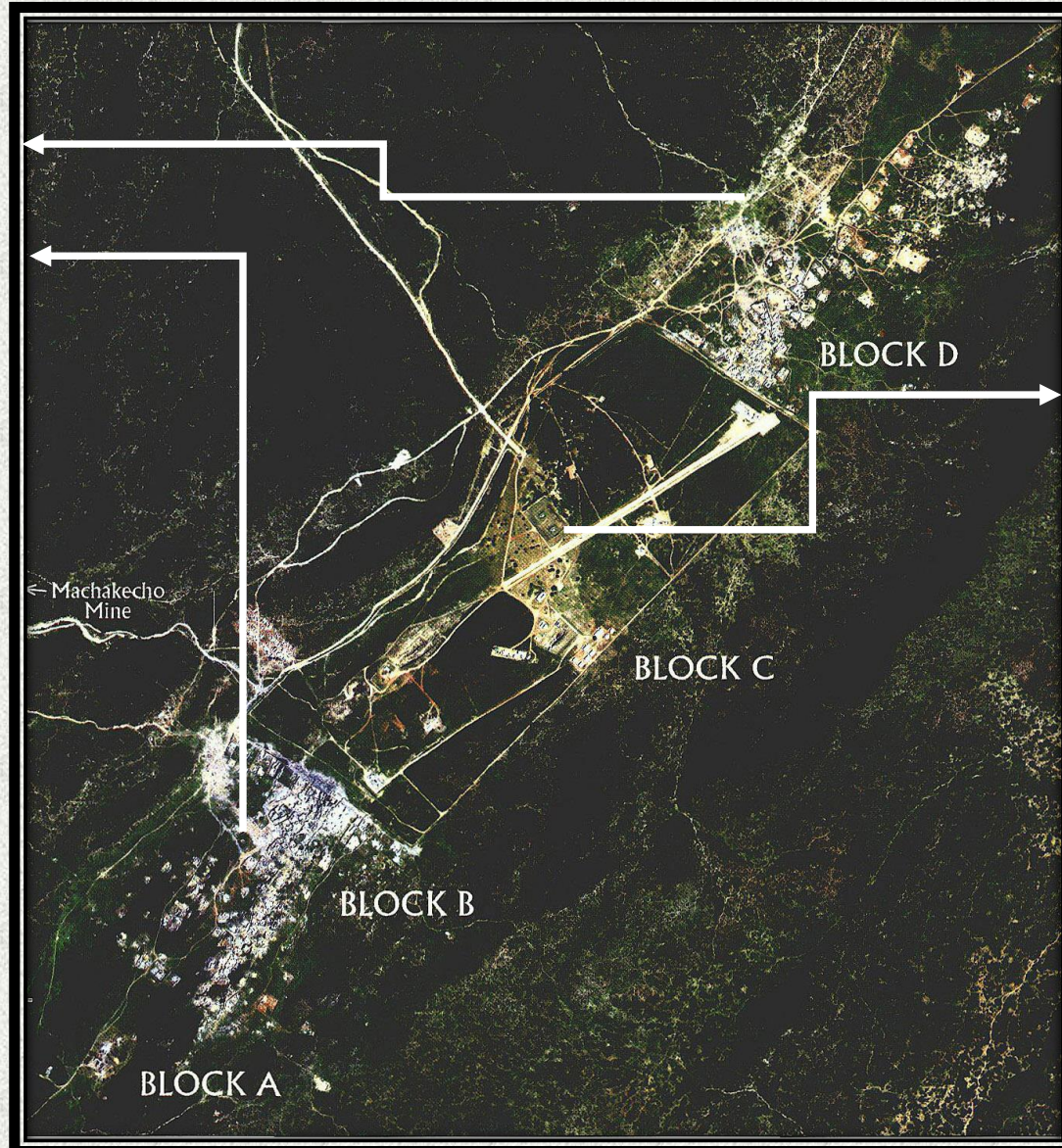
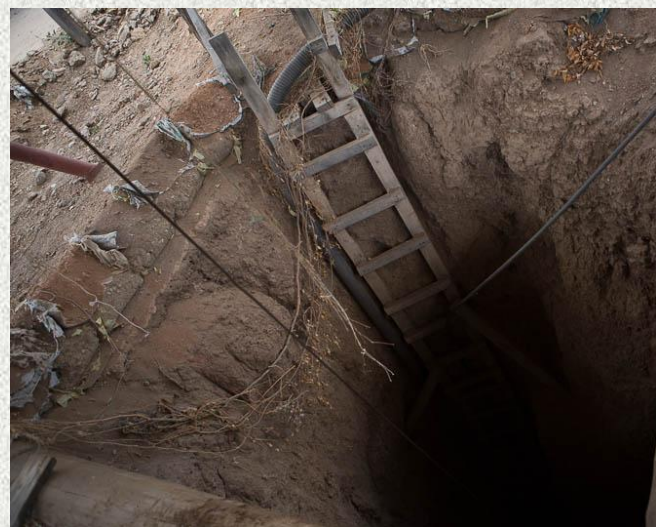
Tanzanite Mining in Tanzania

Overview



Overview

Informal Industry

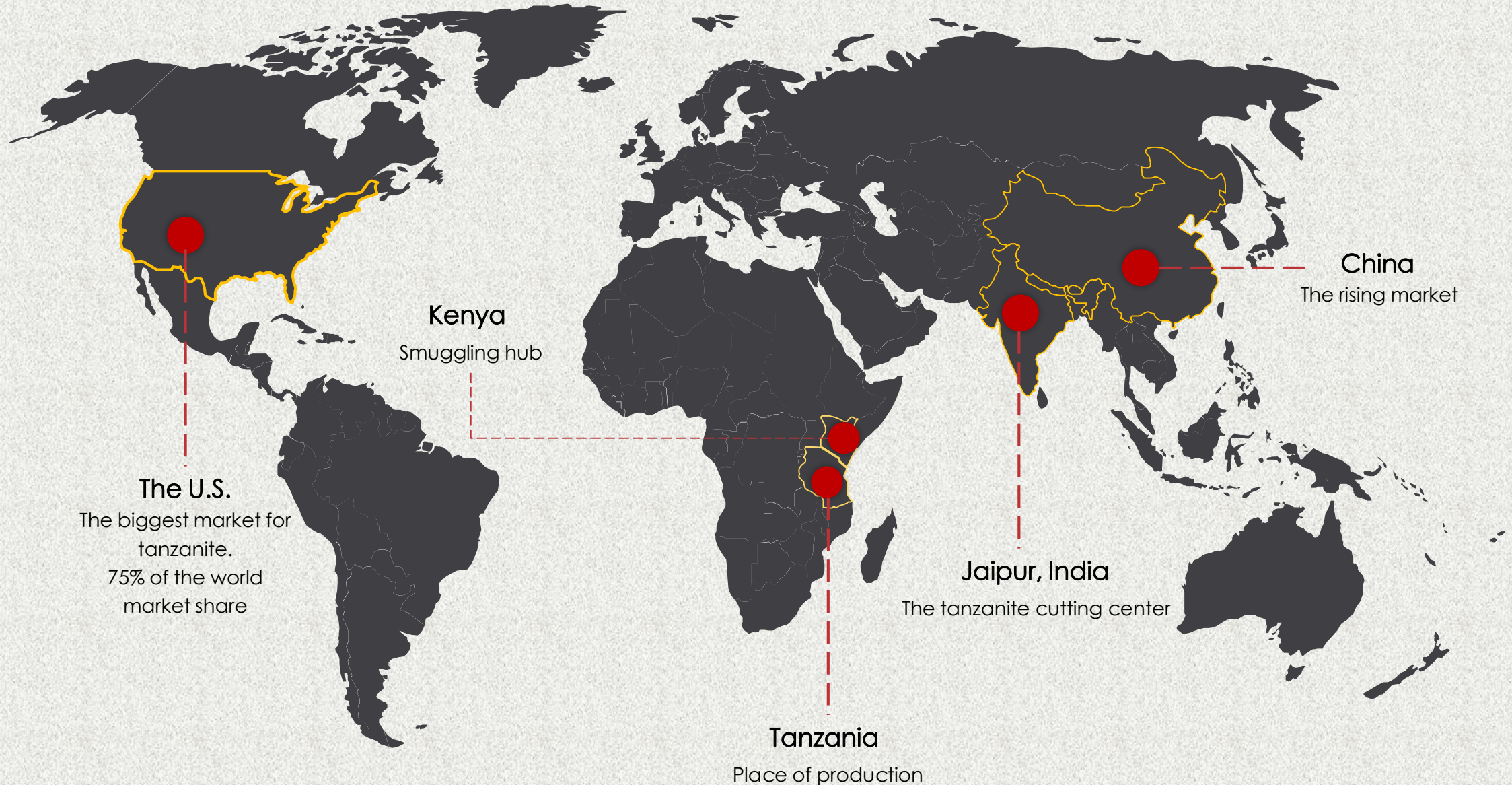


Formal Industry

TANZANITEONE



Governance and Economy





Governance and Economy

Tucson Tanzanite Protocol

2010 Mining Reforms

2017 Mining Reforms

Cooperation with U.S. to
strengthen security oversight of
tanzanite industry

Easier ASM licensing
Increased government ownership of
TanzaniteOne

Raw tanzanite export ban
Wall built around the site

Environment and Health



- Deforestation
- Desertification
- Water scarcity

Environment and Health

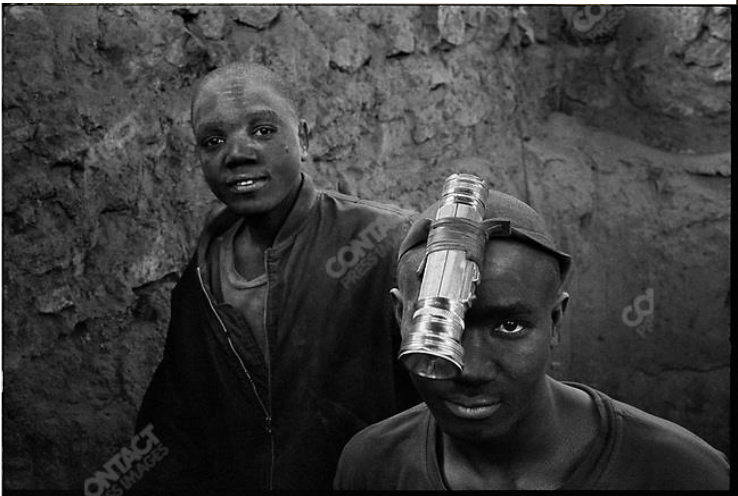


Depth (m)	CO (ppm)	Dust (mg/m ³)
410	53	10.2
350	59	7.1
360	46	6.6
390	102	7.6
340	23	8.5
Average	66.2	8.0
US standard	50	3.0

Environment and Health

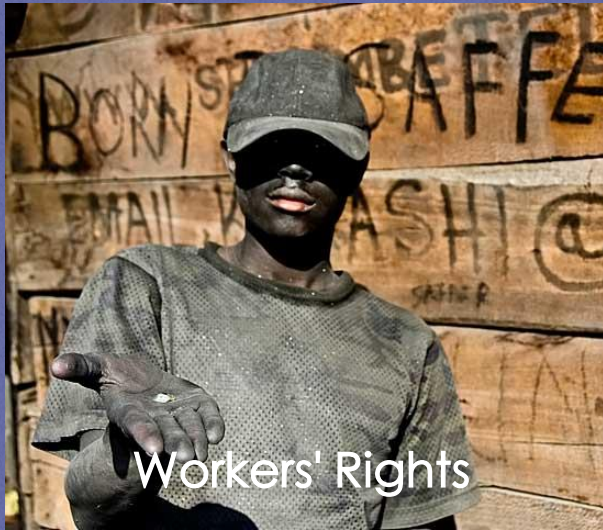


Tanzanite mines delve 100 m or more in narrow, straight and inclined shafts.



98.7% of the small-scale workers lack the proper equipment for protection. Many of them work more than 12 hours a day.

Human Rights



- Non-payment of salaries
- Lack of unions
- A lack of social protection



- Women make up 18% to 20% percent of the entire tanzanite industry



- Reports of child labor in small scale operations

Tanzanite





Amethyst Mining in Brazil

Overview



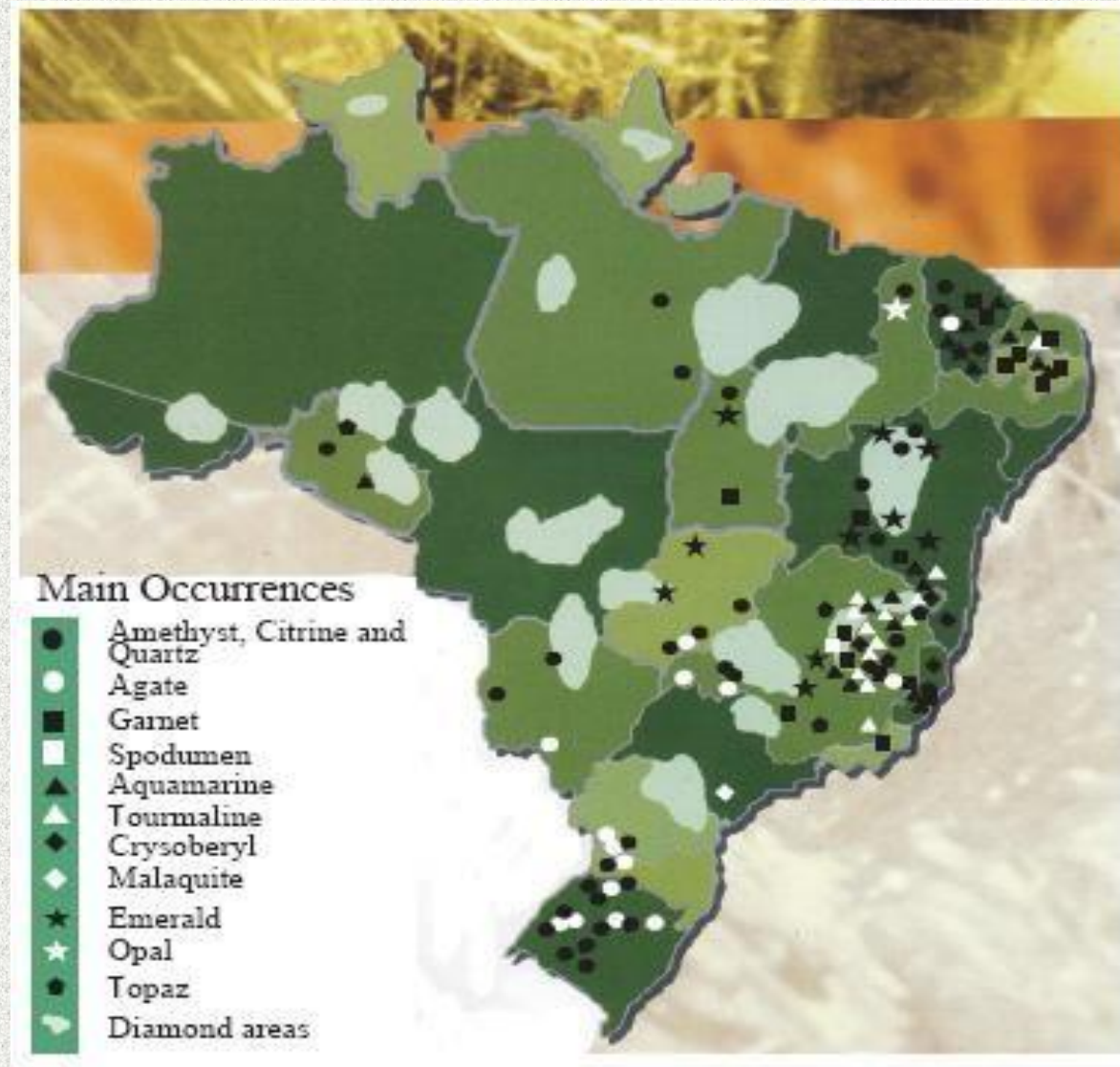
Citrine



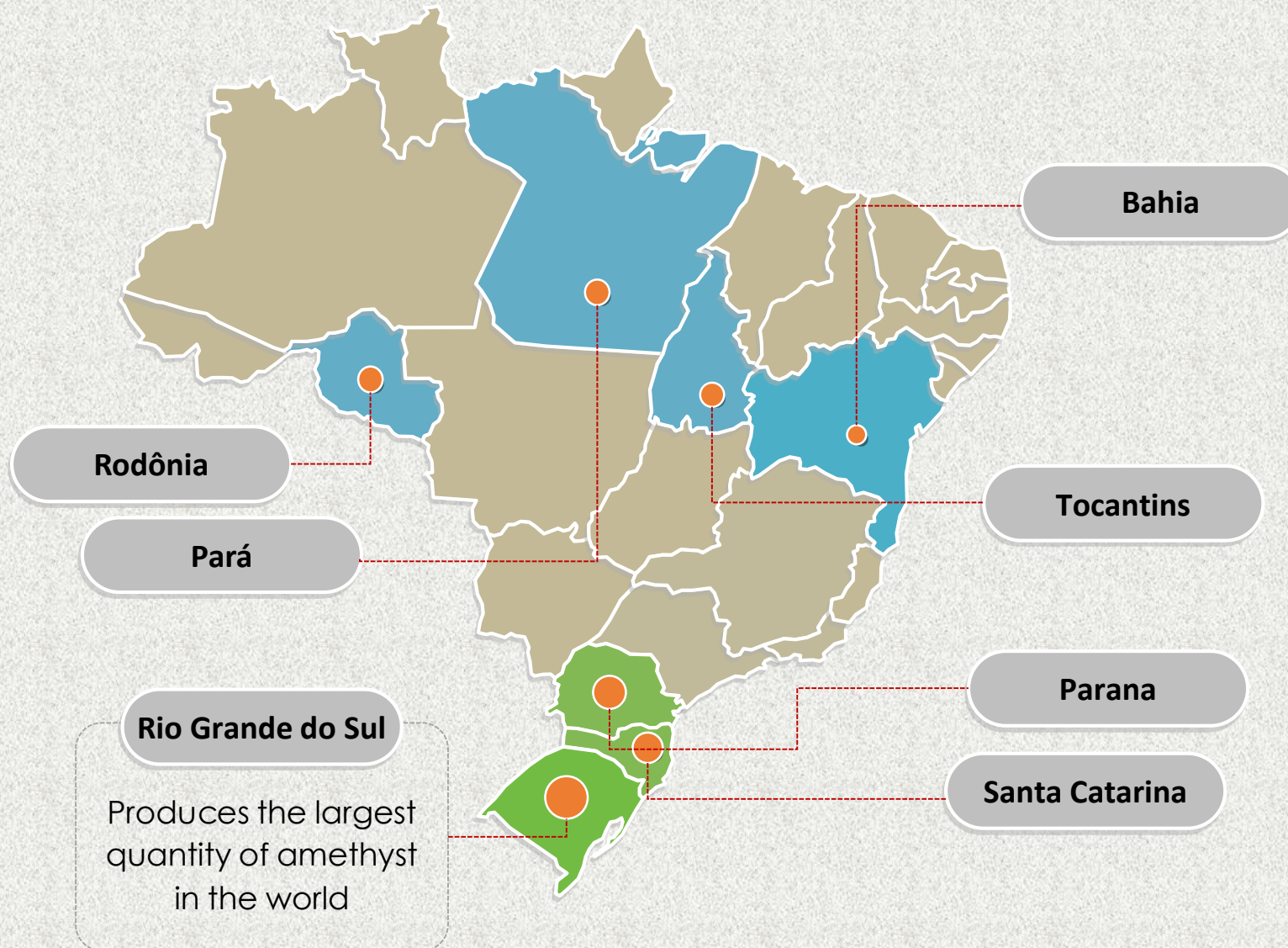
Amethyst

Overview

The main occurrences of
colored gems and
diamonds in Brazil



Overview



North

- Informal Industry
- Individual mining permits are hard to receive
- Lack of resources
- Miners are not local

South

- Formal Industry
- Miners: members of Cooperatives that handle all legal processes
- Cooperatives support education and health initiatives
- Miners are local

Overview



Rio Grande do Sul

Ametista do Sul

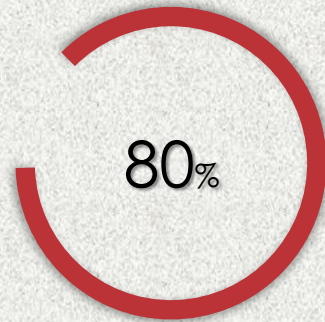
The Cooperative of Miners in
Médio Alto Uruguai
(COOGAMAI)



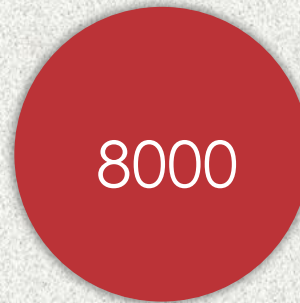
Governance



- The federal government owns mineral resources and deposits
- The government grants mining permits to **Brazilian citizens or companies**
- Government agencies:
 - The Ministry of Mining and Energy (MME)
 - the National Mining Agency (ANM)
- Current goal: More extraction



Amethyst extraction makes up 80% of Ametista do Sul's economy



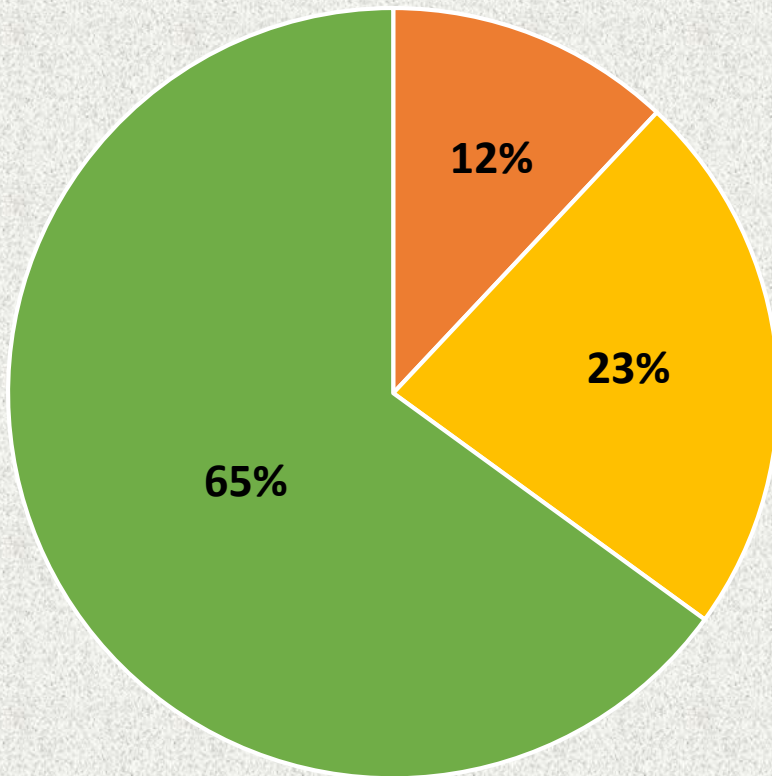
In Ametista do Sul, 8,000 residents work for the 107 licensed mines nearby



Brazilian amethyst miners, on average, make \$100 USD-\$200 USD per month.

Economy

Revenue distribution



Little cross-border smuggling



Little terrorist involvement



Informal Industry



Criminal Organizations

Economy



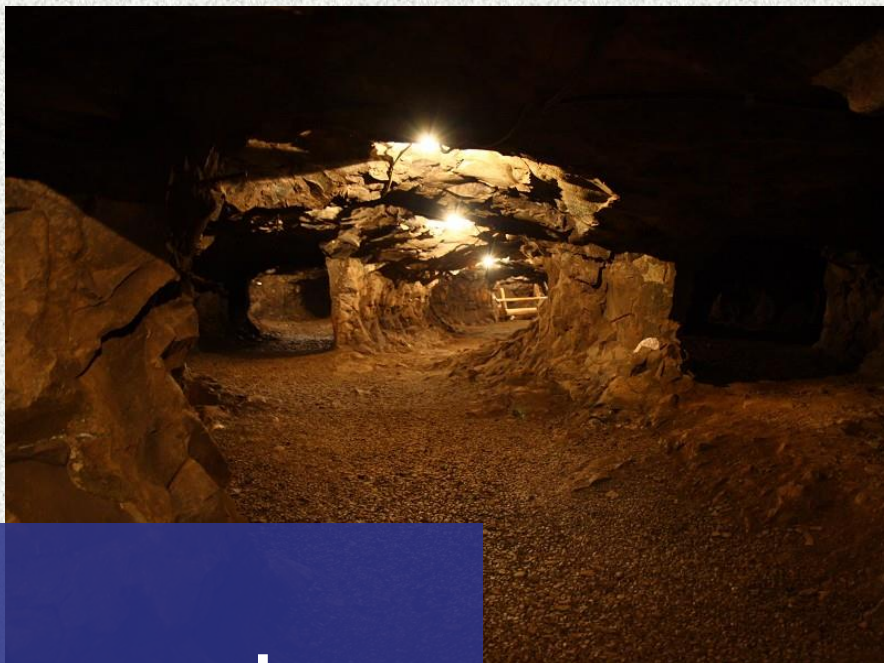
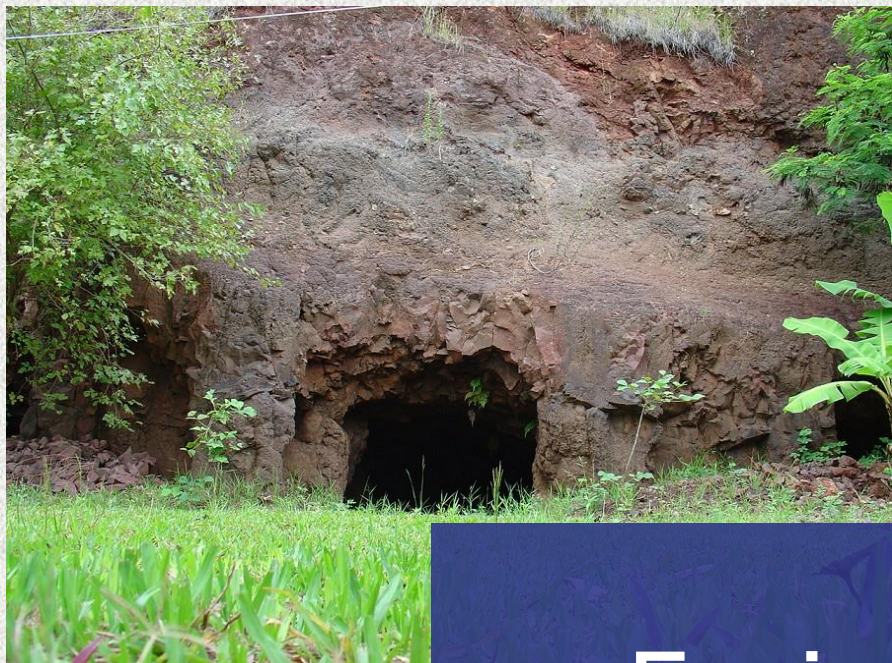
Washing



Amethyst
Cutting



Gem & Jewelry
Trade Shows



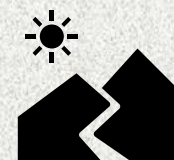
Environment



Little use of toxic materials



Cut down or burn the forest



Abandoned open-pit mines



Fail to enforce the environmental regulations effectively



Health

- Miners tend to not use proper equipment
- Injury and death is common in informal mines



- In Ametista do Sul, miners can attend local health centers
- In northern Brazil, health centers are not easily accessible.

Human Rights



Workers' Rights



Indigenous Groups



Women's Rights



Children's Rights

Amethyst



Scoring Methodology

The Jewelry Development Impact Index (JDI)

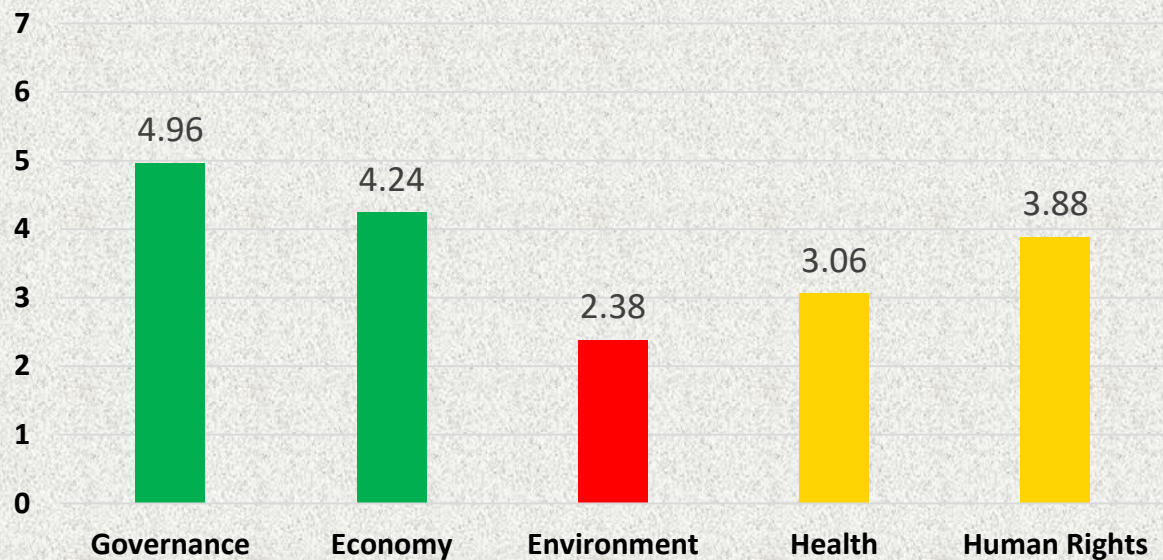
Category	Questions	Values (1-7)
Governance	...	
Economy	What is the availability of the formalized industries?	
...	...	

- 5 Categories
- 23 Sub-Categories
- 124 Questions

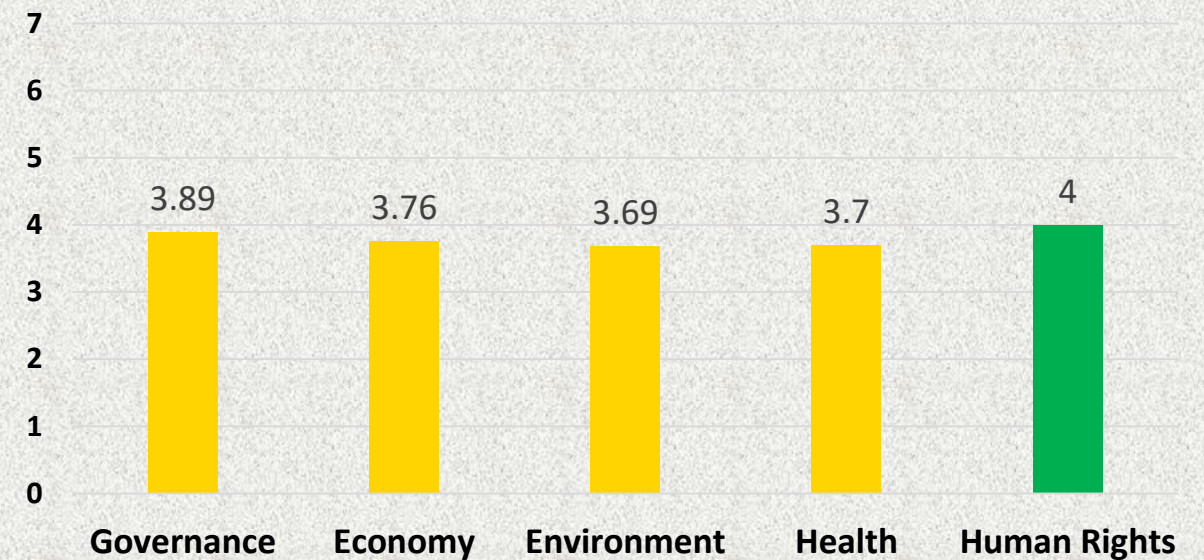


Two Country Comparison

Tanzania Jewelry Development Impact Index

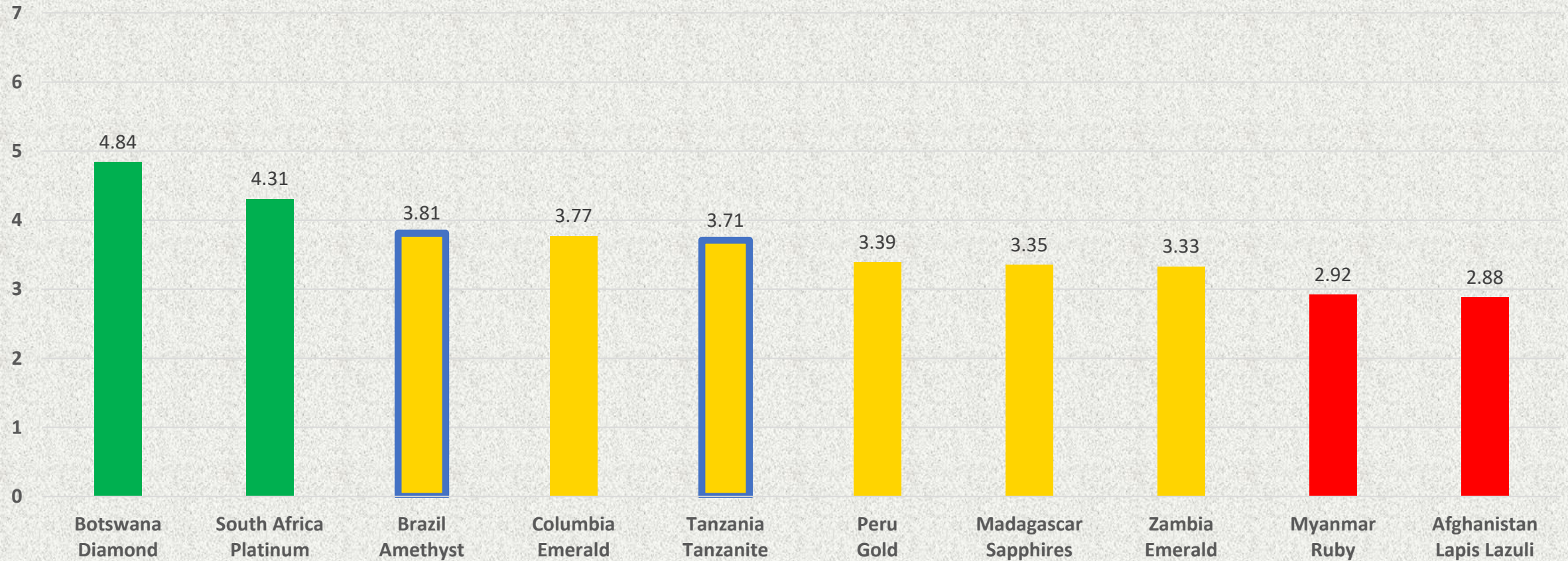


Brazil Jewelry Development Impact Index



Score >5	4< Score <5	3< Score <4	Score <3
Very Positive	Positive	Average	Negative

Ten Country Comparison



Score >5	4< Score <5	3< Score <4	Score <3
Very Positive	Positive	Average	Negative



Gap Analysis



Lack of Data



Contradictory statements



Any Questions?