



# IRMA Draft Chain of Custody Standard

November 2023

# Overview



Chain of Custody Standard Objectives and Overview



Supply Chain Studies



Options for Material Accounting Rationale for Book and Claim System



How to Comment



Discussion



## Part 1

# Chain of Custody Standard Objective and Overview

# Chain of Custody

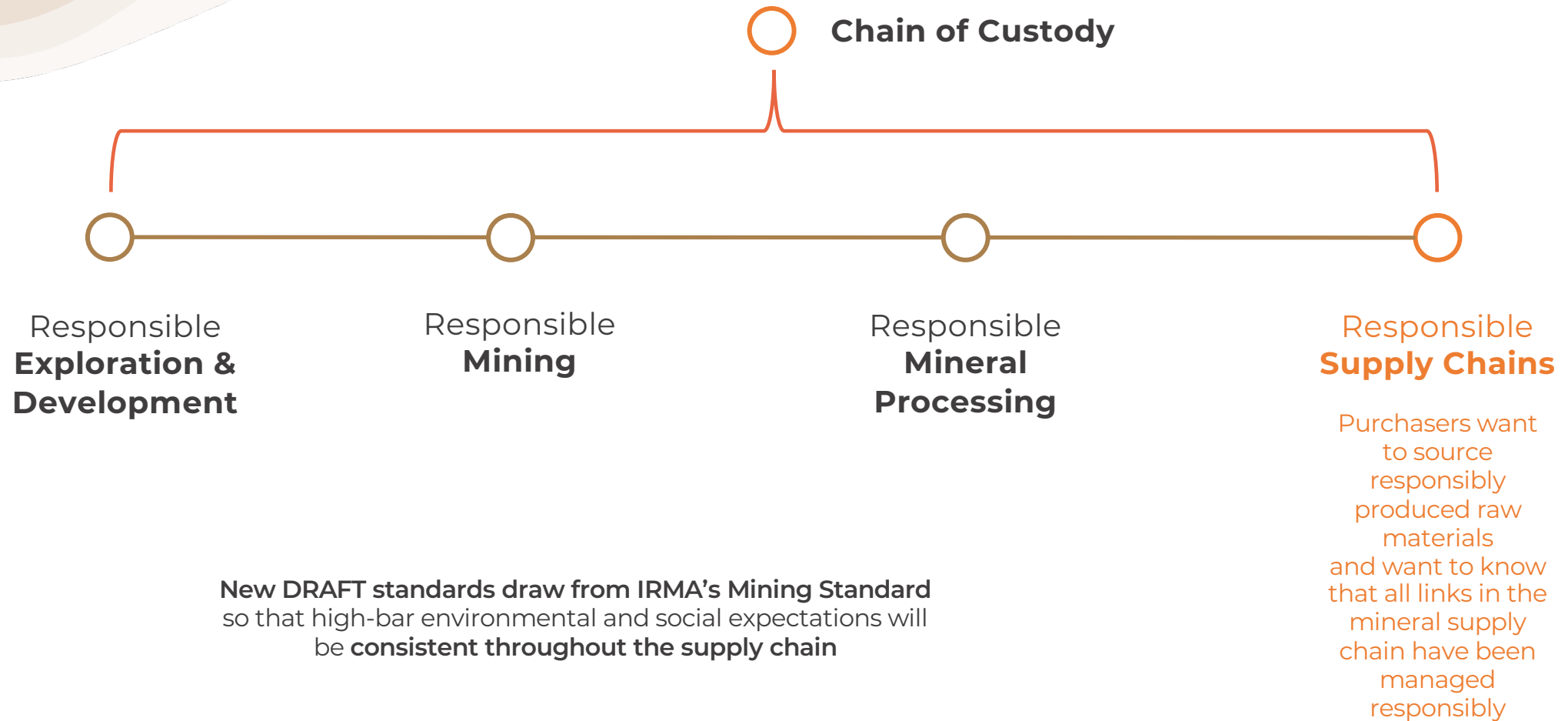
## Standard for Responsibly Mined Materials

**Objective: to provide the base-level requirements for traceability for any mined material from the mine through the downstream chain of custody to the end consumer.**

The IRMA Chain of Custody Standard aims to:

- a) Provide entities in the supply chain with a common set of requirements for sourcing, tracking, accounting, handling, and selling IRMA-achieving mined materials.
- b) Establish requirements that can be independently audited to provide objective evidence for the flow of IRMA-achieving mined materials through the supply chain.

# IRMA is Evolving to support Supply Chain due diligence



IRMA

Part 2

Supply Chain Studies

# Mining Industry Engagement In IRMA

As of 30 Oct 2023

**78 mining companies** are engaged in the IRMA system representing **100 sites**:

- **60 are self assessing the IRMA Standard**, the first step before independent audit
- **24 are piloting** the draft exploration or mineral processing standard self assessments
- **16 are in the independent assessment system**: 12 audits are underway (South Africa, Senegal, Mozambique, Brazil, Chile, Argentina) and 4 completed audits have been published (Zimbabwe, Mexico, Chile)

Countries	
1. Argentina	16. Norway
2. Australia	17. Panama
3. Brazil	18. Portugal
4. Canada	19. Philippines
5. Chile	20. Russia
6. Colombia	21. Senegal
7. Dominican Rep.	22. South Africa
8. Finland	23. Spain
9. France	24. Sri Lanka
10. Indonesia	25. Turkey
11. Liberia	26. Ukraine
12. Mexico	27. United States
13. Mozambique	28. Zambia
14. Namibia	29. Zimbabwe
15. New Caledonia	

Materials	
1. Aggregates	27. Monazite sand
2. Barite	28. Neodymium
3. Bauxite	29. Nickel
4. Cerium	30. Osmium
5. Chromite	31. Palladium
6. Chromium	32. Praseodymium
7. Coal (metallurgical)	33. Platinum
8. Cobalt	34. Potash
9. Copper	35. Quartz
10. Diamonds	36. Rare earth elements
11. Europium	37. Rhodium
12. Feldspar	38. Ruthenium
13. Gadolinium	39. Samarium
14. Gold	40. Sand
15. Graphite	41. Selenium
16. Iridium	42. Silver
17. Iron	43. Staurolite
18. Kyanite	44. Sulphur
19. Lanthanum	45. Talc
20. Lead	46. Tellurium
21. Limestone	47. Titanium
22. Lithium	48. Tourmaline
23. Magnesium	49. Vanadium
24. Mica	50. Xenotime
25. Mineral sands	51. Zinc
26. Molybdenum	52. Zircon

# IRMA Independent Assessment Current Audits (16 sites)

### 8 countries

- S. Africa (5)
- Brazil (4)
- Chile (2)
- Argentina
- Mexico
- Mozambique
- Senegal
- Zimbabwe

### 9 companies

- Anglo (6)
- Gerdau (2)
- Albemarle
- Carrizal
- Eramet
- Livent
- Sishen (2)
- SQM
- Syrah





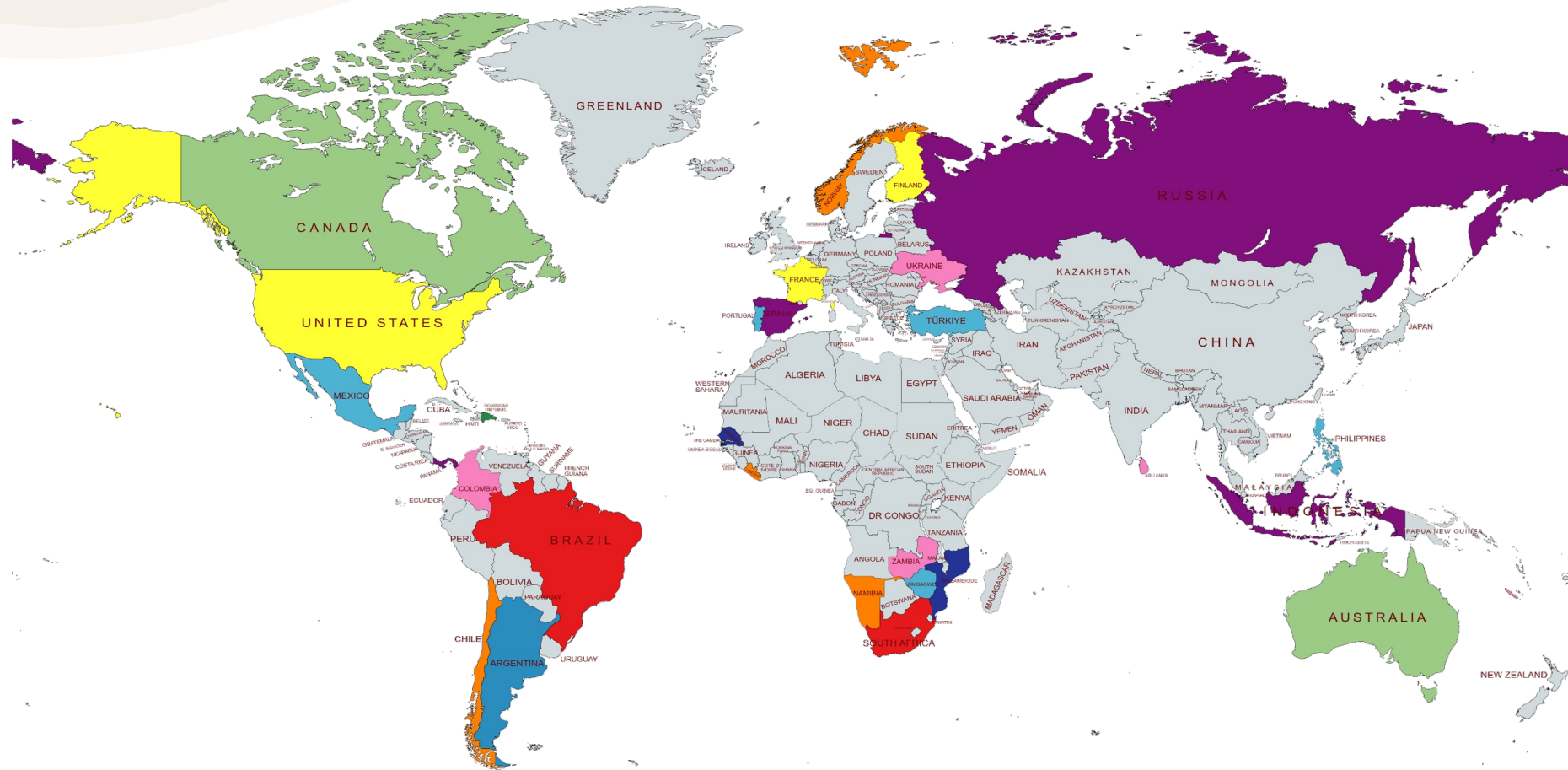
# IRMA Independent Assessment Mining Industry Combined

## Overall Engagement

- 100 sites engaged in IRMA
- 78 mining companies
- 60 sites self-assessing
- 24 piloting draft standards
- 16 independently assessing

## Diverse Reach

- 29 countries
- 6 continents
- 50+ minerals



IRMA

## Supply Chain Studies

Our supply chain studies prioritize materials undergoing independent third-party IRMA audits:

1. PGMs
2. Iron Ore
3. Nickel
4. Lithium
5. Graphite

**IRMA**

**Part 3**

Options for Material Accounting

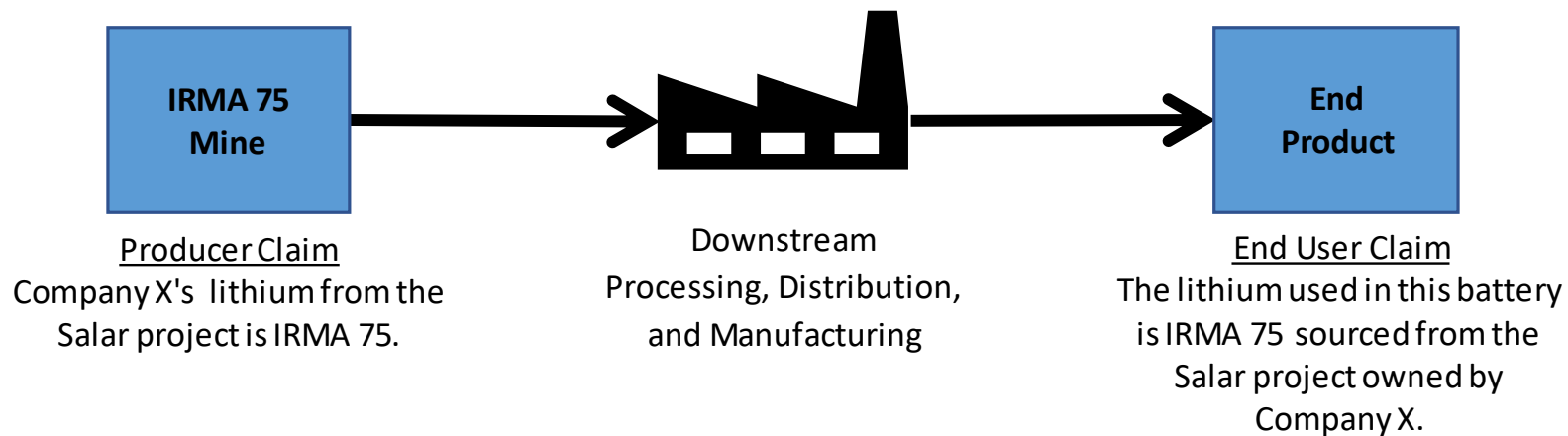
# Proposed Models for Material Accounting

Physical  
Chain of  
Custody

Admin.  
Record  
Flow

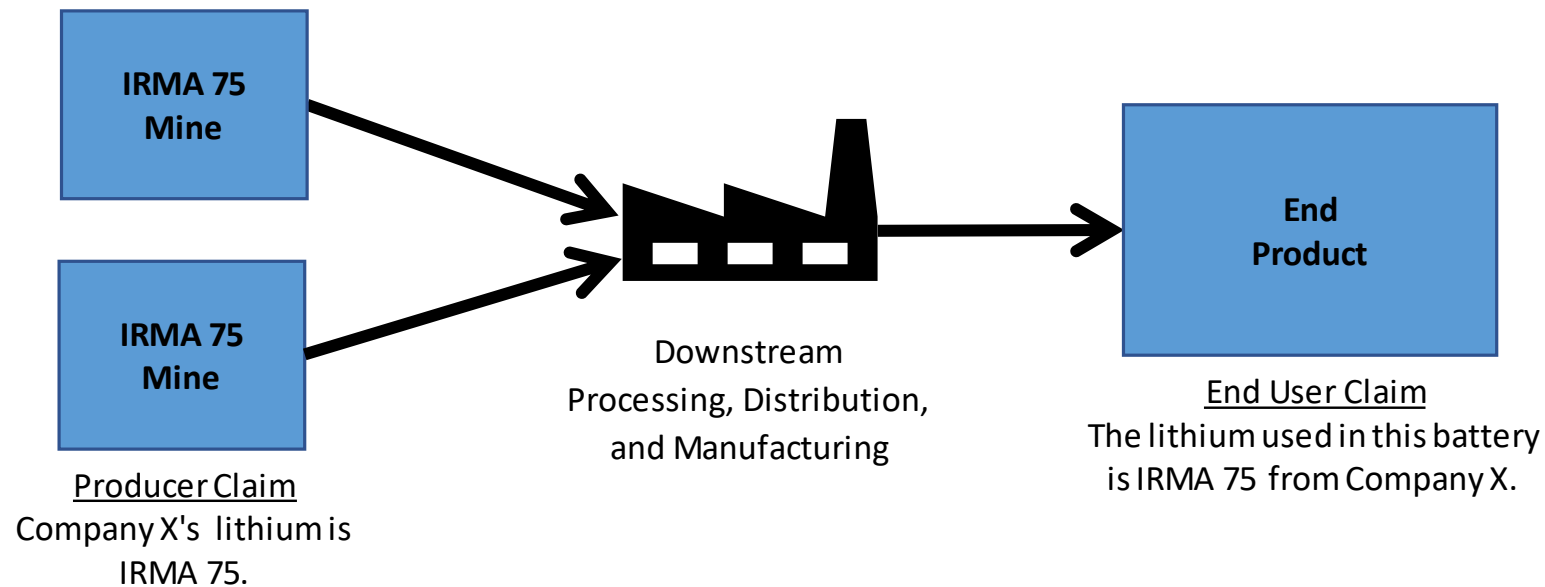
- **Identity Preserved:** Materials or products originate from a single source with IRMA achievement levels maintained throughout the supply chain
  - **Segregated:** IRMA achievement levels of a material or product are maintained from the initial input to the final output
  - **Controlled Blending:** Materials or products with IRMA achievement levels are mixed with other materials or products resulting in a known proportion of IRMA-achieving material in the final output
  - **Mass Balance:** Materials or products with IRMA achievement levels are mixed according to defined criteria with other materials or products
- 
- **\*Book and Claim:** Administrative record flow is not necessarily connected to the physical flow of material or product throughout the supply chain. ***\*Subject to approval by IRMA Board***

**Identity Preserved Model** - *chain of custody model* in which the materials or products originate from a single source and their *IRMA Standard achievement level* is maintained throughout the supply chain.



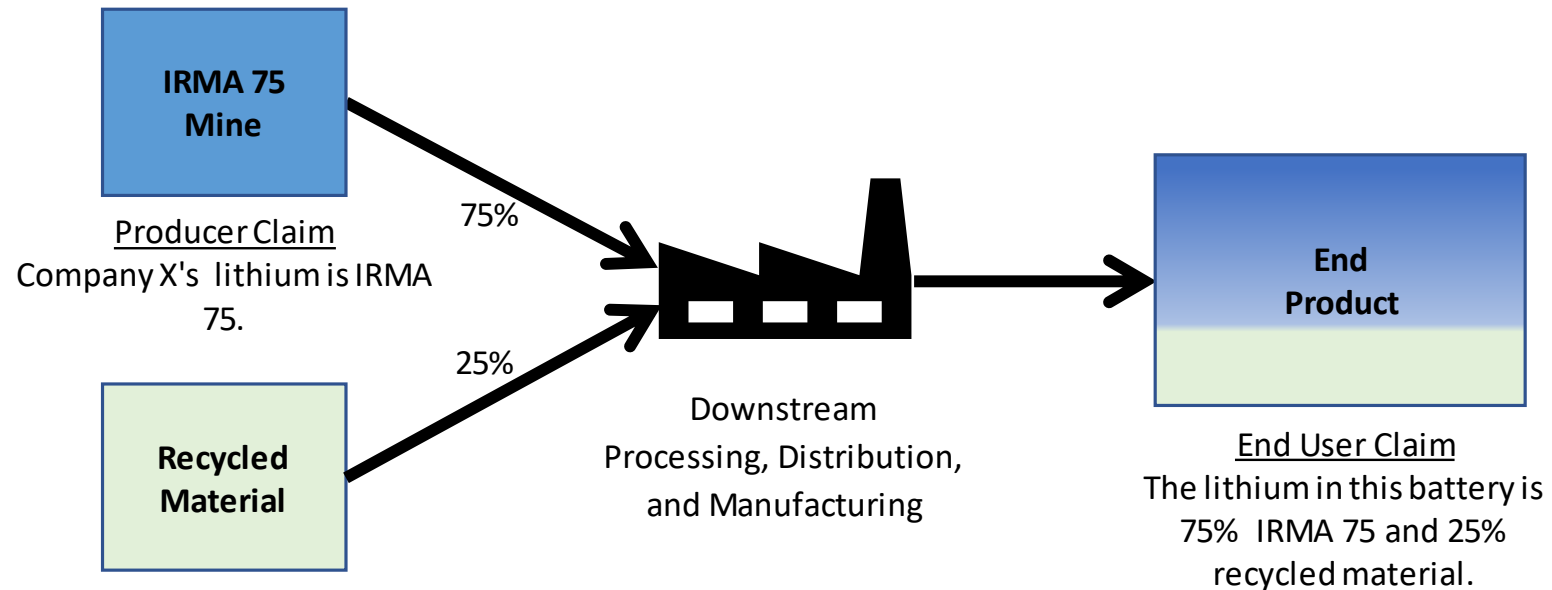
**Figure 1. IRMA Identity Preserved Model** (adapted from ISO Standard No. 22095:2020)

**Segregated Model** - *chain of custody model* in which the materials or products originate from a multiple sources having the same characteristics and their *IRMA Standard achievement level* is maintained throughout the supply chain.



**Figure 2. IRMA Segregated Model** (adapted from ISO Standard No. 22095:2020)

**Controlled Blending Model** - *chain of custody model* in which materials or products with a set of *IRMA Standard achievement levels* are mixed according to certain criteria with materials or products without that set of characteristics resulting in a known proportion of the *IRMA Standard achievement levels* in the final output.



**Figure 3. IRMA Controlled Blending Model** (adapted from ISO Standard No. 22095:2020)

**Mass Balance Model** - *chain of custody model* in which materials or products with a set of *IRMA Standard achievement levels* are mixed according to defined criteria with materials or products without that set of characteristics.

For entities using the mass balance model, two implementation methods may be used:

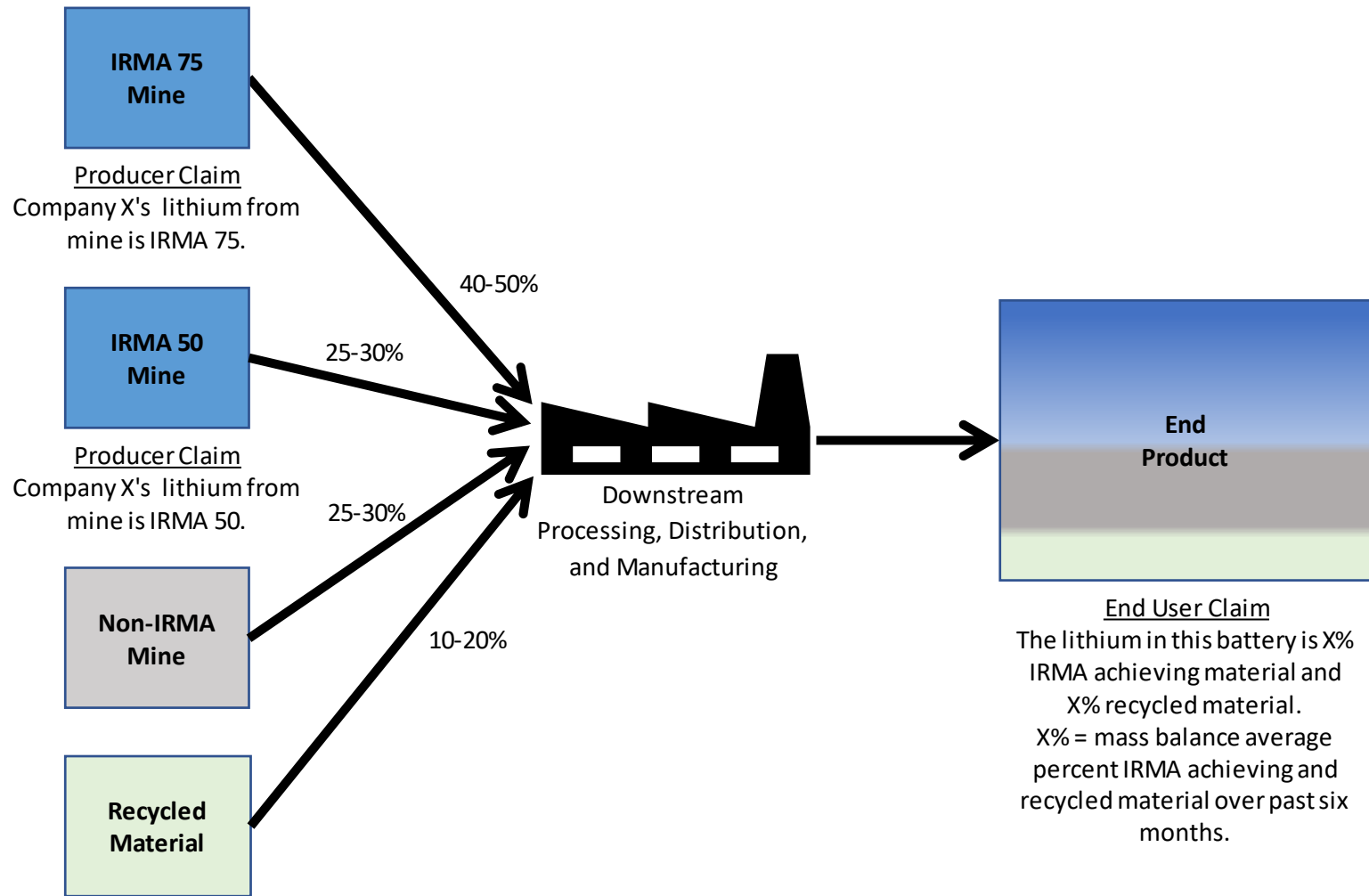
**1. Rolling average percentage implementation method.**

The rolling average percentage method is based on the use of a fluctuating proportion of input bearing specified characteristics entering the entity over a defined claim period, allowing a claim of an average percentage to be made for the output over the claim period.

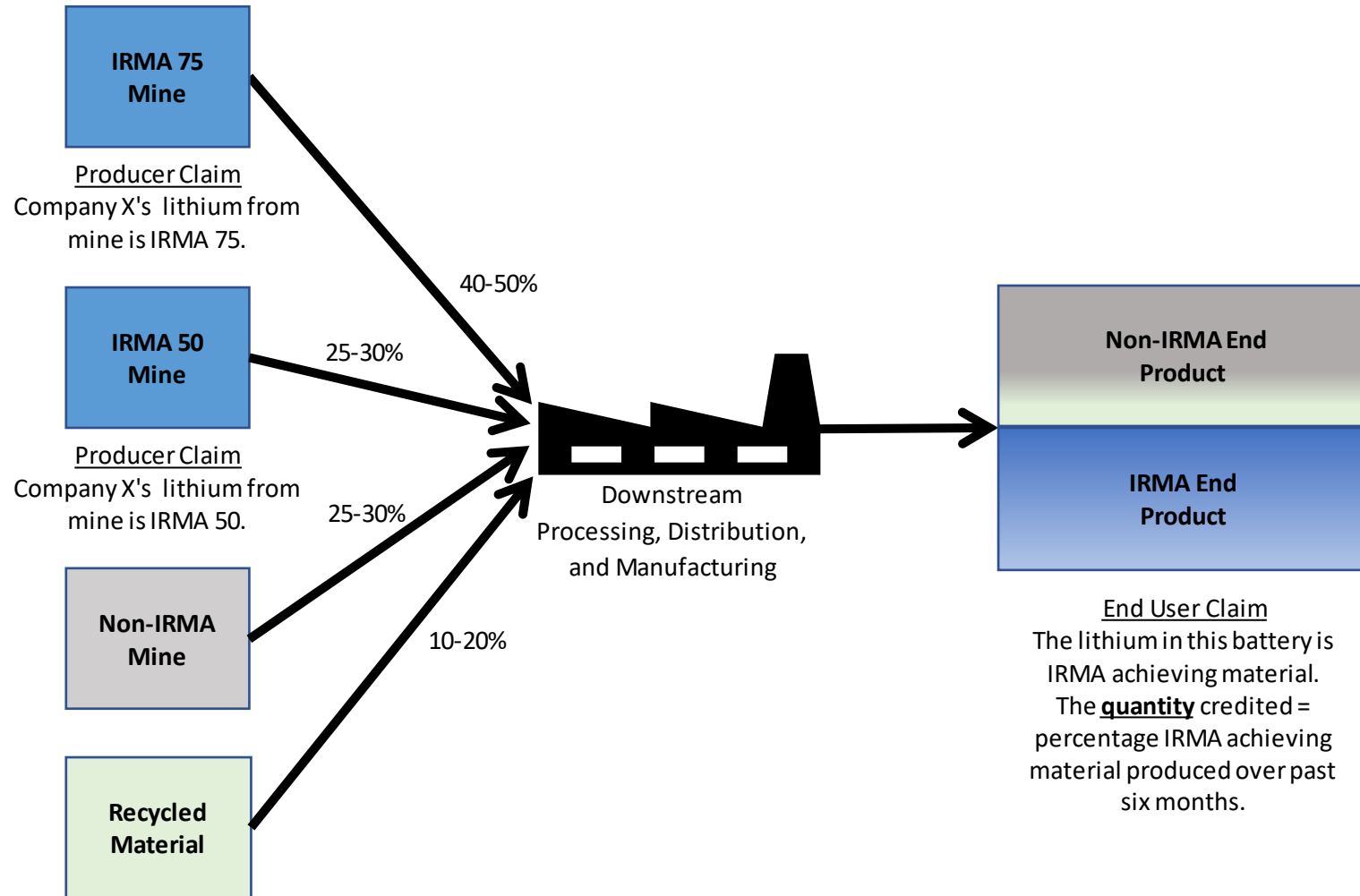
**2. Credit method.**

The credit method is applicable when two or more types of input are used in a material or product. The recorded output amount of each type shall be equivalent to the physical input, taking into account the conversion factor.



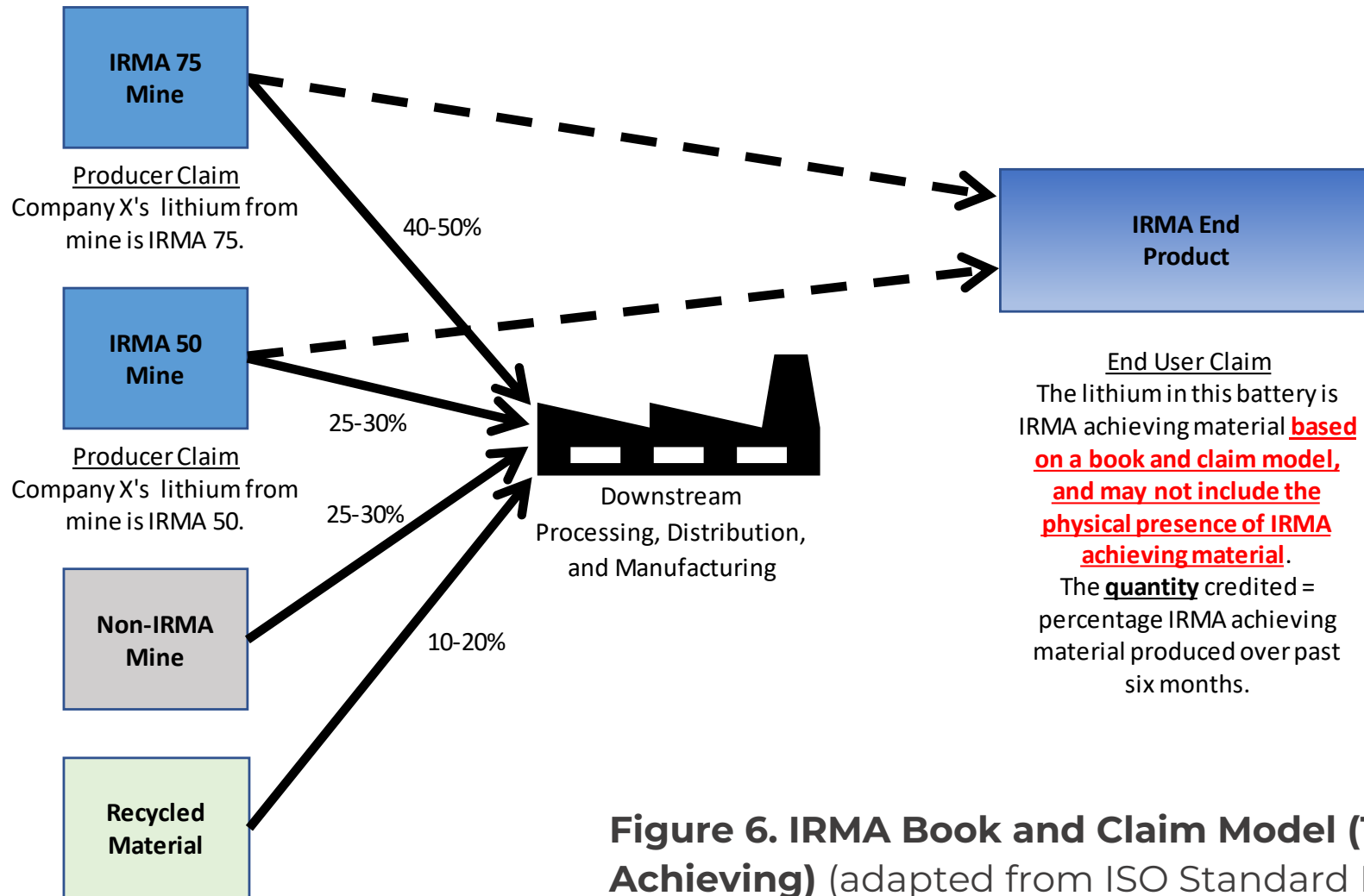


**Figure 4. IRMA Mass Balance Model (Rolling average percentage implementation method)** (adapted from ISO Standard No. 22095:2020)



**Figure 5. IRMA Mass Balance Model (Credit method)** (adapted from ISO Standard No. 22095:2020)

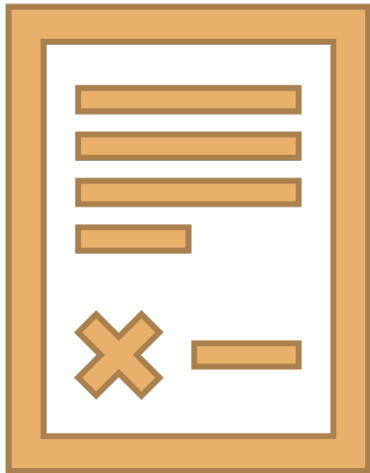
**Book and Claim Model** – *chain of custody model* in which the administrative record flow is not necessarily connected to the physical flow of material or product throughout the supply chain.



**Figure 6. IRMA Book and Claim Model (100% IRMA Achieving)** (adapted from ISO Standard No. 22095:2020)

# Book and Claim Supply Chain Model: Rationale

1

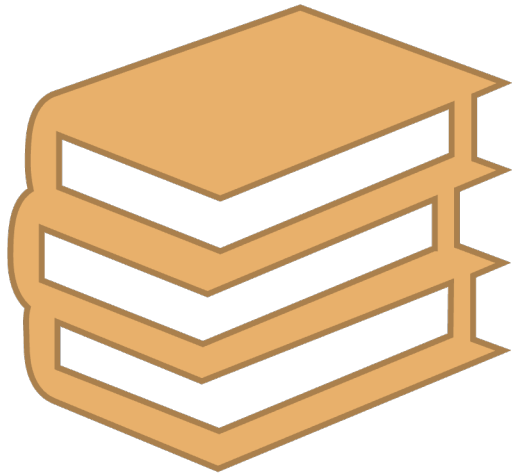


Supply chains for certain materials (platinum group metals (PGMs), lithium, and others) involve mixing material from multiple mine sources.

Not allowing a book and claim system would require physical segregation of IRMA material in a manner that would not be practical, as the processes are continuous and require a blended feed.

# Book and Claim Supply Chain Model: Rationale

2



Nearly all current mined materials supply chains rely significantly on inputs and transfers that include tolling, brokering, trading, warehousing, and shipping.

Maintaining segregation of IRMA and non-IRMA materials would require modification of existing practices and significant shifts in storage space, logistics, capital investments, use of block-chain or similar tracking methods that are not yet in widespread use.

# Book and Claim Supply Chain Model: Rationale

3



Existing chain of custody models for mined materials are not widely used because they do not include a book and claim option and are therefore not practical for some supply chains (especially industrial-scale supply chains).

**IRMA**

Part 4

How to Comment

# We invite you to participate in the Consultation period

From Oct 26 – Jan 26: **90 days**

- Consultation period is 90 days
- There are many ways to participate!
- All comments will be considered equally and objectively
- Comments will be included in a public summary of all comments received
- **Comments may be treated confidentially if desired**



End date:  
**January 26, 2024**

## Via email

- [comments@responsiblemining.net](mailto:comments@responsiblemining.net)

## Via WhatsApp

- To comment via text or voice, use the IRMA WhatsApp number: +1.301.202.1445

## Via postal mail to:

- IRMA Std Comments  
113 Cherry St, #74985  
Seattle, Washington, 98104  
USA



IRMA

Part 5

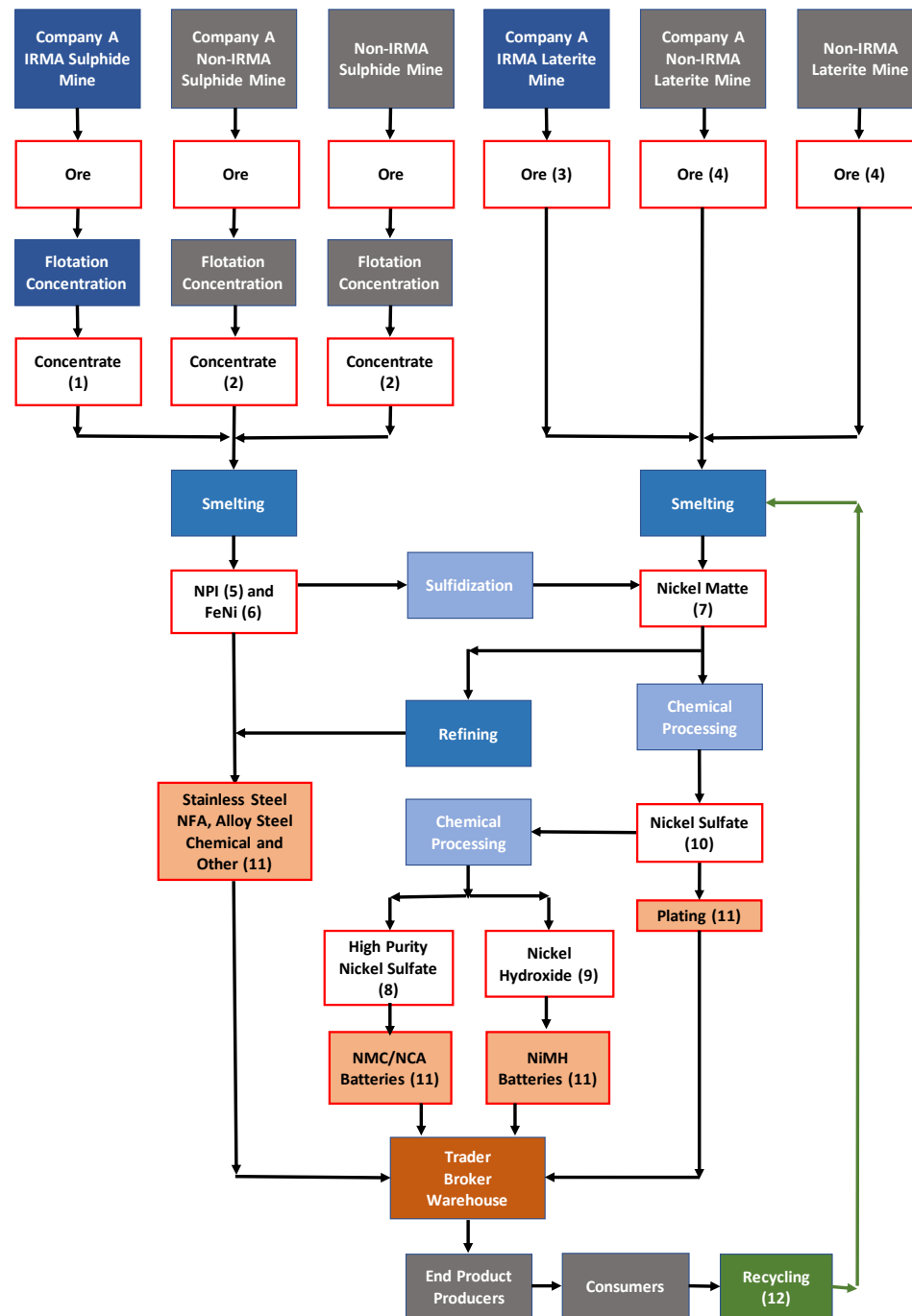
Discussion



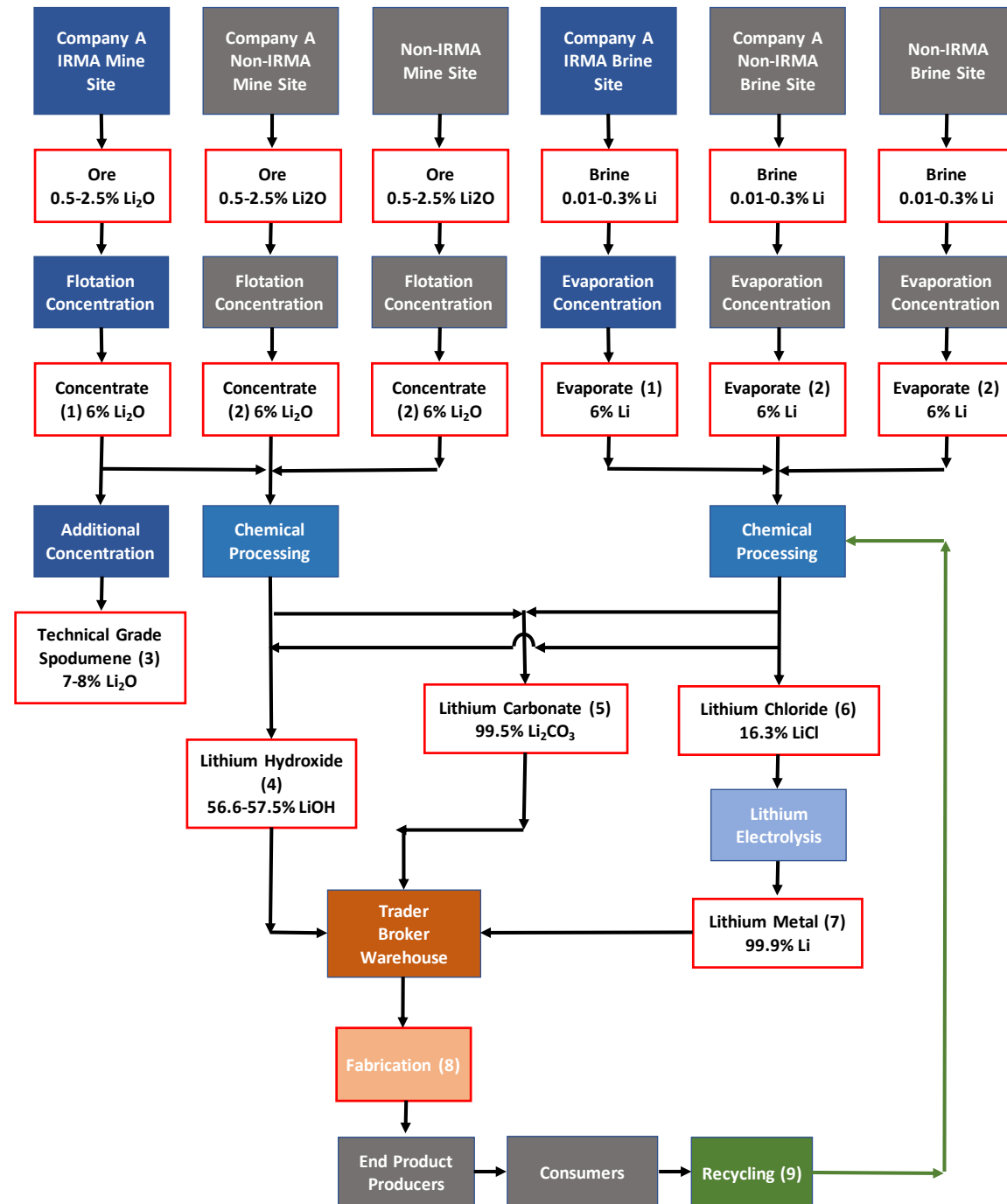
Annex

Examples from Supply Chain Studies

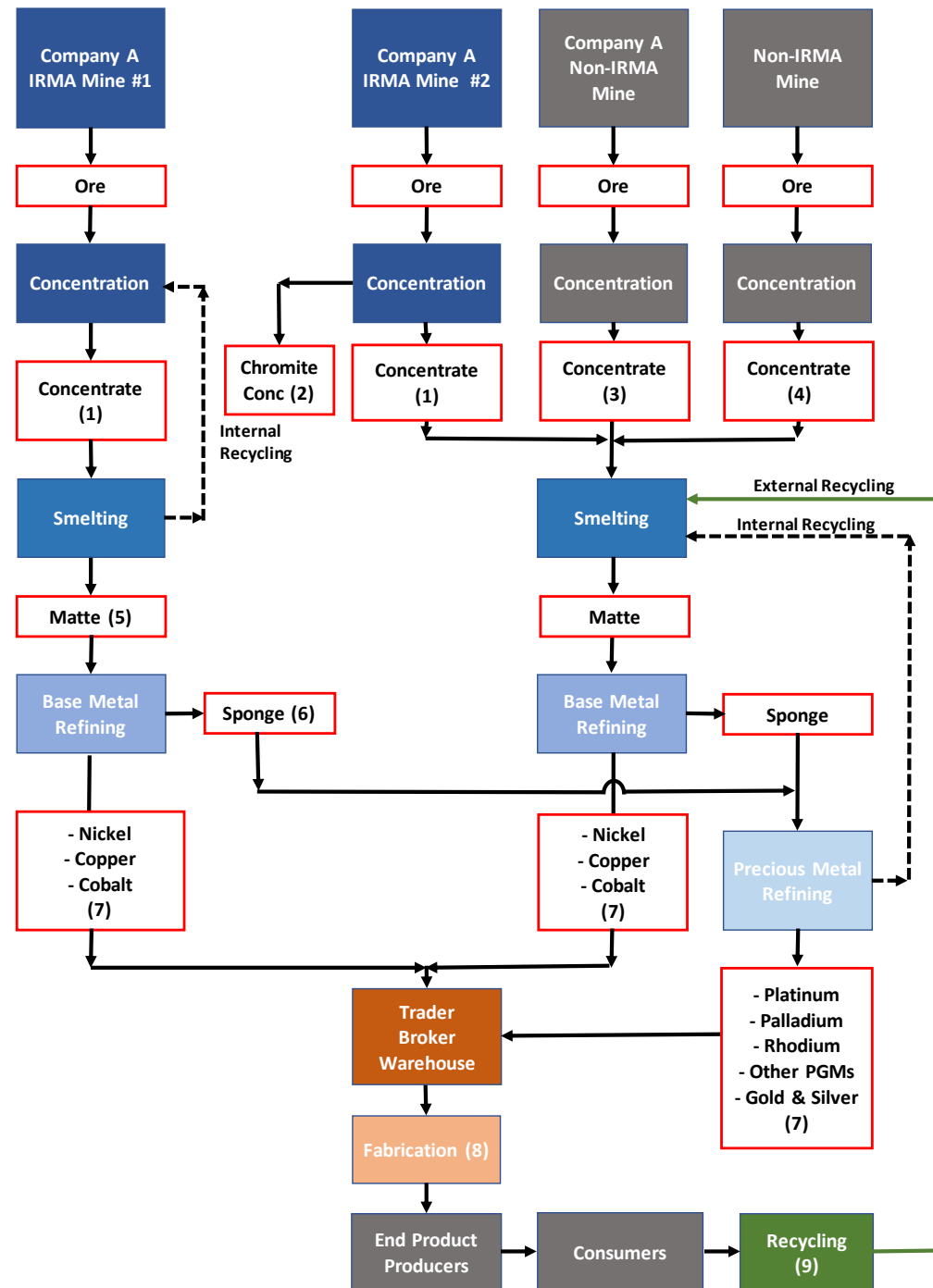
# Nickel Production Supply Chain



# Lithium Production Supply Chain



# PGM Production Supply Chain





Thank you

[info@responsiblemining.net](mailto:info@responsiblemining.net)

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