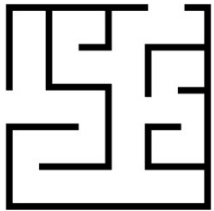


Exploring the ESG Framework Mining & Water Perspective

Assessment of the Emerging ESG Framework and Implications for Mine Water Practitioners

Cansu Perdeli Demirkan, Ph.D. Candidate, Colorado School of Mines
Terry Braun, P.E., RM-SME, SRK Consulting

Outline



Motivation

Methodology

Results & Visuals

Discussion:

Water Stewardship and Mine Water

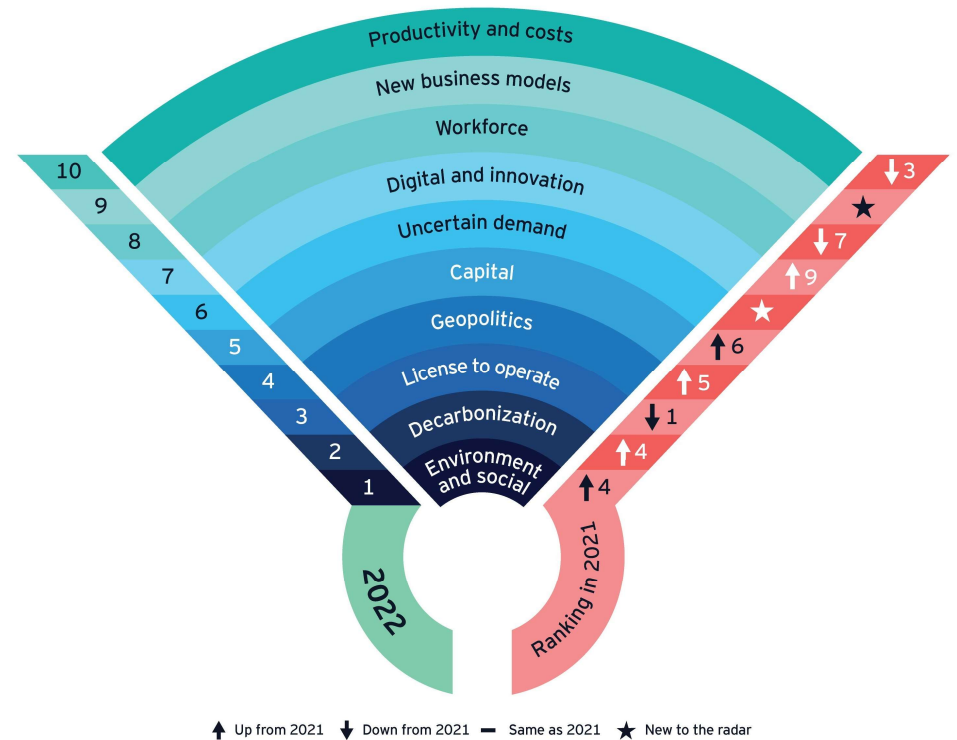
- Applied Principles

Motivation

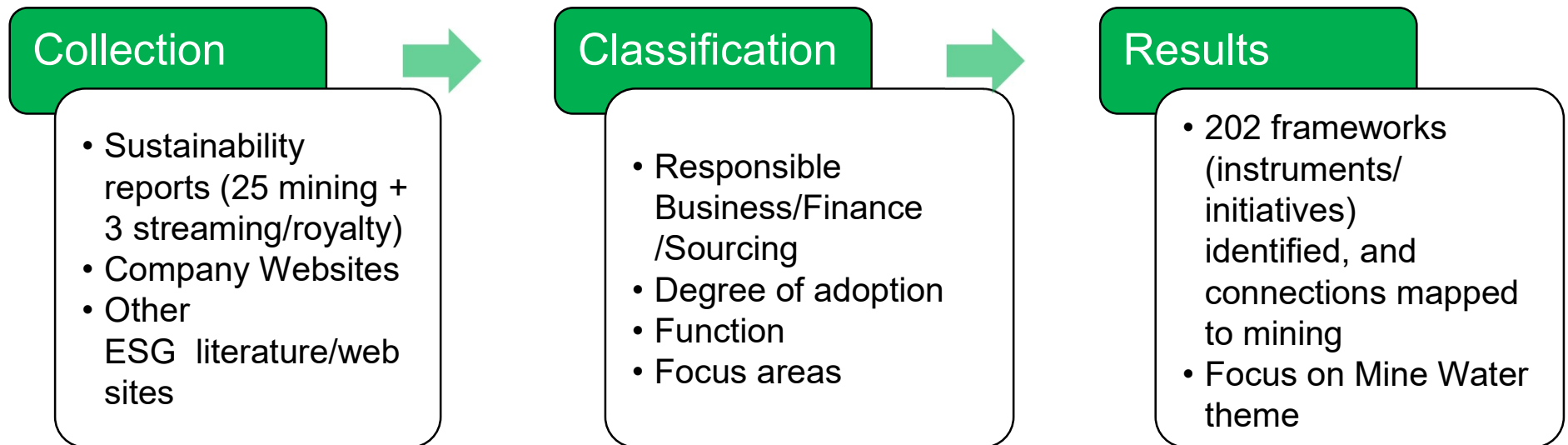
Explore "ESG"

Identify themes

Deeper dive on mine water

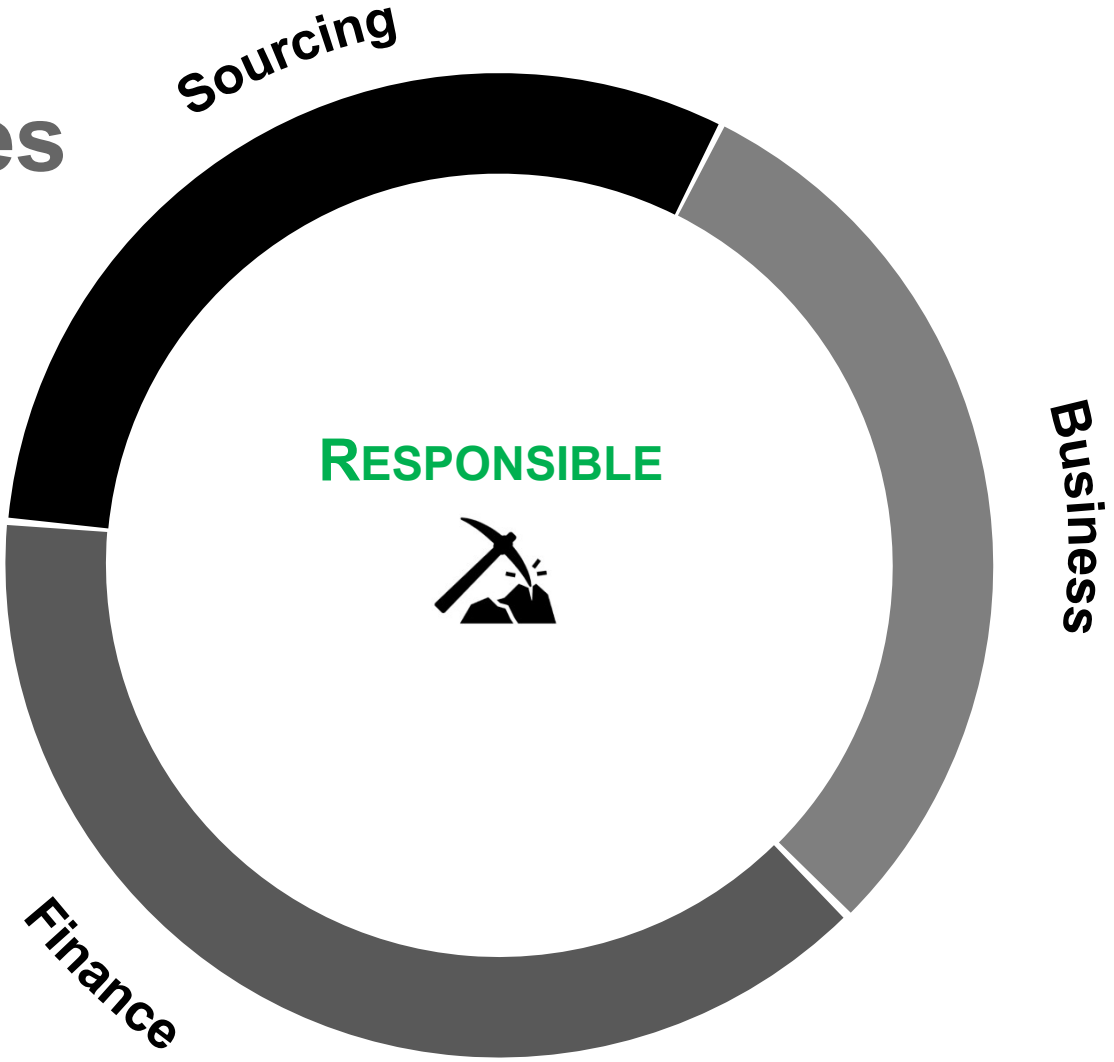


Methodology

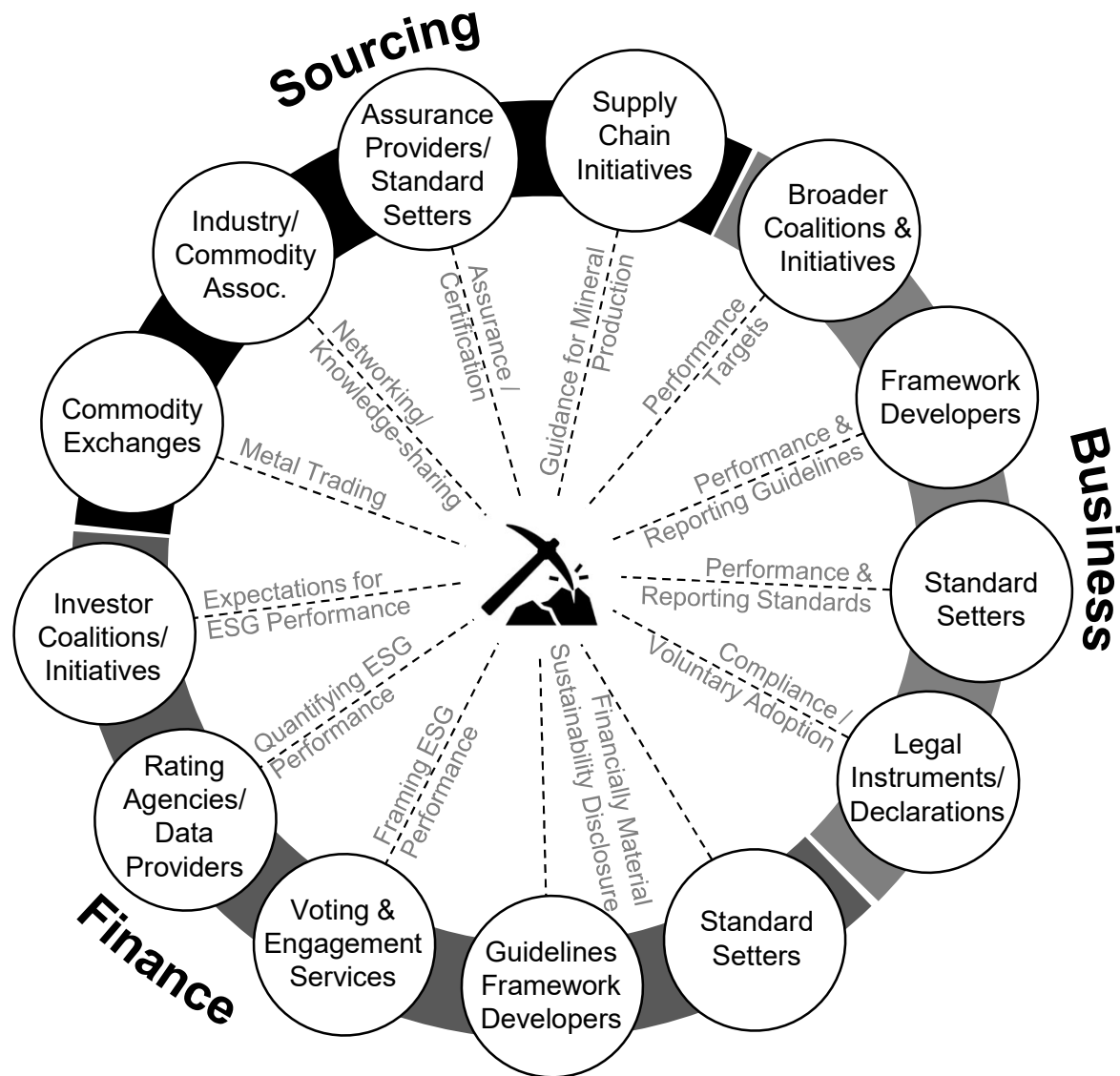




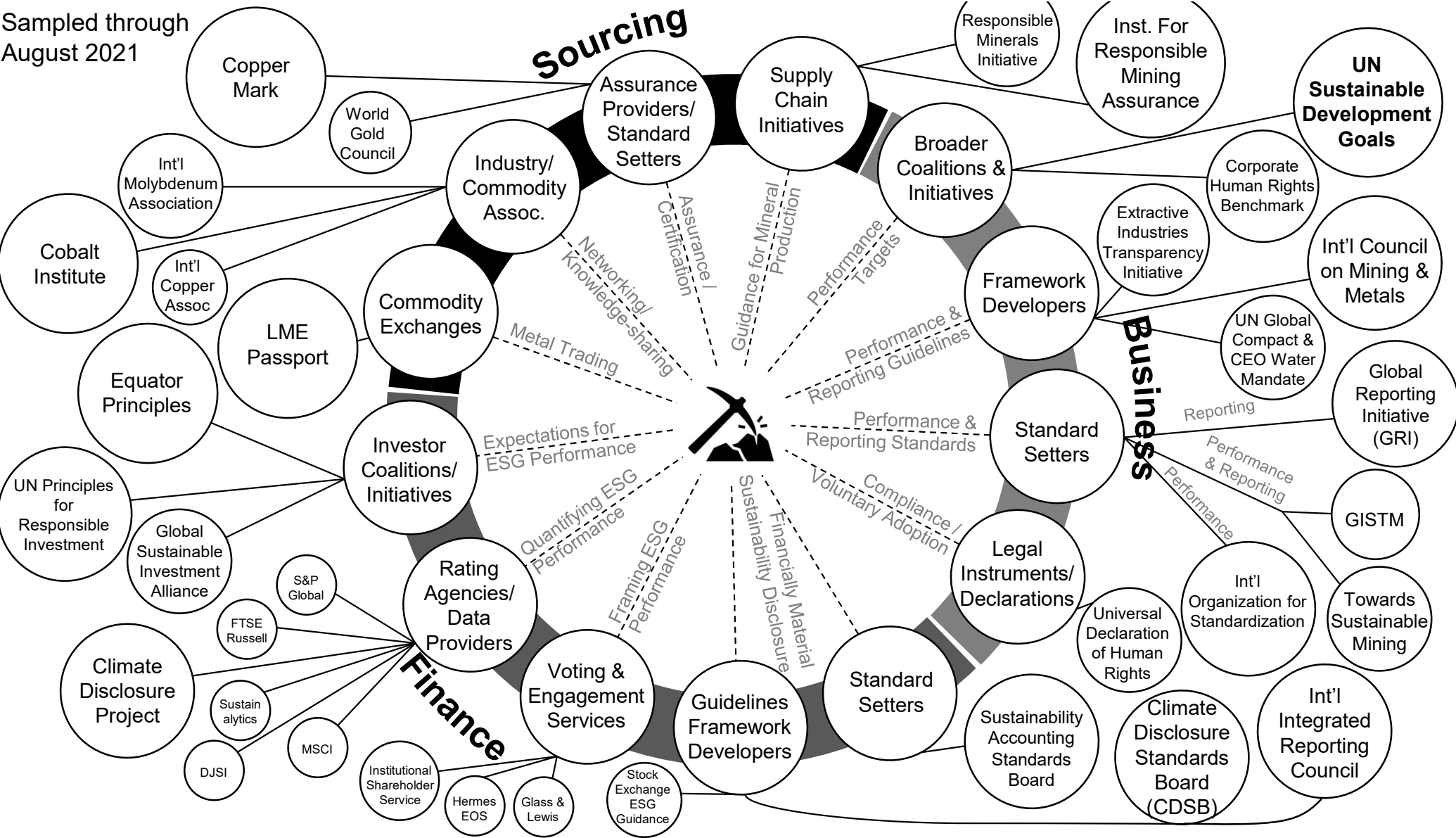
Categories



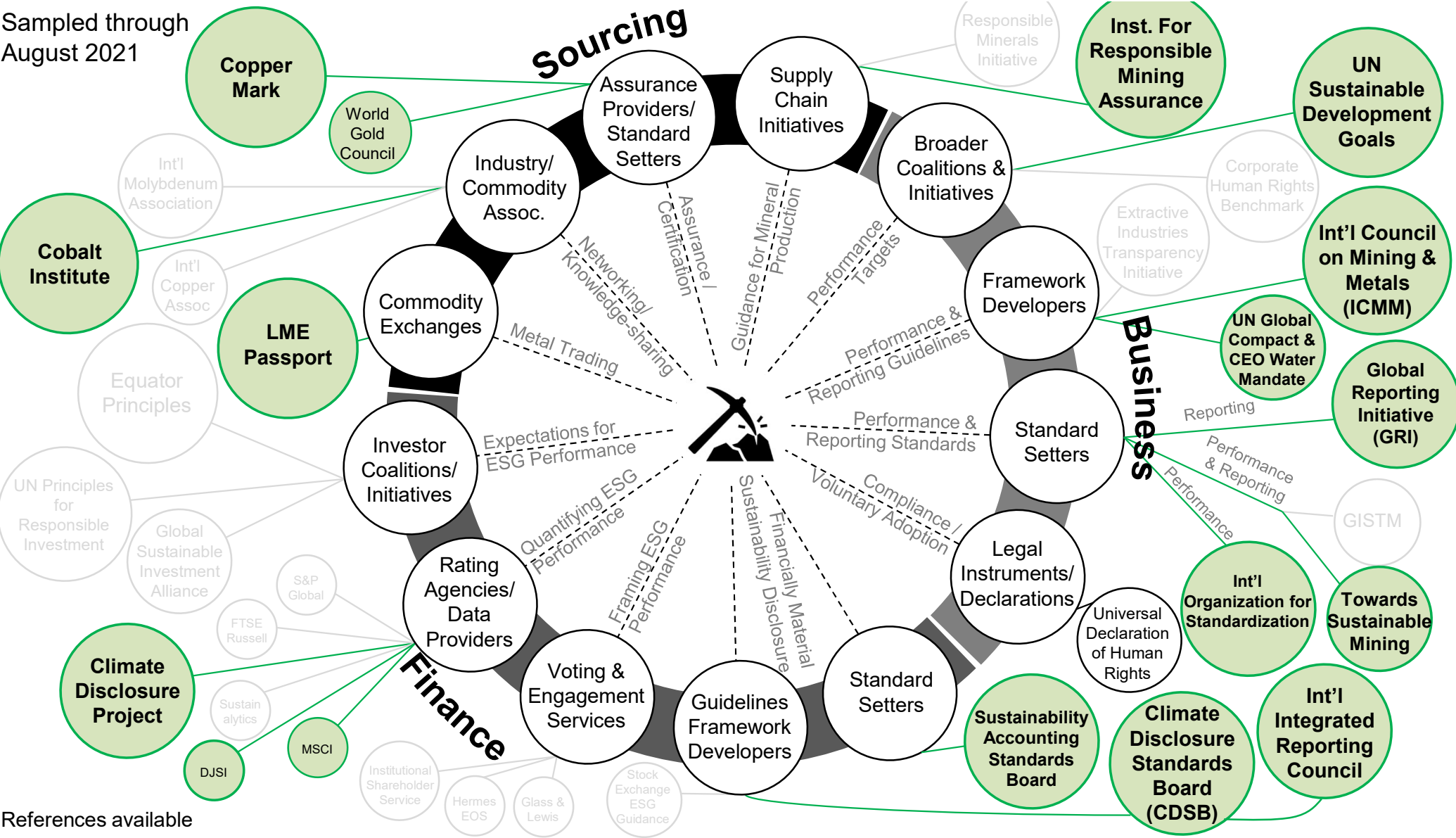
Major Actors



Sampled through August 2021



Sampled through August 2021



References available

Water Stewardship & Mine Water

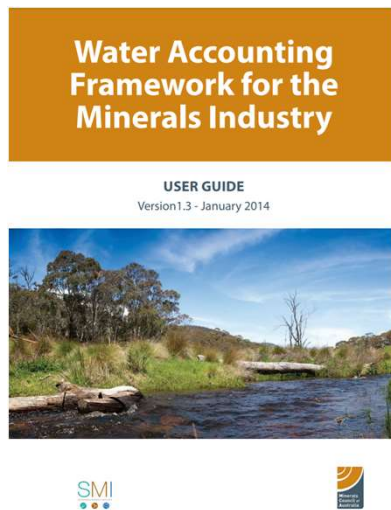
“efficient and responsible withdrawal, use and management of water in operations to support the stewardship of water resources.”

(Adapted from Bettercoal Code 2.0)

1. Understand
 - Water catchment areas & users
 - Baseline water conditions
 - Ecosystems
2. Assess
 - Potential impacts
 - Risks and opportunities
 - Up-to-date water balance
3. Manage
 - Water management plans
 - Reduce water footprint and impact
4. Improve
 - Monitoring & compliance
 - Set targets
5. Engage & Report

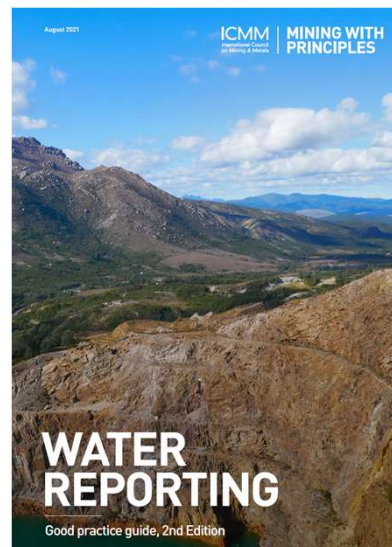
ESG and Mine Water Management Guidance

Defined consistent approach



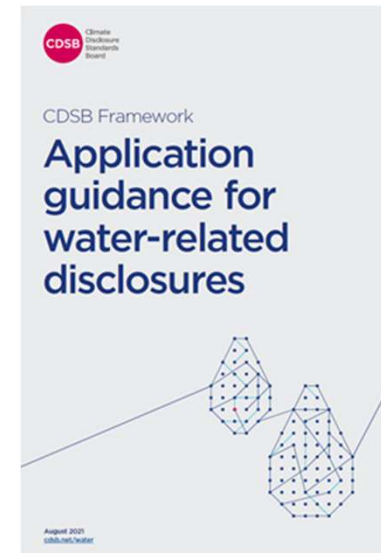
Circa **2011** – updated **2014**
Minerals Council Australia
Sustainable Minerals Institute

Improved consistency and risk metrics



Updated in **2021** (2nd Ed)
International Council on Mining and Metals

Unified framework for sustainability reporting (e.g., IASB, SASB, GRI and CDP)

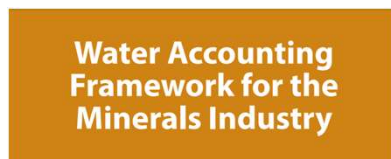


2021 Climate Disclosure Standards Board (not mining-specific)



ESG and Mine Water Management Water Accounting Framework

Defined consistent approach



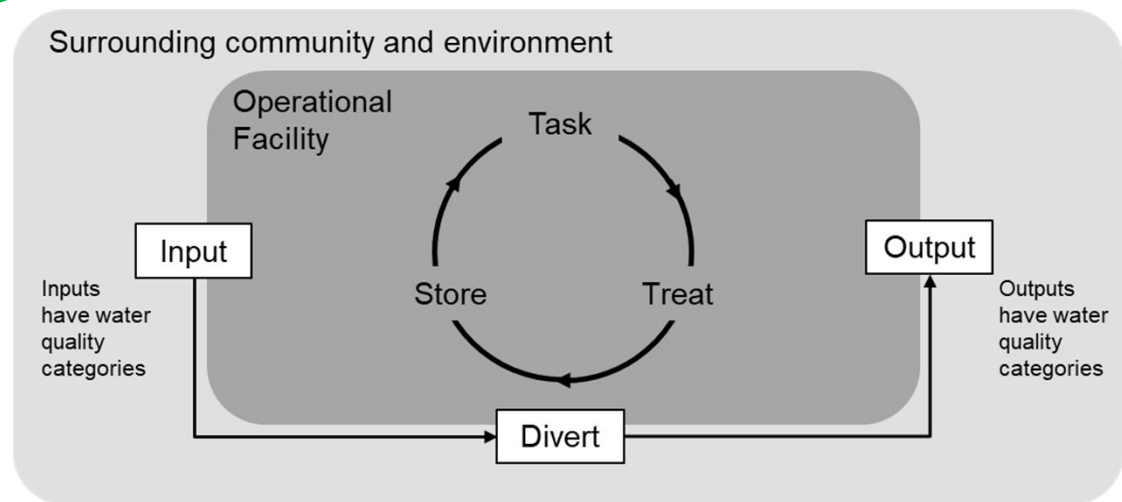
USER GUIDE
Version 1.3 - January 2014



Circa **2011** – updated **2014**
Minerals Council Australia
Sustainable Minerals Institute

Global Reporting Initiative

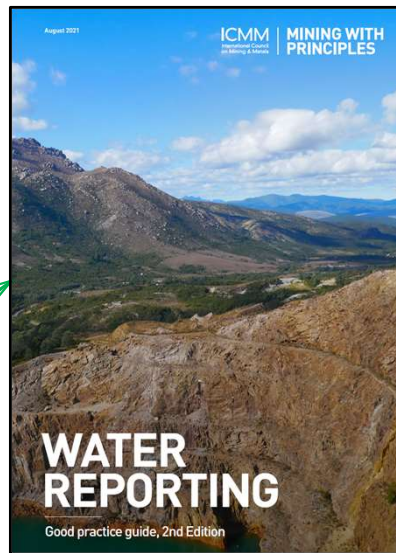
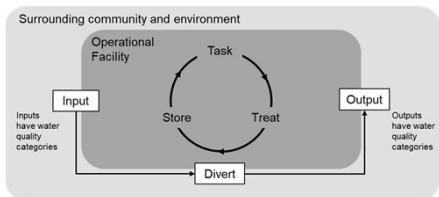
Int'l Council on Mining & Metals



MCS WAF, adapted from Figure 5, WAF User Guide, 2014

ESG and Mine Water Management ICMM on Reporting

Improved consistency in water accounting + risk and opportunity metrics aligned to external reporting



Updated in 2021 (2nd Ed)
International Council on
Mining and Metals

Climate Disclosure Project (CDP)

DJSI

Int'l Council on Mining & Metals (ICMM)

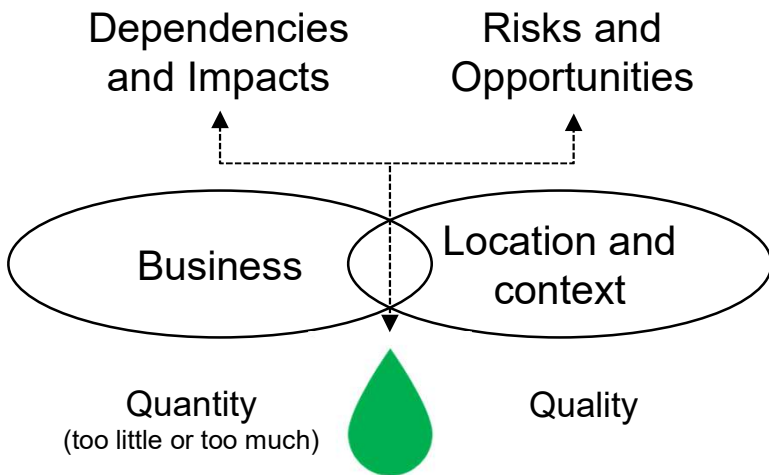
UN Global Compact CEO Water Mandate

Global Reporting Initiative (GRI)

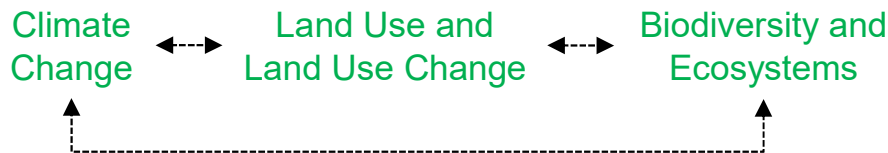
WEF Stakeholder Capitalism Metrics

Sustainability Accounting Standards Board (SASB)

ESG and (Mine) Water Management CDSB on Reporting



Resources – surface, groundwater, rainfall, etc.
Ecosystems – related services and biodiversity – freshwater and marine
Cycle – precipitation, evaporation, evapotranspiration



Unified framework for:

- sustainability reports (GRI)
- sustainability-related financial disclosures (CDSB, SASB)
- financial accounting & disclosures (IASB, FASB)



2021 Climate Disclosure Standards Board (not mining-specific)



CDSB, adapted from Figure 3, Application guidance for water-related disclosures, 2021

Disclosure Framework(s)

GRI 303-1 Water Withdrawal by Source

GRI 303-2 Water Sources Significantly Affected by Withdrawal of Water

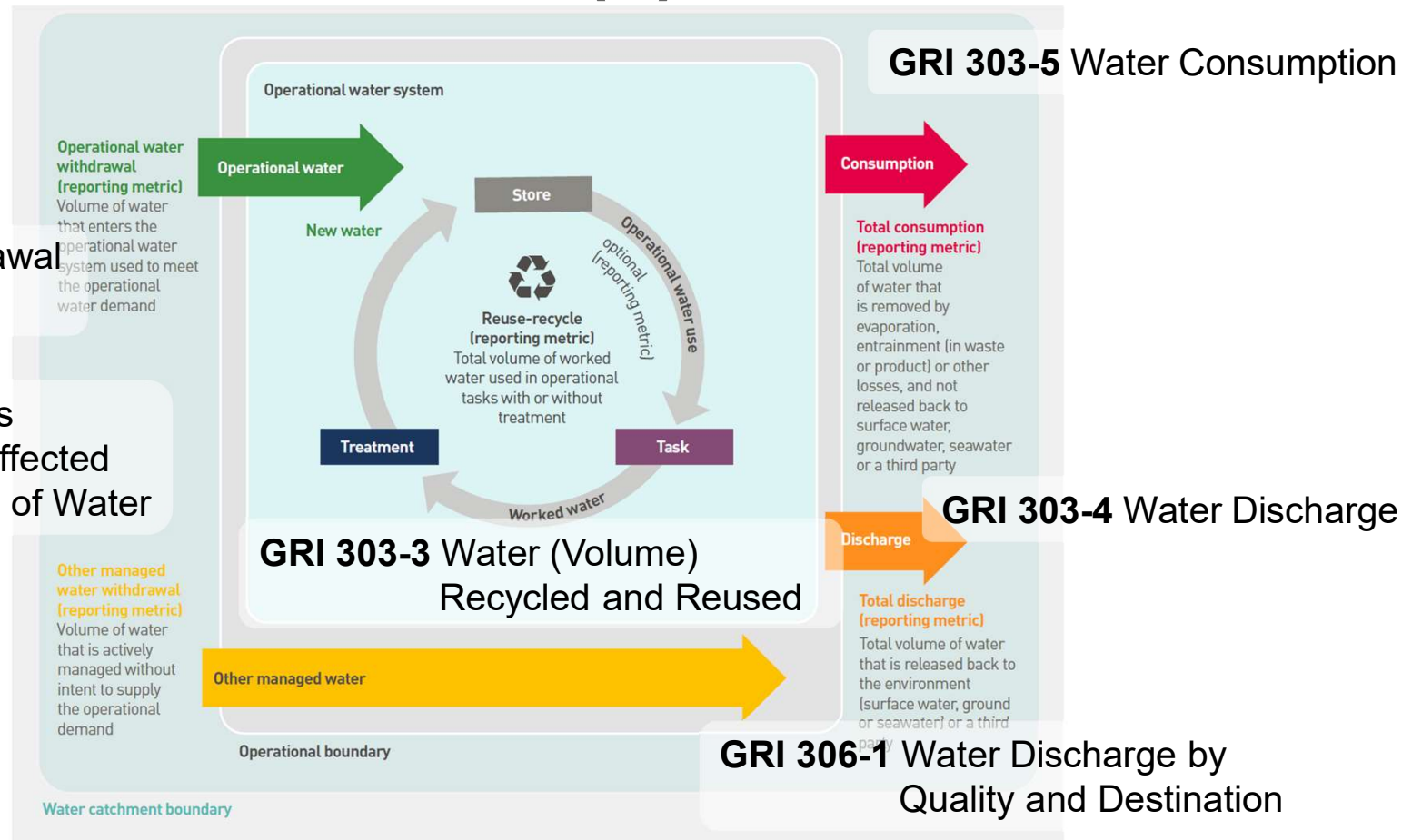
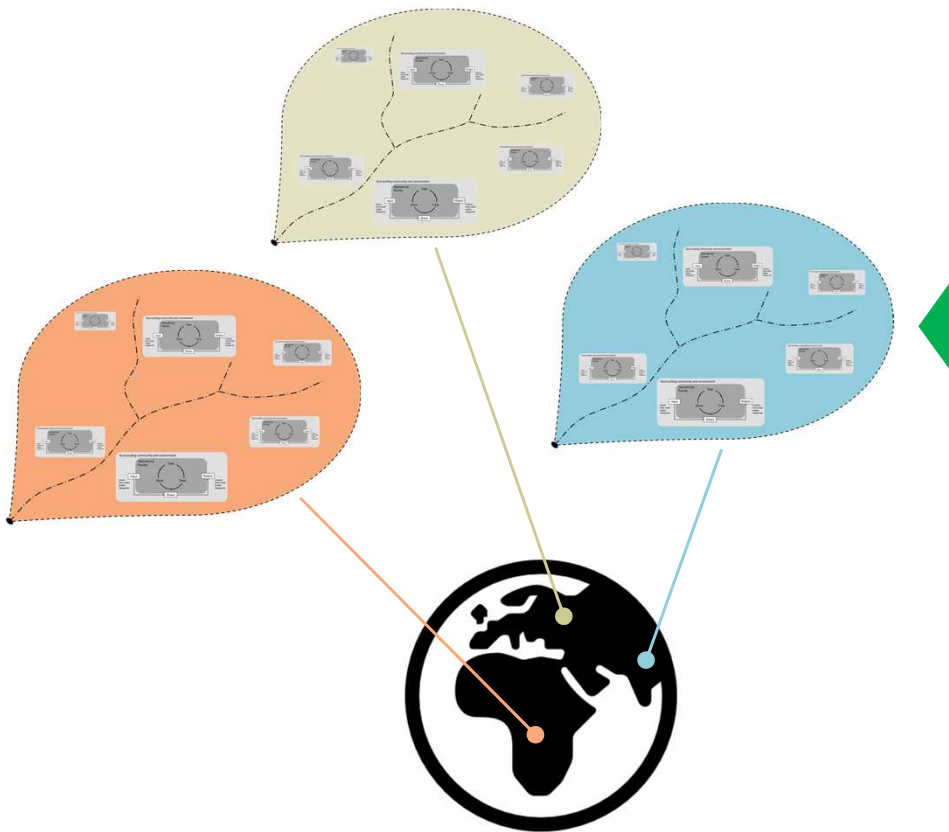


Figure 1 – Site water accounting boundaries and reporting metrics (From Water Reporting 2021 (2nd Ed) ICMM)

GRI 306-1 Water Discharge by Quality and Destination

GRI 306-5 Water Bodies Affected by Water Discharges and/or Runoff

ESG and Mine Water Management Trends



Basin-Wide Assessment

- Wider, basin-level impacts on water
- Shared challenges

Collaborative thinking

- Stakeholders in the Area of Interest

Integration with **land use** and **biodiversity** impacts, **climate change** risks and adaptation

Risk and Uncertainty Analysis

More **localized** reporting (show areas of **scarcity** and **abundance**)

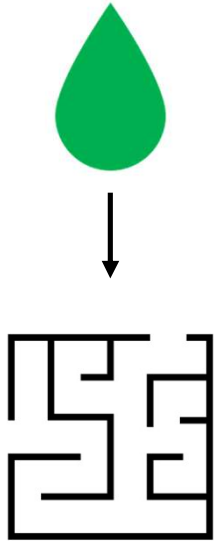
ESG and Mine Water Management Takeaways

Expanding ESG initiatives working towards a common foundational approach to water management and reporting

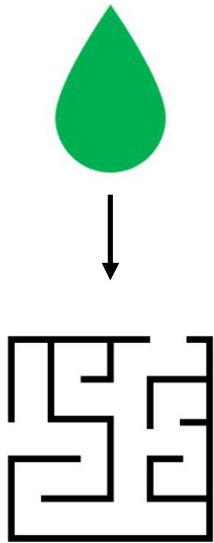
Consideration of broader impacts in water balance models

- ESG trend of integrating water with climate change, biodiversity and ecological system impact assessment
- Water-related risks (e.g., additional **what-if analyses**), opportunities, and their financial implications are important in external reporting

Water Practitioners



In your technical work products for projects throughout the development, operational and post-mining phase, have you considered additional **modelling scenarios** that address ESG water-related questions?



Water Practitioners

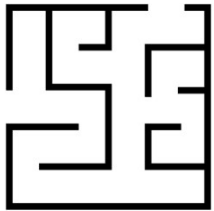
In your technical work products for projects throughout the development, operational and post-mining phase, can you address your task objective

AND

report your inputs, methods and outputs in a manner that **informs ESG Water-Related Disclosure?**

Water Practitioners

More work necessary for consistent approach
to groundwater





Thank you

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