Contents

➢ Standards Committee Meeting 25–29 September DRAFT Minutes  Slides 3–16

➢ Edited presentation slides  Slides 17–151

➢ GHG Method Deep Dive slides  Slides 152–217
DECISION – Previous Meeting (21 June) Minutes

- Propose the Committee accept minutes for publication on ASI website

- For decision: accepted
The Committee supported a pragmatic approach to these Standards Committee representatives to continue in current term (to April 2024):

- Kendyl Salcito to continue as Nomogaia rep, with a request to make explicit on specific issues whether expressing an Alcoa position or a Nomogaia or personal view
- Hugo Rainey to continue as independent

Recognition that there is a need to access expertise (in both the short and long term), but a need to retain balance on the Committee between Civil Society and Industry representation – gaps and (insufficiently) independent seats may erode that balance;

The multi-stakeholder nature of ASI decision making has a regulatory imperative, among others, as legislatures increasingly rely on multi-stakeholder initiative products (such as ASI certification);

Secretariat and Committee members to explore independent experts, with a global distribution; potential for fresh eyes, taking a macro view, not necessarily with aluminium expertise – IUCN scientists and practitioners; health, safety and wellbeing expertise (in particular psychological health and safety/psychosocial risks expertise)
DISCUSSION, elementAI 2.0 – For an individual ASI Certification:
How would you like to be able to access Certificate and conformance information on the ASI website?

• Filter:
  – By certificate validity
  – By (Standard) version
• Ability to “build your own supply chain”
• (Supplier status) Alerts – in particular CoC validity and flagging beyond tier 1 suppliers
• Search by company name, not only Entity name (use of DUNS Numbers – www.investopedia.com/terms/d/dunsnumber.asp)
• For Entity use: ability to conduct multiple self-assessments for a single certification (e.g. multiple assets within one Entity)
DISCUSSION, elementAI 2.0 – For the bigger picture: What kind of aggregated data and analyses would you like to be able to access about conformance against ASI Standards?

- Narrative lessons learned
- GIS overlays – regional geographical layering and filtering
- CAHRA coincidence (even with a disclaimer)
Managing reprisal risks and their impacts on audit quality

The Standard Committee approved the proposal to establish clear guidance on when auditors can stop, pause, suspend, or leave an audit.

➢ **Secretariat Actions:**
  - Update wording regarding Auditor’s decision to leave an Audit based on their “professional judgement”
  - Infographic of the ‘tools'/mechanism the Secretariat and Auditor can use regarding follow action after an Auditor has choose to stop the audit.

The Standard Committee approved the proposed two-tier approach for interview guidance and managing reprisal risks:

i. General Guidance: consolidate existing interview guidance, expand on basic interview techniques, and best practices.

ii. Specific interview guidance and techniques for identifying and interviewing specific vulnerable and at-risk individuals and groups.

All this information will be included within the Assurance Manual

➢ **Secretariat Action:** Add youth, disability and gender diverse groups and individuals to the guidance.

Estimate Audit Time Requirements: Further guidance on interviews

Standard Committee approved the proposed two-tier approach of guidance as articulated above

➢ **Secretariat Action:** Liaise with ASI Auditors Laura Dombi & Dave Knight regarding Audit Times

Managing conflict of interest: Conducting Compliance assessments in conjunction with Witness Assessment Audits

The Standard Committee approved the implementation of ‘Conformance Assessments’:

- The Secretariat will not implement this in 2023 but will explore formalising the assessment in 2024 within the Witness Assessments Framework
- The Assurance team will work out the logistical details.
- We can observe other schemes’ conformance assessments for insights before implementation such as attending as an observer.

➢ **Secretariat Actions:**
  - Look at other financial conformance processes such as the IFC and ARB.
  - Contact Assurance Service International to observe their Conformance Assessments
DISCUSSION – Ask the ASI Auditor (1)

- Laura Dombi (DNV) and Dave Knight (OnePlanet)
- Contractual relationship between Entity and ASI Auditor
- Preparation for Audit and undertaking Audit
- Audits don’t replace a company’s own stakeholder engagement and grievance mechanisms
- Multi-site Audits: corporate then site – project management; implementation of policies
- Qualities of Lead Auditor:
  - Communication skills & leadership
  - Broad understanding of subject matter
  - Ability to engage with a range of stakeholders
  - Empathy and awareness of psychosocial risks (related to Audit process in particular)
    - workers but also communities
- Awareness of outcomes as well as management systems (ISO auditors tend to focus on latter)
DISCUSSION – Ask the ASI Auditor (II)

- Auditor community has a way to go to develop capacity and expertise on human rights, community-led decision making, FPIC, grievance mechanisms, double materiality:
  - Role for ASI training

- Upskilling and talent retention in Auditor pool is an issue

- Areas for ASI improvement, additional work:
  - Public announcement of Audits – e.g. Responsible Steel do this
  - More guidance on stakeholder interviews e.g. how to drill down further if initial interviews flag things, increase sampling (e.g. AA1000 Guidance)
  - Strengthen materiality assessment in ASI standards – risk assessment and due diligence are requirements so this is already in place for many criteria – goal is for entities to be doing this work before the auditor comes
  - Clarity on due diligence end points – e.g. recruitment and contractor management, areas of influence etc
  - Current CoC standard: some customers seek information that is beyond mass balance e.g. specific information such as the source of origin and/or sustainability data (at the moment, voluntary or not possible due to mass balance model). Potential to address in 2027 revision – regulation is pushing quickly, though traceability expectations may not always be able to be met – some business models are based on mixing and may not be able to adjust.
DISCUSSION – Circularity Framework

- Balance required between achievement and ambition;
- How to drive (macro) change through Entity action;
- Need to develop the business case to have location buy-in;
- Potential to add circularity Claims, but with care to avoid falling foul of anti-greenwashing legislation;
- Full value chain approach – different roles for actors along the chain;
- Dependence on demand – drives investment decisions;
- Traceability – direction of travel;
- Role of (potentially reluctant) traders;
- Addition of other elements (biodiversity, climate change etc) to Circularity Framework;
- WHAT NEXT? Working Group workplan, training and communication – to audiences beyond industrial members
DISCUSSION – GHG Pathways Method

• First certification post Pathways Guidance publication would require articulation of Pathway and Plan, but for Entities with base years more than 3 years prior to the Audit, demonstration of performance would also be required.

• Ability to set Pathway scopes at group level (integrating non-ASI Entity assets): flexibility for Entities – see following slides.

• Develop integrated procurement (scope 3 cat.1) slopes for Entities with multiple integrated processes – see following slides.

• Require Guidance for Auditors on triggers of non-conformance (major and minor) and linkage with other criteria (5.1 on disclosure, 5.4 on performance against {Pathways})
  – Entities should embrace non-conformances and seek to address these;
  – Systemic lack of Entity Pathway and Plan would constitute major;
  – Performance against the Pathway addressed more by Criterion 5.4 (except for those Entities with base year >3 years pre-Audit).

• Require a 2016–2018 slope for Entities with earlier base years – Secretariat to develop.
Pathways Scopes (ASI Entities, non-ASI entities, Groups)

Legend
- GHG Pathway(s)
- Scope
- Group/BU/Corporate, etc.
- ASI Entity (certification scope)
- Non-ASI Asset/Site, etc.
Integrated procurement (scope 3 cat.1 slopes)

Entity Pathway scope

Casthouse procurement slope

Semis procurement slope

Fabrication procurement slope

Single integrated procurement slope

Casthouse Scope 1 & 2 slope

Semis Scope 1 & 2 slope

Fabrication (no process slope)

Semis Scope 1 & 2 slope

Fabrication (no process slope)

Entity Pathway scope

Casthouse Scope 1 & 2 slope

Semis Scope 1 & 2 slope

Fabrication (no process slope)
DECISIONS – GHG Pathways Method

1. The Standards Committee recommends to the ASI Board (15 Nov 2023) endorsement of the proposed GHG Pathways method:
   - Primary output/casthouse, semis & fab procurement/casthouse & semis process
   - Choice of base year
   - Group applicability

2. Exclude stand-alone mines and refineries from requirement in first published iteration.


4. Incorporate into Guidance v3.1.1 (with SC oversight) in April 2024.

5. ASI Secretariat to work on:
   a. Integrated process slopes (Oct 23)
   b. Training, communication & rollout (from Q4 2023)
   c. Bx and Al₂O₃ sectoral slopes (2024, post publication)
   d. Land use emissions (2024, post publication)

6. Any updates to sector slopes, method or guidance (based on changing science and/or assurance/implementation experience requires (as usual) Standards Committee (and thence Board) decision
DISCUSSION – 2024–2027 Priorities

• CoC evolution:
  – Value of effort: in early days ASI was learning from its members, large effort to build CoC and then to Audit against; companies need to see the value
  – While CoC does not replace Members’ regulatory obligations, it should have a value for such – for some companies the Performance Standard has a greater value in this regard
  – From some value chain participants a desire for increased traceability – potentially linked to regulatory shifts
  – From all a desire for increasing supply chain transparency

• Performance Standard new criteria/issues:
  – Sound/vibration: Already covered to some extent in Biodiversity Impact Assessment, so why be specific? Light pollution could also be included if so
  – Tailings: review existing third-party guidance before incorporation or adoption of specific approaches – don’t just use Guidance as an accumulation of all publications: strategic approach
  – Induced and cumulative impacts: include in scope (biodiversity impact assessment to include direct, indirect and cumulative)
  – Ecosystem services expansion beyond biodiversity alone
  – Clarity on materiality within all criteria
  – Psychological health & safety

• Broad themes
  – Minimum (conformance) requirements for certification: balance between embracing non-conformances and improving and the credibility of ASI
  – Articulating lessons learned
  – Measuring and communicating performance, e.g. GHGs
DISCUSSION – Civil Society Engagement

- Aim for diversity, global spread and range of broad expertise in standards committee;
- In particular social expertise
- Broaden civil society to include independent and academic representatives (allowed per Governance Handbook) to access expertise but take care that the multi-stakeholder nature is retained;
- Explore ways to engage a wider set of stakeholders through interpretation/translation services – IPAF as a model;
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<thead>
<tr>
<th>Name</th>
<th>Organisation</th>
<th>Member Class</th>
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<tbody>
<tr>
<td>Nicholas Barla</td>
<td>Odisha Indigenous Peoples Forum</td>
<td>IPAF</td>
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<tr>
<td>Louis Elberto Biswane</td>
<td>Organisation of Kalinña and Lokono In Marowijne</td>
<td>Civil Society</td>
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<td>Patrick Brading</td>
<td>Hydro</td>
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**ASI Secretariat**

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<thead>
<tr>
<th>Name</th>
<th>Role</th>
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<tbody>
<tr>
<td>Fiona Solomon</td>
<td>Chief Executive Officer</td>
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<tr>
<td>Mark Annandale</td>
<td>Director of Research &amp; IPAF Advisor</td>
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<tr>
<td>Chris Bayliss</td>
<td>Director of Standards</td>
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<tr>
<td>Gabriel Carmona Aparicio</td>
<td>Circularity Research Manager</td>
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<tr>
<td>Cameron Jones</td>
<td>Director of Assurance</td>
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<tr>
<td>Klaudia Michalska</td>
<td>Supply Chain Analyst</td>
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<tr>
<td>Vicky Tran</td>
<td>Assurance &amp; Claims Manager</td>
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<tr>
<td>Marieke van der Mijn</td>
<td>Director of Partnerships</td>
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<tr>
<td>Andrew Wood</td>
<td>Director of Sustainable Investment &amp; Legal</td>
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</table>

* Alternate
Meeting Objectives

1. Build/develop collective and individual **relationships** among Committee and with ASI Secretariat;

2. Familiarise/refresh Committee members on ASI’s **Assurance and Oversight processes**; and hear from ASI Accredited Auditor(s), with experience of Performance Standard and Chain of Custody Standard certifications and facilitate an exchange of ideas and knowledge;

3. Discuss and, where appropriate, finalise updates to **Assurance Manual** for forthcoming revisions;

4. Recommend a DRAFT Entity Level **1.5 Degree Aligned GHG Pathways Method** for Endorsement by ASI Board and incorporation into PS v3.1.1 Guidance;

5. Agree content and timing for a minor **Performance Standard Guidance update**;

6. Start to scope priorities for **2024–2027 Standards Revision**.
<table>
<thead>
<tr>
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<th>Item</th>
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<td>1400</td>
<td>LUNCH</td>
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<tr>
<td>1410</td>
<td>Welcome, safety briefing, schedule for week, previous meeting minutes &amp; agenda</td>
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<td>ASI Strategy, Board, Committee and team update</td>
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<td>An introduction to the work of IPAF and ‘Beyond Certification’</td>
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<td>elementAL 2.0 updates – and opportunities to evolve ASI Audit reports</td>
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<td>26th</td>
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<td>Assurance Manual Updates (I) – agree content and/or next steps.</td>
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<td>• Managing conflict of interest with ‘conformance assessments’</td>
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<td><strong>DINNER at El Gato Negro Tapas</strong></td>
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## 27th September – Plant Tour: Novelis Recycling Latchford Locks Works

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<td>Tour of Novelis Recycling Latchford Works</td>
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<td>GHG Pathways Method deep dive</td>
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<td>1330</td>
<td>1800</td>
<td>Tour of Novelis Recycling Latchford Works</td>
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<td>Partnerships (including Benchmarking &amp; Recognition) Updates:</td>
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<td>• Mining Standards Convergence (ICMM, MAC-TSM, CopperMark, WGC, IRMA)</td>
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<td>• EU Regulations (CSDDD, CSRD)</td>
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<td>• Review emerging initiatives and regulation for future ASI revision (TCFD/TNFD)</td>
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<td>Start to scope priorities for 2024-2027 Standards Revision:</td>
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<td>• Restructuring of Principles</td>
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<td>• Outcomes-based criteria in PS</td>
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<td>• New criteria (e.g. tailings and sound/vibrations)</td>
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<td>• Changes to supply chain activities/applicability</td>
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<td>• Chain of Custody Standard evolution</td>
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<td>• Claims and Claims Guide</td>
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<td>Encouraging civil society engagement with Standards Committee</td>
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<td>ACTIONS AND MEETING FEEDBACK CLOSE</td>
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<td>1900</td>
<td>DINNER AT The Cavern Restaurant</td>
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<tr>
<td>29th</td>
<td>Informal discussions: ASI Secretariat and IPAF members available for requested topics.</td>
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</table>
Before we begin…

Acknowledgement of Indigenous People

ASI acknowledges Indigenous Peoples and their connections to their traditional lands where we and our Members operate. We aim to respect the cultural heritage, customs and beliefs of all Indigenous People and we pay our respects to Elders past and present.

Anti Trust Compliance

Compliance with ASI Antitrust Policy (February 2021) is a condition of continued participation in ASI activities. Participants should have due regard to this Policy today and in all other ASI activities. Feel free to raise concerns or questions with the Secretariat. https://aluminium-stewardship.org/wp-content/uploads/dlm_uploads/2017/10/ASI-Antitrust-Compliance-Policy-02-2021-.pdf

Ways of Working

• We are a multi-stakeholder organisation.
• Dialogue is at the heart of everything we do.
• We welcome all participants and enable the full participation of all attendees
• We value diversity of backgrounds, views and opinions, which lends itself to healthy debate and improved outcomes.
• We express our views and listen to the views of others in a respectful and professional way
Previous Meeting (21 June) Minutes

• Propose the Committee accept minutes for publication on ASI website

➢ For decision:
PRESENTED SLIDES (EDITED)
IPs engagement with ASI as rights-holders

• **Governance and engagement:**
  •  Indigenous Peoples Advisory Forum (IPAF)
  •  Standards Committee representatives from IPAF (4 out of 24)
  •  Members in their own right (Gulkula Mining, KLIM, Settle Ghana)

• **Specialist knowledge recognition, development and support:**
  •  IPAF contributions to FPIC training for auditors and members
  •  Registered Specialists training – 2 Guineans in audit team for Guinea audits
  •  Funding for Indigenous-led research projects – Norway (Sami), India (Adivasi) - and collaborations in Australia (Cape York)

• **Community-level capacity building:**
  •  Indigenous-led workshops in bauxite regions – Australia, Guinea, Ghana
  •  Indigenous-led participatory and cumulative impact assessment on indigenous cultural landscapes and traditional ecosystem services (IPCIA)

• **Complaints processes:**
  •  Access to remedy and the dialogue process
IPAF is designed to be a communications and engagement platform between representatives of Indigenous Peoples and ASI.

- IPAF members participate in – and provide input, advice and recommendations for – key areas of ASI’s work with and for Indigenous Peoples.
- IPAF supports participation in the Standards Committee and Working Groups, engagement with the ASI Board, engagement with the ASI Complaints Mechanism, and – most importantly – engagement with each other.
‘Remedy’ – Sami peoples and wind power Norway

ASI Complaints Process

• ASI complaints process supporting constructive dialogue, leading to collaborative IPAF project.

• Wind farm on traditional lands impacting reindeer migration routes, under legal challenge in Norway.

• Climate-only focus of wind power developer, did not fully consider human rights and nature impacts.

• Supplying to ASI Certified smelter to support decarbonisation.

• How do the ASI Standards and complaints processes apply?
• How to empower people to find solutions?

• ASI team supported constructive dialogue between Sami and ASI member led to arrangement of on-country exchange, to enable remedy discussions.

• ASI supported collaborative IPAF project between Norway and India, an extension of Indigenous-led Participatory and Cumulative Impact Assessment methodology that considers all cumulative impacts in a defined geographic area, including historic or legacy impacts.
In 2022-2023, ASI funded an IPCIA pilot project in India with Indigenous peoples in 2 contrasting locations:

1. The Bagru bauxite mine in Jharkhand State. An old operating bauxite mine with Indigenous peoples having a good understanding of legacy and contemporary impacts.

2. The Niyamgiri Hills of Odisha State. A significant bauxite resource close to refining and smelting entities subject to 20 year old court ruling essentially requiring an FPIC process. Culturally and environmentally significant region with little understanding of modern developments.

- The India IPCIA project report is now being finalised September 2023
ASI Assurance Framework

“behind the scenes”

September 2023
Standards Committee, Liverpool UK

Presenter:
Cameron Jones, Director of Assurance
Agenda

1. Pre-Audit
2. Audit
3. Post-Audit
4. Certification
5. Post-Certification
6. Ongoing
ASI Assurance Framework
<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pre-audit</td>
</tr>
<tr>
<td><strong>For ‘upstream’ facilities:</strong></td>
<td></td>
</tr>
<tr>
<td>- Audit plan review</td>
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<tr>
<td>- Pre-audit risk assessment</td>
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<tr>
<td><strong>PLUS</strong></td>
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<tr>
<td><strong>For ‘high-risk’ facilities:</strong></td>
<td></td>
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<tr>
<td>- Audit scope review</td>
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<tr>
<td>- Audit team/resources review</td>
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<tr>
<td>- Discussions with audit team and Member</td>
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<tr>
<td>- Witness assessment preparation (as required)</td>
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<tr>
<td>2</td>
<td>Audit</td>
</tr>
<tr>
<td>- Support with elementAL enquiries</td>
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<tr>
<td>- Available for questions from auditor if required</td>
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<tr>
<td>- Undertake Witness assessment (where scheduled)</td>
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<tr>
<td>3</td>
<td>Post-audit</td>
</tr>
<tr>
<td>- Oversight (review) of audit report</td>
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<tr>
<td><strong>Review of:</strong></td>
<td></td>
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<tr>
<td>- Audit team</td>
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<td>- Audit scope</td>
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<td>- Potential conflicts</td>
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<tr>
<td>- Evidence cited</td>
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<td>- Audit findings</td>
<td></td>
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<tr>
<td>- Adequacy of Public Headline Statements</td>
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<tr>
<td>- Corrective Actions (as required)</td>
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<tr>
<td>- Maturity ratings, hyperlinks, next audit scheduling etc.</td>
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<td>4</td>
<td>Certification</td>
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<tr>
<td>- Preparation of draft Certificate and Report</td>
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<tr>
<td>- Addition of context page (as required)</td>
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<td>- Close out oversight in elementAL</td>
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<td>- Internal peer review</td>
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<td>- Final Member review</td>
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<td>- Formal release (via email)</td>
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<td>5</td>
<td>Post-certification</td>
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<tr>
<td>- (Media release)</td>
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<tr>
<td>- (ASI website updated)</td>
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<tr>
<td>- Respond to stakeholder enquiries (as received)</td>
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<tr>
<td>- Identify and action material post-audit issues (auditor performance, revisions to Reports, complaints etc.)</td>
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<tr>
<td>- Cert changes for acquisitions, etc</td>
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<tr>
<td>6</td>
<td>Ongoing</td>
</tr>
<tr>
<td>- Review of ‘audit pipeline’</td>
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<tr>
<td>- Questions from Members &amp; Auditors</td>
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<tr>
<td>- Assist with audit planning</td>
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<tr>
<td>- Auditor and audit firm accreditation</td>
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<tr>
<td>- Consider improvements to existing processes</td>
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<tr>
<td>- Considerations into ASI Learning Platform</td>
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<tr>
<td>- Assurance Manual update</td>
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</tr>
</tbody>
</table>
Step 1

Before an audit
Before an audit – what is reviewed

➢ **Audit plans** submitted to Assurance team for review
  - Mandatory for all ‘upstream’* Entities for initial certification audits against PS
  - Optional, but recommended for all other audits

➢ **Pre-audit risk assessments** for ‘upstream’* Entities
  - Governance
  - Social
  - Environmental
  - Reputational / media coverage

➢ **Discussions with Audit team** on resourcing and expertise (for high-risk Entities)
  - Number of auditors and audit/person days
  - Technical experts to support team
  - Area of Influence, key issues, potential non-conformities

* **UPSTREAM:**
  - Bauxite mining
  - Alumina refining
  - Aluminium smelting
Review of Audit plan

Audit team members ✓
Number of days ✓
Facilities visited ✓
Appropriate time for key issues ✓
Additional time for high-risk issues or previous NCs ✓
Certification scope ✓

Audit Plan

Client Name: United Company RUSAL
Address of Site: Headquarter 1, Velikaya Kholonina 16, Moscow, 121990, Russian Federation
Timas Banket: 269 Leenuh Ave., Luhaka, Bosphorus, 169300, Russian Federation
Kamenski District: Leningrad region, 62145, Russian Federation
Sever do Oeste: Industrial Site territory, Republic of Lachash, 60503, Russian Federation
Novokuznetsk: Kuzbass region, 654043, Russian Federation
Villograd: Leningrad region, 65403, Russian Federation

Contract #: Local

Type of Audit: Surveillance Audit
Standards: ASI Performance V.3, ASI CoC V.2
Start Date of Audit: August 8, 2023
End Date of Audit: September 15, 2023

Audit Objective / Criteria:
1. To verify that the Entity has systems in place that conform to the Performance and
CoC Standards
2. To verify Self-Assessment information, including the Certification Scope
3. To determine the Entity’s Overall Maturity

Scope of Certification:
Supply chain activities:
- Bauxite mining
- Aluminum refining
- Aluminum smelting
- Aluminum recycling
- Cast houses

Audit Team Leader: Igor Pochtukh
Audit Team Members:
- Initial
- PIA

Technical Experts:
- Initial
- Initial

Bureau Veritas Certification

Audit Planning

Date: August 8, 2023, day 1
Site: Headquarter, Moscow

Start Time | End Time | ASI Standards principles and criteria | Process / Participants
--- | --- | --- | ---
09:30 | 10:00 | Opening meeting | Audit advisers, concerned persons
10:00 | 10:30 | Top management interview | Department of EHS, Labor Protection and Industrial Safety
10:30 | 11:30 | 1. Legal Compliance
2. Anti-Corruption
2.2 Leadership
3. Payments to governments
3.4 Stakeholder complaints, grievances and requests for information
6.6 Conflict of interest and high-risk areas
| Global compliance officials
11:30 | 13:00 | 2.5 Environmental and Social Impact Assessments
6.6 Supply Risks
9.3 Indigenous Peoples
9.5 Cultural and natural heritage
| Aluminum Engineering Department
13:00 | 13:30 | Lunch

Day closing Meeting

16:30 | 17:00 | Reserved time and preparation for the Closing meeting | Concerned persons
17:00 | 17:30 | Day closing Meeting
- Summary of the day results
- Information about follow-up actions (if applicable) | Concerned persons
### Pre-audit risk assessment

<table>
<thead>
<tr>
<th>Section</th>
<th>Question</th>
<th>Action</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5</td>
<td>Are any BFPs within the Entity’s Certification Scope located in areas of water stress?</td>
<td>Assess the location of the Entity(s) within the Water Risk Atlas [<a href="https://www.wri.org/applications/groundwater-risk-assessment">https://www.wri.org/applications/groundwater-risk-assessment</a>] or also consider reviewing the World Water Risk Atlas [<a href="https://waterriskatlas.org/">https://waterriskatlas.org/</a>].</td>
<td>According to the WRI Water Risk Atlas, the facility is located in an area (Central North Coast basin) of extremely high water risk. The Water Risk Atlas attributes the main contributing factors being groundwater drawdown, decline in coastal aquifers, and overall water extraction. It is understood however, that water is drawn from a nearby desalination plant for its process water.</td>
</tr>
<tr>
<td>1.6</td>
<td>Are any BFPs within the Entity’s Certification Scope located in areas where effective waste treatment, transport and/or disposal is unlikely to be available.</td>
<td>Assess the location of the Entity(s) and consider the level of accessibility to appropriate waste treatment and disposal infrastructure. Also consider the distance of the facility from major cities and industrial hubs. This may be hard to evaluate, however consider the supply chain activities and potential waste streams. Also consider the waste-related regulatory framework and the likely level of regulatory enforcement.</td>
<td>Based on a review of online literature, maps and business directories, it appears that the entity would have available access to industrial waste treatment and disposal facilities across the broad coastal areas of Oman. It is understood that up to 50% of the company’s waste is sent to the Oman General Company for treatment/ utilization. Auditor to confirm.</td>
</tr>
<tr>
<td>1.7</td>
<td>Are any BFPs within the Entity’s Certification Scope located in a setting where IUCN vulnerable or endangered ‘red list’ species are likely to be present?</td>
<td>Review the IUCN Red List of Threatened Species and use the search function (by region): <a href="https://www.iucnredlist.org/">https://www.iucnredlist.org/</a>. Also consider reviewing [<a href="https://aptors-portal.org/">https://aptors-portal.org/</a>].</td>
<td>A review of the IUCN Red List indicated just one species of concern present in the general South region - the Oman Crested Turtledove, which is listed as Endangered and with decreasing numbers. Its habitat remains widespread across the coastal regions of the UAE, OMAN, and the northern Gulf Islands.</td>
</tr>
<tr>
<td>1.8</td>
<td>Are any BFPs within the Entity’s Certification Scope located adjacent to a Protected Area or area of biodiversity significance?</td>
<td>Review the IUCN Species Data Sheet [<a href="https://www.iucnredlist.org/">https://www.iucnredlist.org/</a>].</td>
<td>A review of the IUCN data sheet for the entity indicates that the entity is adjacent to two important Bird Areas (Khawr Shimi and Khawr Lwa) as well as Al Batinah Coast - the latter indicating a threat to the tidal inter and mangrove habitats.</td>
</tr>
<tr>
<td>1.9</td>
<td>Does the Entity have a power mix that includes a significant proportion of fossil fuels? This is particularly important for Entities that include aluminium smelting as a Supply Chain Activity (SCA).</td>
<td>Review the GHG Emissions Analysis Tool [<a href="https://emissionsanalysistool.oxfordgroup.com/">https://emissionsanalysistool.oxfordgroup.com/</a>].</td>
<td>The GHG Emissions Analysis Tool lists the average CO2 intensity of primary metal produced at a rate of 1.7 Gt CO2/yr. This is lower than the BFL threshold of 1.5 Gt CO2/yr under the Mi-2.</td>
</tr>
</tbody>
</table>

#### SOCIAL

<table>
<thead>
<tr>
<th>Section</th>
<th>Question</th>
<th>Action</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.10</td>
<td>Are any BFPs within the Entity’s Certification Scope located in an area where there are, or likely to be Indigenous Peoples present?</td>
<td>Review the ASI/FAF Report which identifies where Indigenous Peoples are located. Also consider the review the Indigenous World Report at: [<a href="https://www.wri.org/en/regions/indigenous-world-report">https://www.wri.org/en/regions/indigenous-world-report</a>].</td>
<td>There is no law in Oman that addresses violence against women and no specific regulations around sexual harassment. Oman is known for significant underreporting of sexual harassment. While there is legislation in place to ensure non-harassment in the workplace, it does not address selection, recruitment, hiring, promotion, training and termination. Maternity leave is mandated at 60 days. The Oman Government has been acknowledged in improving female participation in the workforce and is specifically targeting literacy and skill training. Overall representation in the private sector is still low.</td>
</tr>
<tr>
<td>1.11</td>
<td>Are any BFPs within the Entity’s Certification Scope considered to be within a region with high gender inequality?</td>
<td>Consider reviewing the information contained at: [<a href="https://genderindex.un.org/country-profiles/">https://genderindex.un.org/country-profiles/</a>].</td>
<td>In the World Bank’s Gender, Business and the Law index for 2021, which ranks women’s economic opportunities, Oman ranked lower than the regional average, scoring 56 out of 100.</td>
</tr>
</tbody>
</table>
Step 2

During an audit
During an audit – support provided

- Support with **elementAL enquiries** (Carolyn and Tianyi)
- Answer **questions from auditor(s)** during the audit if required (rare, but can happen)

Witness Assessment (as arranged)

- Understanding of **scope, criteria and risks**
- Auditing **techniques**
- Demeanour and **professionalism**
- **Attitude** towards stakeholders
- **Planning** and co-operation
- **Flexibility** and adaptability
- **Questioning** and follow-up
- **Methods**, tools and approaches
- Consideration of **health & safety**
- Understanding **cultural** sensitivities
- Application of **non-conformities**
Witness Assessment

Audit plan
Criterion understanding
Materiality and risk
Auditing techniques
Flexibility
Inclusiveness
Stakeholder interviews
Professionalism
Health and safety
Review of objective evidence
Follow up and thoroughness

**OVERVIEW OF AUDIT**

<table>
<thead>
<tr>
<th>Name of Auditor</th>
<th>Capital Limited</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company Entity</td>
<td>Capital United Ltd.</td>
</tr>
<tr>
<td>Name of Member Body</td>
<td>Capital Limited</td>
</tr>
<tr>
<td>Cover of Group</td>
<td>Capital United Ltd.</td>
</tr>
<tr>
<td>ABF Standby</td>
<td>Capital United Ltd.</td>
</tr>
<tr>
<td>Audit Type</td>
<td>Initial Certification audit</td>
</tr>
<tr>
<td>Audit Date</td>
<td>10 March 2023</td>
</tr>
</tbody>
</table>

**SUMMARY OF AUDIT scope**

- **Name of Audited Entity**: Capital United Limited
- **Name of Auditor**: Capital United Ltd.
- **Name of Member Body**: Capital United Ltd.
- **Audit Type**: Initial Certification audit
- **Audit Date**: 10 March 2023

**BUSINESS ASSESSMENT**

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audit plan</td>
<td>The audit plan was developed in a timely manner, in consultation with the client's audit committee. The plan was reviewed and updated as necessary.</td>
</tr>
<tr>
<td>Criterion understanding</td>
<td>The criteria were clearly defined and understood by the audit team.</td>
</tr>
<tr>
<td>Materiality and risk</td>
<td>The risk assessment was conducted in a thorough manner.</td>
</tr>
<tr>
<td>Auditing techniques</td>
<td>The audit was conducted in a comprehensive manner.</td>
</tr>
<tr>
<td>Flexibility</td>
<td>The audit was conducted in a flexible manner.</td>
</tr>
<tr>
<td>Inclusiveness</td>
<td>The audit was conducted in an inclusive manner.</td>
</tr>
<tr>
<td>Stakeholder interviews</td>
<td>The stakeholder interviews were conducted in a comprehensive manner.</td>
</tr>
<tr>
<td>Professionalism</td>
<td>The audit was conducted in a professional manner.</td>
</tr>
</tbody>
</table>
| Health and safety                   | The health and safety measures were in place.
| Review of objective evidence        | The review of objective evidence was thorough and comprehensive. |
| Follow up and thoroughness          | The follow up and thoroughness were carried out in a comprehensive manner. |

**Understanding materiality and risk**

- The level of risk and materiality was assessed in consultation with the client's audit committee.

**Witness Assessment**

- The witnesses provided accurate and relevant information.

**Notice**

- Always ensure the use of appropriate audit techniques and documentation.
- Always ensure the confidentiality of the collected evidence.

**Comment**

- The audit team conducted a comprehensive and thorough audit, ensuring all objectives were met.

---

**Note:**

1. Always ensure the use of appropriate audit techniques and documentation.
2. Always ensure the confidentiality of the collected evidence.
Witness Assessment
Step 3

After an audit
Oversight – focus areas

**ANTI-CORRUPTION**
- Government payment records
- Corruption training of staff
- Legitimacy of business dealings and financial sources
- Bribery/corruption history and any legal proceedings
- ‘Whistleblower’ mechanisms
- Money laundering prevention

**RESPONSIBLE SOURCING**
- Responsible sourcing policy
- Its OWN supply chain assessments
- Responsible procurement targets

**HUMAN RIGHTS**
- Human Rights policy
- Human Rights training of staff
- Modern Slavery Statement and prevention
- Forced labour, debt bondage, involuntary overtime etc.
- Engagement with local communities and Indigenous Peoples
- Labour rights, including anti-discrimination and Freedom of Association

**GHG EMISSIONS**
- Raw GHG emissions data, verified by a third party
- Public disclosure of GHG emissions
- Emissions reduction initiatives and targets
- GHG reduction pathway(s)
- Integration of GHG reduction plans into management system

**CAHRAs**
- Are any materials sourced from conflict-affected regions?
- Assess risks of supplier contributing to conflict
- Assess risks of supplier contributing to Human Rights abuses

**ENVIRONMENT**
- Prior environmental fines and prosecutions
- Waste management and minimisation programmes
- Any impacts to biodiversity and ecosystem services
- Use/management of any controlled/scheduled substances?

**INDIGENOUS**
- Policies to respect rights and interests
- Any IP? – what process to identify
- Engagement with IP and informed of ASI process
- FPIC for New Projects/Major Changes and mining and rehab operation
The ‘Oversight’ process

- Critical aspect of the assurance framework
- Secretariat engage directly with audit team
- ***Review of the audit***
  - Audit team
  - Audit scope
  - Correct Supply Chain Activities
  - Potential conflicts
  - Evidence cited / reviewed by audit team
  - Audit findings (appropriate rating)
  - Level of detail provided
  - Consistency
  - Adequacy of Public Headline Statements (clarity, language, consistency etc.)
  - Corrective Actions (as required – for Major NCs)
  - Maturity ratings, hyperlinks, next audit scheduling etc.

# audit reports submitted for oversight
The ‘Oversight’ process

OA 4d Conformance - ASI Query

This field displays only if you have checked ‘No’ above. Use it to enter a query on this issue to be made available to the Auditor in their Dashboard. When they have responded, an ‘Auditor Response’ field will appear below, along with a field to close out the item if the response is satisfactory.

ASI questions

Just some general questions....
Re. 8.1 - was the river considered in the biodiversity risk assessment (re aquatic species and habitats)?
Re. 8.3 - with respect to alien species, given the large bulk ships arriving/departing the port which had traveled through international waters, is the Entity considering the management of ballast water in its risk assessment? In particular to the introduction of noxious species (e.g. Crown of Thorns Seastar etc.)
Re. 11.2 - During your walk around of the refinery area, in your professional opinion, was there sufficient

OA 4d Conformance - Auditor Response

This field appears when the auditor has submitted a response to the ASI Query above. It is not editable by the Secretariat so is read-only.

Audit team responses

Re. 8.1: Yes, the river was considered in the risk assessment. You also can find this information in the sustainability Report (Chapter 9).
Re. 8.3: the management of ballast water is part of the risk assessment. It is controlled by the harbour (Niedersachsen Ports GmbH & Co. KG). It’s out of the responsibility of AOS.
Re. 11.2: was checked during the walk around everything you mentioned was checked.

OA 4d Conformance - Closed

Closed out

If you are satisfied with the Auditor Response above, then you can close the item by selecting ‘Yes’. If not, you can add a further query and/or clarify your query in the ‘ASI Query’ box above. Include a date for the second and any subsequent query, for tracking purposes (e.g. "28Jan2020: ").
Step 4

Certification
✓ Prepare cover page
✓ Prepare certificate details (2–3 pages)
✓ Enter Public Headline Statements (PHS) into Report template
✓ Revise PHS to improve consistency, grammar, punctuation, appropriate level of information
✓ Update document history (version control)
✓ Distil as a .pdf version
✓ Enter metadata
The Certification process – final steps

➢ Certificate and public (summary) report released
  o Emailed to Member and auditor

➢ Provision of other related information
  o Logos / links
  o Survey
  o Any specific requirements (follow up audits, provisional status)

➢ Preparation of media release
  o Introduction to Thad for preparation of media release

➢ Upload onto ASI website
  o Work with Riley to upload certificate
Step 5

Post certification
Post certification

- **Media release** issued (via Thad)
- **ASI website** updated
- Respond to stakeholder **enquiries** (as received)
- Identify and action material **post-audit issues** (if any). These may include:
  - auditor performance
  - revisions to Reports
  - Complaints
  - Identify leading practice and poor practice with respect to audit reporting and audit effort
- Certification changes for **acquisitions/divestments** etc

**Not the end:** → Surveillance Audit / Scope Changes / Re-Certification Audit
Ongoing initiatives and support
Ongoing initiatives and support

➢ Review of ‘audit pipeline’ – identifying upcoming higher-risk Entities and potential witness assessment opportunities
➢ Receipt and response to questions from stakeholders
➢ Provide support to audit teams regarding future audit planning, in particular multi-site audit scopes and initial ‘upstream’ audits
➢ Review and approve Auditor and Audit Firm Accreditation applications
➢ Registered Specialist applications
➢ Work with Learning team in identifying and implementing improvements to auditor training program
➢ Provide input into Auditor Community of Practice (issues, concerns, areas for improvement)
➢ Consider and implement improvements to existing processes (templates, guidance, elementAL etc.)
➢ Assurance Manual update
Assurance Manual update...

➢ What is the Assurance Manual?
  ➢ Principles, procedures and objectives for the model that supports certification
  ➢ Process for achieving & maintaining cert
  ➢ Members – how to conduct SA
  ➢ Auditors – auditing & assess conformance
  ➢ ASI oversight process

➢ Why update?
  ➢ Part of our approach of review
  ➢ Issues raised by stakeholders incl. the SC
  ➢ Changing global context, e.g. in-country risks and reprisal risks
  ➢ ISEAL proposed changes in light of NGO/CSO critiquing standards & certification schemes

The proposal

➢ General
  ➢ Remove redundant info, Restructure for ease of use, Align terminology, Plain English, Reference elementAL v2
  ➢ Status – all in for 2023 update

➢ CoC
  ➢ Pass or fail approach, Buy-back if error, Verify data not just audit system, Mandatory surveillance audit
  ➢ Status – will be for the CoC Standard V3

➢ Assurance and Audit Quality/Integrity
  ➢ Reprisal risks, Auditor rotation, Audit team composition, Provisional certification for minor NC
  ➢ Status – most for future updates, reprisal risk for 2023 & more guidance for interviews in discussion with HRWG

➢ Audit Planning
  ➢ Member vs auditor risk identification, Clarity for NC thresholds, Guide on interview times and reporting times, More info for worker interviews, Compliance assessments
  ➢ Status – Most approved to be in update

Aim: Q1/2 2024
Other initiatives – focus areas for 2024

- Working more closely with IPAF with respect to audit input (before and after)
- Potential mentoring program with Registered Specialists and/or auditors
  e.g. “buddy” system (desktop and in-person)
- Greater engagement with individual auditors on their experience and sharing this with other auditors
  e.g. Two auditors attending in-person Standards Committee in September
- ‘Beta testing’ with selected auditors on elementAL 2.0
- Public disclosure of upcoming audits (when audits are initiated)
- Input into ongoing Standards revision process (2027) – focus on ‘auditability’
- Increased auditor engagement through in-person events (in China, EU?)
General Q&A
ASI Circularity Framework and Working Group

Gabriel Carmona Aparicio
28 September 2023
Evaluating today’s climate policy

Global greenhouse gas emissions by sector
This is shown for the year 2016 – global greenhouse gas emissions were 49.4 billion tonnes CO₂eq.

Negative Emissions Technologies

Biofuels & Hydrogen
Non-emitting electricity
(batteries, renew. & nuclear)
Carbon capture & storage
Evaluating today’s climate policy (2)

Not only about climate change

See: Richardson et al (2023)
Focus is often on consumption but that is only half the story

- Global material stocks increased have increased 23-fold from 35 Gt in 1900 to 792 Gt in 2010.
- Stock maintenance and expansion is also responsible for environmental degradation.
- Yet, 1.6 billion people lack adequate housing or 200 million hours walking are required to get water or go to school.

The magic washing machine
Stocks, Flows and Services

Stock-flow-service nexus (Haberl et al 2017, Carmona et al 2021)
Resource service cascade (Kalt et al 2019, Whiting et al 2021)
Daly’s ends-means spectrum (O’Neill et al 2018, Tanikawa et al 2021)
Resource transformation chain (Cullen and Allwood 2010)
Today’s linear economy

Take – Make – Use – Dispose

New products = new raw materials

Persistent Elevated Levels of Waste Generation

Implementing Recycling Measures at “end-of-pipe”

Source: EMF (2013)
The idea of circularity

Circularity embodies the ethos of extending the lifecycle of materials to their utmost potential, thereby minimising waste generation.

Analogous to the perpetual nature of a circle, we should aspire to foster a system where resources are used in a continuous and sustainable cycle.

Source: EMF (2013)
Why is circularity important?

Circularity embodies the strategic management of resources, curbing wastage and safeguarding the environment.

Consider this as an exercise in thoughtful and intelligent resource stewardship.
Circularity Iceberg

- Recycling
- Design for Re-X
- Product life extension
- Resource efficiency
- Circular supply chain
- Product-as-a-Service
- Traceability & Transparency
- Retain product ownership
ASI Circularity Framework

https://aluminiumstewardship.box.com/v/circularityframeworkaug23
Aluminium is a special material for circularity. Here's why:

1. Infinite recoverability
2. Energy and carbon saver
3. Less red mud and tailings
4. More recycling means less bauxite needs to be mined
Driving change role

**Adopter**
Enhancing the internal environmental sustainability performance.

**Enabler**
Empowering customers and suppliers' transition towards a CE.

**Influencer**
Promoting collaboration among stakeholders to foster circularity.
<table>
<thead>
<tr>
<th>Umbrella strategy</th>
<th>CE strategy</th>
<th>Associated terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainable by Design</td>
<td>1 Refuse</td>
<td>Avoid single use or disposable products</td>
</tr>
<tr>
<td></td>
<td>2 Rethink</td>
<td>Cradle-to-cradle, Sharing initiative, membership business</td>
</tr>
<tr>
<td></td>
<td>3 Redistribute</td>
<td>Convenient/safe public services, provisioning systems, decent living standards, collaborative consumption</td>
</tr>
<tr>
<td>Resource efficiency</td>
<td>4 Reduce</td>
<td>Lightweighting, Less material use, downsizing, miniaturisation, multifunctionality, right-sizing</td>
</tr>
<tr>
<td></td>
<td>5 Reuse</td>
<td>Modularity, easy disassembly.</td>
</tr>
<tr>
<td></td>
<td>6 Repair</td>
<td>Remanufacture, Refurbish</td>
</tr>
<tr>
<td></td>
<td>7 Repurpose</td>
<td>Upcycling</td>
</tr>
<tr>
<td>EoL recovery</td>
<td>8 Regenerate</td>
<td>Rehabilitation, carbon capture gardens</td>
</tr>
<tr>
<td></td>
<td>9 Recycling</td>
<td>Downcycling, cascading</td>
</tr>
<tr>
<td></td>
<td>10 Reclaim</td>
<td>Urban mining</td>
</tr>
</tbody>
</table>
Circularity Business Models

- **New revenue models**: Paying for use instead of ownership. Producer remains the product’s owner. Material leasing models
- **Supply chain collaboration**: New alliances between companies in new and established production chains. Circular value chains / networks.
- **Traceability**: Using technology to transparently track and manage product lifecycles, promoting responsible sourcing and informed decision-making

Source: Atasu et al (2021). Retain product ownership (RPO), Product life extension (PLE), Design for recycling (DFR)
Measuring points

1. Material demand
2. Material stocks
3. Circularity rates
4. Balance: Lifecycle assessment

1. Narrow demand
2. Slow stock degradation
3. Cycle resources

CO₂
Future developments

- Circularity framework
- Standards & Guidance
- Knowledge networks
- Working group
- Training & communication
- Research (stocks-service, LCA)
Knowledge networks: ISO/TC 323

Standardization in the field of circular economy to develop frameworks, guidance, supporting tools and requirements for the implementation of activities of all involved organizations, to maximize the contribution to Sustainable Development.

ISO 59 004 – Circular Economy – Terminology, principles and framework for implementation

ISO 59 010 – Circular Economy – Guidance on business models and value networks
ISO 59 020 – Circular Economy – Measuring and assessing circularity
ISO 59 040 – Circular Economy – Product Circularity Data Sheet
ISO 59 014 – Secondary materials - Principles, sustainability and traceability requirements

ISO TR 59 031 – Circular Economy – Performance based approaches
ISO TR 59 032 – Circular Economy – Review of business model implementation
• Meeting 1 (19th July 2023) & Meeting 2 (23rd August 2023). Meetings every 6-8 weeks.

• **Scope**: Balance between macro to entity-level initiatives for broader influence.

• **Work Segmentation**: Prioritizing key areas as per the Terms of Reference (ToR). Creating focused sub-groups for in-depth analysis and strategy development.

• **Collaborative Strategy**: Fostering collaboration for tangible changes in the aluminium value chain.
<table>
<thead>
<tr>
<th>Month</th>
<th>Title</th>
<th>Objective</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction and Circularity Framework Presentation</td>
<td>Understand and discuss the CWG ToR and expectations.</td>
<td>Review the proposed ASI circularity framework and identify how it aligns with the CWG ToR.</td>
</tr>
<tr>
<td>2</td>
<td>Review of ToR and Prioritisation</td>
<td>Deepen understanding of the ToR and identify priorities</td>
<td>Review the ToR in-depth. Conduct a materiality assessment of key issues to help prioritise.</td>
</tr>
<tr>
<td>3</td>
<td>Development and compilation of the circularity requirements matrix</td>
<td>Outline key circularity requirements and measurements within the aluminium sector</td>
<td>Consolidate all the contributions, ensuring consistency and accuracy. Resolve any discrepancies or conflicts in the data with inputs from the respective contributors.</td>
</tr>
<tr>
<td>4</td>
<td>Strengthening and refinement of PS Princ 4.</td>
<td>Deep-dive into the CWG ToR’s first aspect: Strengthening and refinement of PS Principle 4</td>
<td>Identify potential challenges and solutions in implementing these changes. Analise how Principle 4 addresses priorities identified in previous meeting.</td>
</tr>
</tbody>
</table>
| 5-8   | Formation and work of CWG Subgroups | Create dedicated groups for specific topics:  
• Waste reduction (overburdens, bauxite residue) and accounting (tailings)  
• Packaging – cans  
• Packaging – others  
• Transport - Automotive | Form subgroups to tackle specific topics. Develop offline approaches to support work and discuss metrics and measurement methods |
| 9-10  | Addressing Resource Efficiency in PS | Discuss and develop strategies for increasing resource efficiency | Start discussion on outcome-based criteria towards resource efficiency, including threshold values per process/supply chain activity. |
| 11-12 | Review and Consolidation | Review progress made, consolidate findings, and develop recommendations. Planning for Future Actions | Consolidate findings and observations made during the past months into a comprehensive report with recommendations to inform the SC. |
Final thoughts

• Are there any critical elements missing from our current ASI Circularity Framework?
• Do you believe the current framework adequately addresses the challenges we highlighted, particularly in relation to the linear economy and resource management?
• From an operational standpoint, are there any challenges you foresee in implementing the proposed strategies within the ASI Circularity Framework?
• How can we make these more actionable within the Aluminium industry?
Thank you!

Questions and Ideas?

gabriel@aluminium-stewardship.org


Downscaling Planetary Boundaries: Metals

See: Desing et al (2023)
Downscaling Planetary Boundaries: Aluminium

(A) Contribution to total impact

1. Aluminium
2. Copper
3. Steel
4. Cast iron
5. Zinc
6. Lead
7. Tin
8. Nickel
9. Gold
10. Silver
11. Platinum
12. Titanium
13. Chromium
14. Stainless steel

See: Desing et al (2023)

(B) Total impacts on segment boundaries

CO₂
CO₂eq
Biodiversity
Ozone depletion
P to ocean
P to soil
N emissions
Land use
Cropland use
Water consumption
Energy

See: Desing et al (2023)
GHG Method for PS 5.3 – recommendation for ASI endorsement
Today’s Standards Committee plan

1. A method for 1.5 degree Entity level GHG Pathway articulation
   a. Primary output-based slope(s)
   b. Casthouse, semis and fabrication procurement slope(s)
   c. Casthouse & semis process slopes

DECISION ON RECOMMENDATION

2. Applicability choices
   a. Intra-Entity portfolios
   b. Inter-Entity portfolios (group or corporate level slopes)

DECISION ON RECOMMENDATION

3. First iteration applicability
   a. Should the primary slopes ONLY apply to Entities containing Aluminium Smelters (ie exclude stand alone bx and Al₂O₃)

DECISION ON RECOMMENDATION

4. Auditor Guidance for Pathway articulation
   a. Base year choice
   b. Baseline verification (linkage to 5.1 and other – external – criteria)

DECISION ON RECOMMENDATION

5. Auditor Guidance for Pathway articulation (first cert)/Plan resilience

DISCUSSION

6. Auditor Guidance for Plan performance
   a. Excursions from the slope
   b. Delayed action
   c. Force majeure
   d. etc

DISCUSSION
Process

- ASI Standards Committee meet w/c 25th September
- Will consider draft method for recommendation to ASI Board (15 Nov 2023), under PSv3 criterion 5.3
- Standards Committee is ASI decision making body re changes to Standards and Guidance and may also direct amendments to method
- Endorsement by ASI Board would see inclusion of language/tools in Performance Standard Guidance initially
- Q1 2024 rollout, including training (see following)
- Third party initiatives and products due for delivery in Q4 2023 could see minor (sector slope) amendments to align
  - RMI Horizon Zero Product level Emission Reporting Guidance (Dec ‘23) & Procurement (2024)
  - Center for Climate Aligned Finance aluminium framework (Dec ‘23); see https://home.treasury.gov/news/press-releases/jy1744
  - No revised SBTi Sectoral Decarbonization Approach or Sector Guidance for aluminium coming any time soon, though ASI is in liaison with SBTi Aluminium team (along with IAI and RMI)
Timeline for discussion (assuming endorsement)

• ASI publish method and supporting documentation as a stand-alone document Jan 2024, noting incorporation into Guidance forthcoming in next update round, signalling that it applies to Audits post Guidance update

• Training and communication begins immediately on publication

• April/May 2024 – Guidance update publication (3.1.1)

• 2024:
  – Further discussion/decision by Standards Committee on additional Auditor Guidance (performance during re-certification)
  – Stand-alone Bauxite and Alumina cradle to gate slopes
  – Project: LULUCF emissions and potential incorporation into sectoral slopes
ASi Performance Standard v3.0 (2022) Criterion 5.3

The Entity shall:

a. Establish a GHG Emissions Reduction Plan and ensure a GHG Emissions Reduction Pathway consistent with a 1.5°C warming scenario, using an ASI endorsed methodology when available.

b. Ensure that the GHG Emissions Reduction Pathway includes an Intermediate Target covering a period no greater than five years, which:
   i. Addresses all Direct and Indirect GHG emissions.
   ii. Is developed using a Science-Based Approach endorsed by ASI, if available.
   iii. Is publicly disclosed.

c. Review the GHG Emissions Reduction Plan annually.

d. Review the GHG Emissions Pathway on any changes to the Business that alter baselines or targets.

e. Publicly disclose:
   i. The latest version of the GHG Emissions Reduction Pathway
   ii. The latest version of the GHG Emissions Reduction Plan.
   iii. Progress against the GHG Emissions Reduction Plan on an annual basis.
Primary (electrolytic) aluminium & precursors

- Fixed boundary, mine to smelter casthouse (electrolytic metal only)
- Cradle to gate emissions (direct and upstream indirect)
- Slope measured at casthouse **OUTPUT** (precursors – non-integrated alumina refiners and bauxite miners – will need to in-gather data from customers until SDAs for bauxite and alumina are developed, in 2024)
- Choice of slope:
  - All emissions in a single Pathway
  - Electricity and non-electricity emissions split Pathways (as per Center for Climate Aligned Finance DRAFT)
- Singular portfolio (Entity) slope or individual smelter casthouse slopes
Primary cradle to gate intensity

Electricity-related

Non-electricity-related
Primary cradle-to-gate intensity (single slope)
Non-electrolytic supply chain activities

• Dual slopes: casthouse & semi-fabrication
  – Metal procurement emissions intensity (scope 3 cat. 1)
  – Process emissions intensity (scopes 1 & 2)

• Single slope: fabrication
  – Metal procurement emissions intensity (scope 3 cat. 1)

• Procurement slope measured at supply chain activity INPUT

• Process slope measured at OUTPUT

• Slopes apply at Entity level, with procurement encompassing all metal entering the certification scope (even if from within same corporate system).
Simplified data entry

<table>
<thead>
<tr>
<th></th>
<th>Process Scope 1+2 Intensity (t CO2e/t Al)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casthouse in Baseline YEAR (2021)</td>
<td>0.315</td>
</tr>
<tr>
<td>Semi-fabrication process in Baseline YEAR (2021)</td>
<td>0.130</td>
</tr>
<tr>
<td>Fabrication process in Baseline YEAR (2021)</td>
<td></td>
</tr>
</tbody>
</table>

**Type of INPUT to which column B applies (column A applies to whole process):**

- 0 = purchased scrap (not including internal scrap) plus aluminium metal (cold or liquid)
- 10.0 = purchased cassthause products (not including those internally produced in Integrated cassthause)
- 12.0 = purchased semi-fabricated & fabricated products (not including those internally produced in integrated semi-fab or fabrication process)
Process slopes (casting & semi-fabrication)
Procurement: casthouse

Non-smelter casthouse:

- Average mass-weighted emissions intensity of input aluminium (cold metal + liquid metal + scrap (with yield factor applied) entering the Entity certification scope (i.e. purchased or transferred from outside the Entity) in the baseline year.

Smelter casthouse:

- Average mass-weighted emissions intensity of input aluminium (cold metal + liquid metal + scrap (with yield factor applied) entering the casthouse process in the baseline year.

Allocation method choice:

- The allocation of an emissions burden to input scrap (i.e. embodied carbon) is a decision for the Entity – the sectoral slope does not change accordingly (although the Entity slope will).

CASTING: casthouse inputs emissions intensity
Procurement: post-casthouse

SEMI-FABRICATION:

- Average mass-weighted emissions intensity of cast aluminium entering the Entity certification scope (i.e. purchased or transferred from outside the Entity) in the baseline year.

- Not including metal from integrated casthouse processes (which is captured in the prior process stage (casthouse))

FABRICATION:

- Average mass-weighted emissions intensity of semi-fabricated and fabricated aluminium entering the Entity certification scope (i.e. purchased or transferred from outside the Entity) in the baseline year.

- Not including metal from integrated semis processes (which is captured in the prior process stage (semi-fabrication))
SEMIS: Casthouse products procurement emissions intensity
FAB: Semis procurement emissions intensity
2. APPLICABILITY

See whiteboard for details
3. FIRST ITERATION APPLICABILITY

If we are looking to develop bauxite and alumina slopes in 2024 and in the interim stand along facilities would need to ingather downstream scope 3 data to develop their Pathways, might we not exclude such Entities from the requirement until we have such slopes?

How many current certificates apply to such situations?
- Dadco (Refining) - 08/2026
- Gulkula (Mining) - 06/2024
- MRN (Mining) - 01/2025
- Hydro B&A (doesn’t really count as mid and downstream assets are certified under a different Entity so would need to demonstrate Pathways there anyway)

Recommendation: do not apply current Pathway method at non-integrated mines/refineries – wait until such slopes are available
4. Base Year

- Entities that are developing GHG Pathways for the first time are encouraged to use the most recent year for which data is available as the base year.
- If an Entity has more detailed data for a previous year this is acceptable for validation purposes, as long as most recent year data is also disclosed.
- If the chosen base year is more than 3 years prior to the initial ASI Performance Standard Certification/Re-Certification Audit that is assessing conformance with Criterion 5.3 (e.g. to align with a corporate baseline), the most recent year data should indicate already achieved performance in line with the Entity Pathway in order for the Entity to be in conformance.
- The base year should be fixed for the duration of the Pathway.

- Intermediate Targets must cover a minimum of 5 years and a maximum of 10 years from the chosen base year.
- Intermediate Targets must cover a period no greater than five years from the chosen base year.
Demonstrating Conformance

- In addition to articulation of a GHG Pathway that aligns with (is at or below) the generated Entity slope, conformance in subsequent Audits would require demonstration of performance that follows (is at or below) the GHG Pathway, averaged (by production mass) over the certification period.

- For example:
  - Smelter casthouse
    - 2024 initial Audit
      - 2023 base year (8.6 t CO$_2$e/t Al)
      - Pathway slope Intermediate Targets: 2024: 8.4  2025: 8.2  2026: 7.8
    - 2027 re-certification Audit
      - Production 2024: x  2025: y  2026: z
      - Demonstrate an average production weighted emissions performance $a$, 2023–2026 of:
        - $a = \frac{(8.4(x)+8.2(y)+7.8(z))}{(x+y+z)}$
        - If $x = y = z$, then $a = 8.1$ tCO$_2$e/t Al
Some implications/issues

• Increase in non-conformances likely, even among existing certified Entities – some may not ever be able to achieve
  – May be (but not necessarily) regionally specific
• The sectoral slope with shift if action is delayed; this will steepen Entity slopes – how to cope with this (potentially) fast change and shifting targets.
• New facilities – from what base do they plot their slope?
• GHG Plans and relationship with GHG Pathways – auditor “stress tests”
• If primary doesn’t decarbonise at scale, downstream cannot meet the Pathway requirements (at scale)
  – first movers that can lock in low carbon supply (primary and/or recycled material) will be advantaged;
• Some Entities that were v3 Audited between April 2022 and the method endorsement/publication will not have GHG Pathways that follow an ASI endorsed method and may not have Intermediate Targets that meet the standard.
1. METHOD DECISION

1. Recommend to the ASI Board to endorse the GHG Pathways method:
   - output/procurement/process
   - choice of base year
   - group applicability

2. Exclude stand-alone mines and refineries from requirement in first iteration.

3. Publish endorsed method and tool and audit/implementation guidance as stand alone document in January 2024.

4. Incorporate into Guidance v3.1.1 (with SC oversight) in April 2024.

5. ASI secretariat to work on:
   a. Integrated process slopes (Oct 23)
   b. Bx and Al2O3 sectoral slopes (2024)
   c. Land use emissions (2024)
   d. Training, communication & rollout (from Q4 2023)

6. Any updates to sector slopes, method or guidance (based on changing science and/or assurance/implementation experience requires (as usual) Standards Committee (and thence Board) decision
Partnerships
Priorities Update

ASI Standards Committee meeting, Liverpool

28 September 2023
Agenda

1. ASI Partnerships priorities
2. ISEAL Update
3. Downstream Engagement
4. Benchmarking and alignment
5. Next steps
ASI Partnerships

ASI Partnerships Priorities – the ‘Who’:  
➢ **Climate Change**  
➢ **Downstream sectors:** Automotive, Building & Construction, Other (Aerospace, Renewable Energy, Packaging)  
➢ **Due Diligence Regulation**  
➢ **Financial & Investment Sector**  
➢ **ISEAL Alliance**

Resourcing:  
- Wen Zhang started on 19 September as Assurance & Benchmarking Manager  
- Brings strong analytical experience from WEF, Alcoa and CM Group  
- Will work on TCFD / TNFD alignment project, EU / national regulations and other benchmarking projects
• Successful evaluation against 3 ISEAL Codes with very few NCs overall
  ✓ Standard-Setting Code in 2019 and 2023
  ✓ Assurance Code in 2020
  ✓ Impacts Code in 2021

• New: Annual membership requirements and reporting

• Marieke member of the ISEAL Technical Committee and Steering Group for Integrated Code, Andrew applying for Financial Committee

• ASI team participates in number of ISEAL Communities of Practice and working groups

• ASI and RJC are the only Code Compliant members of ISEAL in the mining and metals space; CopperMark, IRMA, ResponsibleSteel, Swiss Better Gold are Community Members (but working towards Code Compliant membership) – others applying (MAC–TSM)
ASI engagement with ISEAL in 2023

**Completed:**

- Successfully completed independent evaluation against Standard-Setting Code Part II (no NCs)
- Submitted feedback on ISEAL Integrated Code during public consultation periods
- Reached out to other ISEAL Code Compliant members to understand how they approach **repraisal risks in auditing**
- Presented on ISEAL webinar on ‘Operational or site-level grievance mechanisms: standard requirements and auditing challenges’
- Submitted EOIs for ISEAL Innovations Fund, latest one focusing on human rights training for auditors (with Pillar Two)

**Planned:**

- Vicky and Klaudia participated in ISEAL Members Week in Amsterdam last week
- Update ASI’s Annual Membership Improvement Plan
- Andrew to join the ISEAL Finance Committee
- If successful, implement ISEAL Innovations Fund project with Pillar Two
Chapter 0: Policies, Procedures, and responsibilities for scheme components

Chapter 1: **Strategy for impact**

Chapter 2: **Scheme integrity, governance, and operations**

Chapter 3: Scheme performance and continual improvement (monitoring, evaluation, and **learning**; or MEL)

Chapter 4: Data and information management

Chapter 5: Stakeholder engagement

Chapter 6: Standards development and **maintenance**

Chapter 7: Assurance

Chapter 8: **Claims**
<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Second round consultation</td>
<td>30 May – 31 July 2023</td>
</tr>
<tr>
<td>Secretariat prepares the final draft</td>
<td>July – October 2023</td>
</tr>
<tr>
<td>Steering Group review the final draft for recommendation to the Technical Committee</td>
<td>October 2023</td>
</tr>
<tr>
<td>Technical Committee makes recommendation of final draft to the ISEAL Board</td>
<td>November 2023</td>
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<tr>
<td>Board approves final version</td>
<td>Early 2024</td>
</tr>
</tbody>
</table>
What does this mean for ASI?

- Code covers new issues (claims, due diligence, governance) but is less thorough and prescriptive than existing Codes of Good Practice
- As a **Code Compliant** member:

<table>
<thead>
<tr>
<th>ISEAL Code Compliant member</th>
<th>Evaluation techniques: ISEAL exploring staff and key stakeholder interviews, sampling approaches and reviewing documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Submission to ISEAL of a self-assessment against new requirements of the ISEAL Code of Good Practice (the Code)</td>
<td></td>
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<tr>
<td>• Transition plan submitted to ISEAL demonstrating how the new requirements of the Code will be met</td>
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<tr>
<td>• Dialogue and agreement on the evaluation model to maintain compliance</td>
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<tr>
<td>• Commitment from the ISEAL Code Compliant Member on the course of evaluations to maintain compliance with the Code</td>
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<thead>
<tr>
<th></th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-2025 deadline for demonstration of compliance with new requirements</td>
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<td>Annual surveillance assessment</td>
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<tr>
<td>Independent evaluation(s) against the full scope of the ISEAL Code of Good Practice</td>
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</tbody>
</table>

- **Evaluation techniques:** ISEAL exploring staff and key stakeholder interviews, sampling approaches and reviewing documentation
Downstream Engagement – Automotive

- Collaborating with **Drive Sustainability**, **GBA** and **RSCI, IRMA** and with OEMs bilaterally
- Aim is to:
  - Encourage these organisations to recognise ASI Certification so that ASI Certified Entities can use their PS Certification to meet requirements of these initiatives and thus reduce duplication of efforts.
  - Inform initiatives of ASI’s system (standards, assurance and impacts) and our Beyond Certification work and outcomes.

**Challenges:**
- Level of recognition between initiatives is low
- Consumer facing so have been target of civil society campaigns
- Interest in initiatives that cover all metals, many (therefore) joined IRMA
- Increasingly want to do their own audits / site visits particularly in high-risk areas (as part of due diligence requirements and processes)
Downstream Engagement – Building & Construction

ASI is recognised by several Green Building Schemes:

- **BREEAM** – completed
- **US Green Building Council LEED** – completed (but a pilot credit)
- **Green Building Council Australia (GBCA)** – completed
- **German Green Building Council (DGNB)** – on hold (no response from DGNB)
- **Belgium Construction Certification Association (BCCA)** – ongoing

**Challenges:**
- Fragmentation of supply chain initiatives, often on national basis
- Response rates in these initiatives can be low
- However as the focus grows on embodied carbon (and other issues) in material sourcing for the built environment, it is hoped that interest in ASI and its specialist knowledge will increase
**LME – OECD Alignment Assessment**

- ASI achieved **Conditional Alignment** in 2022
- To become **Fully Aligned**, 3 audit shadows need to be conducted at ASI members:
  - One completed
  - Two being planned, but challenging since not much insight in audit pipeline
- ASI on **OECD Multi-Stakeholder Steering Group (MSG)** since April 2023

**Mining Standards Convergence:**

- **Copper Mark, ICMM, MAC** and **World Gold Council** are consolidating their existing standards and systems into one single global standard to ‘counter’ IRMA
- Copper Mark will be Secretariat and their assurance model likely to be used
- Monitor progress and log Mining Standards Convergence requirements for upcoming ASI Standards Revision
- **IRMA** is keen for ASI to become ally as being the only two ‘truly multi-stakeholder initiatives’
  - Engagement goal: IRMA Buyers Group to stop sending letters to ASI Members
Benchmarking & Recognition – Challenges

- **Resource** and **time-intensive**
- **Under-resourced** in many organisations
- Intent is there but at the same time **competition between schemes** (who have their own agendas and constituencies)
- Increased **scrutiny on assurance**:
  - Benchmarking assessments becoming more rigorous and include shadow audits (not just ‘standards on paper’)
  - Standards strengthening their own oversight programs (including witness assessments etc)
- May **benefit only some companies** (still need to do the work required from other scheme)

**Possible consequences:**
- Less benchmarking **between schemes** but **more alignment assessments of schemes overall** (by regulators etc)
- Roles for OECD (and ISEAL) in setting credibility criteria of schemes
- Alignment may decide which schemes are fit for purpose/can exist and which ones not
- More schemes may **merge** (Mining Standards Convergence) or proliferation of schemes?
Sustainability reporting: IFRS and ISSB

• The Trustees of the IFRS Foundation announced the formation of the International Sustainability Standards Board (ISSB) on 3 November 2021 at COP 26 in Glasgow

• ISSB standards set global baseline of sustainability disclosures focused on the needs of investors and financial markets

• IFRS S1 and IFRS S2 Standards launched on 26 June 2023
  • IFRS S1: General Requirements for Disclosure of Sustainability-related Financial Information
  • IFRS S2: Climate-related Disclosures (incorporates TCFD recommendations)

• IFRS Foundation taken over the monitoring of the progress on companies’ climate-related disclosures from the TCFD. IFRS also working on new areas (human capital, human rights, biodiversity and nature, integrated reporting)

• In addition, interoperability going on between ISSB and EU Commission (for CSRD and ESRS), CDP (will align platform with S2) and GRI

• There won’t be one standard, however there will be strong focus on harmonization between reporting standards
Sustainability reporting: TCFD and TNDF frameworks

**TCFD:**
Companies should disclose the relevant information within the framework of the four recommended core subjects for a TCFD-aligned report.

**TNFD:**
The TNFD aims to build a risk management and disclosure framework that can be used by organisations of all sizes in all jurisdictions to identify, assess, manage and disclose nature-related dependencies, impacts, risks and opportunities.
Emerging reporting architecture

Where TNFD Fits in the Emerging Reporting Architecture

International & Domestic Policy Goals
- Paris Agreement (2.0 / 1.5 targets)
- Global Biodiversity Framework (Portfolio of Targets)

International Frameworks for Corporate and FI Action

Corporate Reporting Standards
- GRI
- IFRS®

Market Regulation
- SEC (US)
- EFRAG (EU)
- JSA (Japan)
- SEBI (India)
- Others...

Corporate & FI reporting activity

Report Preparers & Users
ASI focus is on:
- EU Corporate Sustainability Due Diligence Directive (CSDDDD)
- EU Corporate Sustainability Reporting Directive (CSRD) and European Sustainability Reporting Standards (ESRS)
- EU Green Claims Directive

ASI is monitoring:
- EU Batteries Regulation
- EU Critical Raw Materials Act
- EU Deforestation Regulation
- EU Forced Labour Regulation
- Legislation and initiatives in China
- Input/advice/questions from Association members
Regulatory Developments – What, when, who

**EU CSDDD**
- Sets obligations for companies related to actual and potential human rights and environmental adverse impacts, with respect to own operations, the operations of their subsidiaries, and the chain of activities of the company
- Corporate due diligence duty and duties for Directors
  - Group 1: +/- 9,400 companies with 500+ employees and net EUR 150 million+ turnover worldwide.
  - Group 2: +/- 3,400 companies in high-impact sectors with 250+ employees and net EUR 40+ million turnover worldwide, and operating in defined high impact sectors > extraction of minerals.

**EU CSRD / ESRS**
- Will legally oblige more than 55,000 global companies to conduct verifiable, comparable and meaningful sustainability reporting based on the newly developed EU Sustainability Reporting Standards (ESRS)
- Updates and replaces the existing Non-Financial Reporting Directive (NFRD)
- EU CSDDD outsources reporting requirements to EU CSRD

**EU Green Claims Directive**
- Provides consumers with accurate and accessible general information on the environmental impact of products and services
- Reduces the proliferation of labelling schemes and claims who are greenwashing

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**Timeline**

1 June 2023: EP plenary voted on and approved its position

2024: CSDDD becomes law

2026: The CSDDD will be transposed into national law by the Member States + Group 1 need to begin reporting

2027: Small credit institutions and insurance undertakings (reporting in 2027 on 2026 data)

2026+: Applies 24 months after the date of Entity into force

1 July 2022: CSRD enters into force

2024: Organisations already subject to NFRD start their CSRD reporting (reporting in 2025 on 2024 data)

2026: Listed SMEs (reporting in 2027 on 2026 data)

March 2023: Commission adopts proposal for a Directive on green claims

2025: Large organisations not currently subject to NFRD (reporting in 2026 on 2025 data)

2026: Companies and businesses in Group 2 will need to begin their CSDDD reporting and disclosure

1 July 2023: CSRD enters into force

2024: CSDDD becomes law

2026: The CSDDD will be transposed into national law by the Member States + Group 1 need to begin reporting

2027: Small credit institutions and insurance undertakings (reporting in 2027 on 2026 data)

2026+: Applies 24 months after the date of Entity into force
Alignment: Next Steps

Challenges:
➢ Continued proliferation of initiatives by topic, region, sector, material
➢ Regulation entering spaces previously left to voluntary initiatives

Next steps:
Mapping the ASI Performance V3 and CoC V2 Standards against the frameworks of...

TCFD and TNFD:
• Governance
• Strategy
• Risk management
• Metrics and Targets (additional ASI categories may include Due diligence and Disclosure, as per below)

EU CSDDD and CSRD / ESRS
• Human Rights and Environmental Due Diligence
• Sustainability Reporting

... and discuss with SC to discuss including in next Standards Revision
Discussion and Q&A
2024–27 Priorities

• Restructuring of Principles
  – Systemic performance
    – Adaptation of existing criteria
    – Consolidation of existing sub-criteria (e.g. public disclosure)
  – Outcomes based criteria
    – Thresholds
    – Pathways
    – Circularity metrics
    – Etc

• Changes to supply chain activities/applicability
  – New activities (e.g.
    – Non-linear processes
  – Applicability of systemic criteria (above) at group level (agnostic of SCA)
  – Linkage to potential new certifying membership applicability
    – E.g. carbon products (anodes etc), chemical aluminas, scrap management, pre-melt processing, traders

• Chain of Custody Standard evolution

• Thematic/ risk gaps in current Criteria
  – Mine tailings
  – Sound/vibrations
  – Wellbeing/psychological health & safety

• Claims and Claims Guide
ASI Chain of Custody Standard evolution

ASI Standards Committee Meeting, Liverpool

28 September 2023
ASI Chain of Custody (CoC) Standard

- Enables a link between verified practices under the ASI Performance Standard at successive steps of the supply chain, to the Products produced by ASI Certified Entities.

Objective
- Increase the supply of, and demand for, ASI Aluminium through the global value chain.

Value to Certified Members
- Enhance transparency
- Access to sustainability data
- Respond to customers’ requests
- Make claims for end-use products
- Prepare for regulatory compliance requirements
Chain of Custody Qualitative Research Interviews

- Interviews conducted between 26 June and 31 August, 2023

- 15 Entities from:
  - Production and Transformation (9),
  - Industrial Users (4),
  - Downstream Supporters Membership classes (1),
  - Non-Members (1).

- 11 Entities had achieved a CoC Certification.
Objective & Questions

• How ASI CoC Certification is being used in practice and how ASI CoC Standard may need to evolve in the future to meet market and stakeholder expectations.
• Inform ASI Standards revision in 2027.

Main topics discussed:
1. Internal/external drivers for ASI CoC Certification.
2. Challenges in implementing and auditing the current ASI CoC Standard.
3. The ‘Dream’ ASI CoC Standard: what would it deliver?
4. Interest in sustainability data.
1.5 Degree Aligned Emissions Pathways for the Aluminium Value Chain
1. Aluminium sector 1.5 degree greenhouse gas pathway(s) and emissions budget 30 mins
2. A “Sectoral Decarbonisation Approach” (SDA) 15 mins
3. ASI Performance Standard methodological gap and method “constraints” 15 mins
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The aluminium sector

- Is responsible for...
  - ...around 2% of global annual anthropogenic GHG emissions (as CO$_2$e);
  - ...around 4% of CO$_2$ emissions;
- Emissions are concentrated in primary aluminium production (95%);
- Electricity-related emissions in aluminium smelting (electrolysis) make up 60% of total sectoral emissions;
- High (regional and asset-level) variability in electricity-related emissions in aluminium smelting, driven by power mix, all other emissions exhibit relatively low variability;
- Availability of (quality) scrap and current “lowest available carbon” primary is a limiting factor; as the sector decarbonises the latter may ease, but the former remains constrained and will be unevenly distributed;
- The sector will need similar volumes of primary aluminium in 2050 as today, even with near 100% recycling rates.
Net Zero Emissions by 2050 Scenario

Definitions
A scenario which sets out a pathway for the global energy sector to achieve net zero CO2 emissions by 2050. It doesn’t rely on emissions reductions from outside the energy sector to achieve its goals. Universal access to electricity and clean cooking are achieved by 2030.

Objectives
To show what is needed across the main sectors by various actors, and by when, for the world to achieve net zero energy related and industrial process CO2 emissions by 2050 while meeting other energy-related sustainable development goals such as universal energy access.

EMISSIONS REDUCTION
Aluminium Sector (million tonnes CO2e)

- Only global aluminium sector 1.5 degree scenario (1.5DS)
- “Broadly aligned” with IEA NZE scenario
- Incorporates non-CO₂ GHG emissions
- Mining to semi-fabrication (including recycling)

https://international-aluminium.org/resource/1-5-degrees-scenario-a-model-to-drive-emissions-reduction/
Global metal supply

Primary Aluminium (million tonnes)

Post-consumer scrap (million tonnes)

Pre-Consumer scrap* (million tonnes)

*Pre-consumer scrap generated during the production of final products from semis.
Primary aluminium emission sources, 2021 (source: IAI)
ASI PS Certifying Smelters (scopes 1+2+3 from anode purchases only)

Source: CRU Group
https://emissionsanalysistool.crugroup.com
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The Sectoral Decarbonisation Approach (SDA) is a method to derive a company specific benchmark from sector specific decarbonisation trajectory. The calculation steps are as follows:

\[ d = CI_b - SI_{2050} \]

\( d \): Initial performance in base year relative to 2050 sector target  
\( CI_b \): Company emissions intensity in base year  
\( SI_{2050} \): Sector emissions intensity in year 2050

\[ p_y = \frac{SI_y - SI_{2050}}{SI_b - SI_{2050}} \]

\( p_y \): Decarbonisation index of the sector in year \( y \)  
\( SI_y \): Sector emissions intensity in year \( y \)  
\( SI_b \): Sector emissions intensity in base year  
\( SI_{2050} \): Sector emissions intensity in 2050

\[ CI_y = d \times p_y + SI_{2050} \]

\( CI_y \): Company emissions intensity benchmark in year \( y \)

From RMI Center for Climate Aligned Finance (DRAFT)

- **Science Based Targets Initiative** have an SDA for aluminium, but:
  - Not 1.5 degree-aligned
  - Not applicable to whole value chain
  - Applies to direct (scope 1) emissions only
  - SBTi are “working on” a revised SDA, but will not be published any time soon (2025 at earliest) and will only apply to primary at first.

- SDA is being used by CCAF and was preferred approach of the ASI Climate Change WG

- CCAF SDA not applicable to whole value chain and focused on measuring performance of investment portfolio rather than Entity
Sectoral Decarbonisation Approach
DRAFT Center for Climate Aligned Finance Framework
• Sectoral Decarbonisation Approach:
  – Convergence on a target intensity following a sectoral “slope” or slopes
  – Requires sectoral absolute emissions budget in a given period (year) and sectoral activity data (production/shipments/procurements) to define a (sectoral) intensity slope
  – Entity/asset/supply chain activity can be mapped to the sectoral slope with a known baseline intensity as long as the Entity/asset/supply chain activity has the same scope (system boundary) as the sectoral slope.

• Direct and indirect = cradle to gate (broadly equivalent to GHG Protocol Scopes 1, 2 and 3 (cats. 1, 3 & 4 – upstream)
• IAI activity and emissions data at various points on the value chain allow definition of multiple SDA Pathways, for different Entity/supply chain activity types
Sectoral (average) slope measured at different points on the value chain
What is the method for?

• It is a way to measure ASI Entity (or other defined entity – asset, corporation, site) performance over time in line with a sectoral 1.5 degree scenario;
• It respects the sectors 1.5DS carbon budget (so slopes may/will change if action is delayed);
• It is forward-looking;
• It is not a measure of “low carbon”, “green”, “net zero” aluminium;
• ASI Performance Standard does have a criterion for smelter emissions performance today (5.2), designed as a way to exclude new fossil fuel based production;
• Criterion 5.2 is broadly aligned with the SDA method (we will explore later) for a currently operating coal fired smelter, but it is not a measure of “low carbon aluminium” either.

➢ ASI IS NOT DEVELOPING A “LOW CARBON STANDARD” BUT THAT DOESN’T STOP STAKEHOLDERS FROM:
  – THINKING WE ARE...
  – THINKING WE SHOULD...

ASI Performance Standard v3 (2022) 5.2 Aluminium Smelter GHG Emissions Intensity.

Where an Entity is engaged in Aluminium Smelting and where the Aluminium Smelter:

a. Started production after 2020, the Entity shall demonstrate that the average Mine to Metal Emissions intensity is below 11.0 tonnes CO2e per metric tonne of cast Aluminium (t CO2e/t Al).

b. Was in production up to and including 2020, the Entity shall demonstrate that Mine to Metal Emissions intensity:
   i. Is below 11.0 t CO2e/t Al.
      or
   ii. Has been reduced by a minimum 10% over the previous three reporting periods and that the Entity has established GHG Emissions abatement plans that ensure Mine to Metal Emissions intensity is:
      a. below 13.0 t CO2e/t Al by end 2025, and
      b. below 11.0 t CO2e/t Al by end 2030.
ASi Performance Standard v3.0 (2022) Criterion 5.3

The Entity shall:

a. Establish a GHG Emissions Reduction Plan and ensure a GHG Emissions Reduction Pathway consistent with a 1.5°C warming scenario, using an ASi endorsed methodology when available.

b. Ensure that the GHG Emissions Reduction Pathway includes an Intermediate Target covering a period no greater than five years, which:
   i. Addresses all Direct and Indirect GHG emissions.
   ii. Is developed using a Science-Based Approach endorsed by ASi, if available.
   iii. Is publicly disclosed.

c. Review the GHG Emissions Reduction Plan annually.

d. Review the GHG Emissions Pathway on any changes to the Business that alter baselines or targets.

e. Publicly disclose:
   i. The latest version of the GHG Emissions Reduction Pathway
   ii. The latest version of the GHG Emissions Reduction Plan.
   iii. Progress against the GHG Emissions Reduction Plan on an annual basis.
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   iii. Progress against the GHG Emissions Reduction Plan on an annual basis.

Additionally, the method needs to:

- Apply to ALL certifying Entities
  - 5.3 is not just for smelters, it is for all P&T and IU Entities
- Be simple to use (by Entities) and communicated (by ASI)
- Produce Entity Pathways and Targets that are Auditable (simplicity and consistency)
- Be fair in its treatment of similarly scoped Entities (benchmark-able)
- Have reasonable data requirements, while helping to drive improvements in data transfer/transparency
- Use, reference and harmonize with existing Guidance, frameworks and emerging approaches (including regional approaches), while meeting the requirement of 1.5 alignment (c. 15–16 GT CO₂e emissions budget to 2050).
Scope 3 categories

The GHG Protocol

Scope 3
- Leased assets
- Employee commuting
- Purchased goods/services

Scope 2
- Purchased energy
- Purchased heating & cooling
- Purchased steam

Scope 1
- Company facilities
- Company vehicles

Scope 3
- Transport & distribution
- Processing of sold product
- Use of sold products
- Leased facilities
- Investments
- Franchises
- End of life treatment

UPSTREAM ACTIVITIES
REPORTING COMPANY
DOWNSTREAM ACTIVITIES
Methodological gaps in aluminium value chain

• While there are emerging emission intensity pathway methods (SDA) for some parts of the aluminium value chain, there are gaps.

• When the WG started its work:
  ✓ there are existing/draft/emerging methods;
  ✗ there are currently no well articulated methods;
  ▼ existing methods could be adapted.
<table>
<thead>
<tr>
<th>ASI Member Class</th>
<th>Supply Chain Activity (ASI Entities)</th>
<th>Broad weight of Scope 3 emissions (up/downstream) as a share of SCA total</th>
<th>Primary cradle to gate</th>
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</thead>
<tbody>
<tr>
<td>P&amp;T</td>
<td>Bauxite Mining</td>
<td>📂 📂 📂 📂</td>
<td>✔️</td>
<td>N/A</td>
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<tr>
<td>P&amp;T</td>
<td>Alumina Refining</td>
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<td>Aluminium Smelting (electrolysis)</td>
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<td>✔️</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>P&amp;T</td>
<td>Casthouses</td>
<td>Primary</td>
<td>📂</td>
<td>(scrap share)</td>
<td>N/A</td>
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<tr>
<td></td>
<td></td>
<td>Secondary</td>
<td>📂 📂</td>
<td>(scrap share)</td>
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<tr>
<td>P&amp;T</td>
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<td>📂 📂</td>
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<td>N/A</td>
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<td>N/A</td>
<td>N/A</td>
<td>📃 Procurement (scope 3 category 1) pathway</td>
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<tr>
<td>• IU</td>
<td>Other manufacturing or sale</td>
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<td>N/A</td>
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### ASI Manufacturing and Recycling Scope 3 Activity

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<td>P&amp;T</td>
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<td>N/A</td>
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<tr>
<td>P&amp;T</td>
<td>Alumina Refining</td>
<td>↓</td>
<td>✓</td>
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<td><strong>Primary</strong></td>
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<td>✓ (scrap share)</td>
<td>N/A</td>
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<td>✓ (scrap share)</td>
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- **P&T** indicates primary manufacturing processes.
- **IU** indicates in-use processes.
- **N/A** indicates not applicable or not available.

**Notes:**
- Primary procurement pathway (mass-weighted) for scope 3 category 1?
- (cold metal g2g – just use recycling slope?)
- (scrap share)
- METHODOLOGICAL ALIGNMENT REQUIRED ON BURDEN OF SCRAP!!
- could use IEA electricity slope
- Procurement (scope 3 category 1) pathway
### Supply Chain Activity (ASI Entities)

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<td>(if using casthouse mass allocation slope)</td>
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<td></td>
<td>Secondary</td>
<td>🔄 🔄</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P&amp;T</td>
<td>Aluminium Re-melting/Refining</td>
<td>➔</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>P&amp;T</td>
<td>Semi-fabrication</td>
<td>➔ 🔄 🔄</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• P&amp;T</td>
<td>Material conversion</td>
<td>➔ 🔄 🔄 🔄</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IU</td>
<td>Other manufacturing or sale</td>
<td>➔ 🔄 🔄 🔄 🔄</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **P&T** (Mining & refining C2G) (at smelter casthouse)
- Cut-off/top down
- Mass allocation/bottom up
- Allocation choice determined by scrap generator/supplier

As at 10 July 2023
Primary Aluminium

IAI Cradle-to-Gate Guidance

Scope 1
- Mining
- Refining
- Electrolysis
- Casting Primary

Scope 2
- Production of Purchased Electricity and Heat
- Production of Self-Generated Electricity and Heat

Scope 3
- Production of ancillary materials
- Production of fuel
- Waste Processing
- Upstream Transport
Primary cradle-to-gate intensity

t CO2e/t Al
Challenges – addressed by July 2023 method

• There is only one (cradle to gate) sectoral slope articulated/published with annual intensities:
  – IAI/Misson Possible Partnership primary aluminium (measured at the smelter casthouse, includes no recycling)
• BUT, there are periodic IAI emissions and activity data for semi-fabricated and fabricated outputs
• ...and total casthouse (primary + post-consumer + pre-consumer) outputs can be derived from published data.
• Emissions from primary production dominate the sector, so a reasonable assumption is that interpolated cradle to gate intensities of downstream processes follow a primary slope (between the known periodic intensities)
• Hence, ASI Secretariat developed top-down sectoral slopes for semis, fabricated and total casthouse (primary plus recycled) aluminium output.
• These are then used to define slopes for entities with these activities in their scope, given a baseline performance.
• These top-down slopes make no reference to recycled content or changes in recycling input (at Entity level) over time; they are just emissions slopes for a given GHG intensity baseline. The emissions allocated to scrap OUTPUT however, do play a role.
• Where scrap input to a casthouse is allocated a carbon footprint, however, a bottom-up analysis that sums input slopes is required; given that there is an internal loop or loops of emissions within such an approach, a top-down reference sectoral slope, with a fixed boundary that counts all emissions and all activities in a single bucket, cannot be used.
• Lets explore each of these in turn:
1.5° Scenario for the Aluminium Sector

Table 1: 1.5°GHG Budget Aluminium Sector

<table>
<thead>
<tr>
<th>Activity (Mt Al)</th>
<th>2018</th>
<th>2030</th>
<th>2040</th>
<th>2045</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity (Electrolysis)</td>
<td>670</td>
<td>461</td>
<td>74</td>
<td>15</td>
<td>6</td>
</tr>
<tr>
<td>Electricity (Other)</td>
<td>33</td>
<td>27</td>
<td>30</td>
<td>14</td>
<td>9</td>
</tr>
<tr>
<td>Aluminium industry</td>
<td>279</td>
<td>231</td>
<td>176</td>
<td>320</td>
<td>76</td>
</tr>
<tr>
<td>Aluminium in Other Sectors + Transport</td>
<td>77</td>
<td>64</td>
<td>49</td>
<td>34</td>
<td>21</td>
</tr>
<tr>
<td>FPC</td>
<td>35</td>
<td>29</td>
<td>22</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>Aluminium Sector</td>
<td>1,055</td>
<td>813</td>
<td>341</td>
<td>236</td>
<td>121</td>
</tr>
</tbody>
</table>

Table 2: 1.5° Budget Aluminium Sector by Process

<table>
<thead>
<tr>
<th>Activity (Mt Al)</th>
<th>2018</th>
<th>2030</th>
<th>2040</th>
<th>2045</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Aluminium</td>
<td>1,055</td>
<td>813</td>
<td>341</td>
<td>236</td>
<td>121</td>
</tr>
<tr>
<td>Recycled Aluminium</td>
<td>17</td>
<td>170</td>
<td>149</td>
<td>63</td>
<td>37</td>
</tr>
<tr>
<td>Internal Scrap / Fabrication Scrap</td>
<td>11</td>
<td>8</td>
<td>7</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Sums</td>
<td>25</td>
<td>35</td>
<td>24</td>
<td>23</td>
<td>14</td>
</tr>
<tr>
<td>Aluminium Sector</td>
<td>1,055</td>
<td>813</td>
<td>341</td>
<td>236</td>
<td>121</td>
</tr>
</tbody>
</table>

Table 2: 1.5°Production

<table>
<thead>
<tr>
<th>Activity (Mt Al)</th>
<th>2018</th>
<th>2030</th>
<th>2040</th>
<th>2045</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Aluminium</td>
<td>65</td>
<td>65</td>
<td>64</td>
<td>71</td>
<td>70</td>
</tr>
<tr>
<td>Recycled Aluminium</td>
<td>17</td>
<td>16</td>
<td>18</td>
<td>16</td>
<td>24</td>
</tr>
<tr>
<td>New Scrap / Manufacturing Scrap</td>
<td>22</td>
<td>23</td>
<td>24</td>
<td>18</td>
<td>13</td>
</tr>
<tr>
<td>Old Scrap / Post-Consumer Scrap</td>
<td>32</td>
<td>35</td>
<td>32</td>
<td>27</td>
<td>20</td>
</tr>
<tr>
<td>Internal Scrap / Fabrication Scrap</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Sums</td>
<td>85</td>
<td>125</td>
<td>125</td>
<td>125</td>
<td>125</td>
</tr>
<tr>
<td>Final Product Shipments</td>
<td>82</td>
<td>125</td>
<td>125</td>
<td>125</td>
<td>125</td>
</tr>
</tbody>
</table>

Table 4: 1.5°Intensity Data (Process Emissions)

<table>
<thead>
<tr>
<th>Activity ( tonnes per tonne)</th>
<th>2018</th>
<th>2030</th>
<th>2040</th>
<th>2045</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Aluminium</td>
<td>16.1</td>
<td>11.8</td>
<td>4.2</td>
<td>2.2</td>
<td>1.2</td>
</tr>
<tr>
<td>Recycled Aluminium (Gate to Gate)</td>
<td>0.6</td>
<td>0.3</td>
<td>0.4</td>
<td>0.2</td>
<td>0.1</td>
</tr>
<tr>
<td>Sums (Gate to Gate)</td>
<td>0.3</td>
<td>0.3</td>
<td>0.4</td>
<td>0.2</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Casthouse “cut-off method”

Emissions Mt CO2e (2018, 2030, 2040, 2045 & 2050)

https://international-aluminium.org/wp-content/uploads/2021/10/1.5-Scenario-Dataset-3.xlsx
<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2040</th>
<th>2045</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fabrication and Semi-fabrication Emissions Mt CO2e (2018, 2030, 2040, 2045 &amp; 2050)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 1: 1.5°C Scenario for the Aluminium Sector**

<table>
<thead>
<tr>
<th>CO₂e emissions (Mt)</th>
<th>2018</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2040</th>
<th>2045</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity (Electrolysis)</td>
<td>670</td>
<td>481</td>
<td>74</td>
<td>15</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Electricity (Other)</td>
<td>33</td>
<td>37</td>
<td>32</td>
<td>14</td>
<td>10</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Aluminium Industry</td>
<td>279</td>
<td>231</td>
<td>176</td>
<td>320</td>
<td>76</td>
<td>31</td>
<td>31</td>
</tr>
<tr>
<td>Aluminium in Other Sectors – Transport</td>
<td>77</td>
<td>64</td>
<td>49</td>
<td>34</td>
<td>21</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>FGC</td>
<td>35</td>
<td>29</td>
<td>22</td>
<td>15</td>
<td>10</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Aluminium Sector</td>
<td>1,095</td>
<td>813</td>
<td>341</td>
<td>136</td>
<td>121</td>
<td>53</td>
<td>53</td>
</tr>
</tbody>
</table>

**Table 2: 1.5°C Scenario for the Aluminium Sector by Process**

<table>
<thead>
<tr>
<th>CO₂e emissions (Mt)</th>
<th>2018</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2040</th>
<th>2045</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Aluminium</td>
<td>1,037</td>
<td>796</td>
<td>238</td>
<td>155</td>
<td>57</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>Electrolysis</td>
<td>523</td>
<td>586</td>
<td>155</td>
<td>75</td>
<td>40</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>Recycled Aluminium</td>
<td>11</td>
<td>9</td>
<td>7</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Internal Scrap/Fabrication Scrap</td>
<td>11</td>
<td>9</td>
<td>7</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Primary Process</td>
<td>20</td>
<td>32</td>
<td>24</td>
<td>23</td>
<td>14</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Aluminium Sector</td>
<td>1,095</td>
<td>813</td>
<td>341</td>
<td>136</td>
<td>121</td>
<td>53</td>
<td>53</td>
</tr>
</tbody>
</table>

**Table 3: 1.5°C Production**

<table>
<thead>
<tr>
<th>CO₂e emissions (Mt)</th>
<th>2018</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2040</th>
<th>2045</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Aluminium</td>
<td>64</td>
<td>65</td>
<td>69</td>
<td>71</td>
<td>70</td>
<td>63</td>
<td>63</td>
</tr>
<tr>
<td>Recycled Aluminium</td>
<td>42</td>
<td>49</td>
<td>57</td>
<td>66</td>
<td>74</td>
<td>51</td>
<td>51</td>
</tr>
<tr>
<td>Non Scrap/Manufacturing Scrap</td>
<td>13</td>
<td>16</td>
<td>15</td>
<td>15</td>
<td>12</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Old Scrap/Post-Consumer Scrap</td>
<td>13</td>
<td>16</td>
<td>15</td>
<td>15</td>
<td>12</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Internal Scrap/Recycling Scrap</td>
<td>13</td>
<td>16</td>
<td>15</td>
<td>15</td>
<td>12</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Semi-Produced</td>
<td>20</td>
<td>32</td>
<td>24</td>
<td>23</td>
<td>14</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Final Product Shipment</td>
<td>98</td>
<td>118</td>
<td>126</td>
<td>136</td>
<td>144</td>
<td>53</td>
<td>53</td>
</tr>
</tbody>
</table>

**Table 4: 1.5°C Efficiency Data (Process Emissions)**

<table>
<thead>
<tr>
<th>CO₂e emissions intensity (tonnes per tonne)</th>
<th>2018</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2040</th>
<th>2045</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Aluminium</td>
<td>14.1</td>
<td>11.9</td>
<td>11.5</td>
<td>4.2</td>
<td>2.2</td>
<td>1.2</td>
<td>0.5</td>
</tr>
<tr>
<td>Recycled Aluminium</td>
<td>0.6</td>
<td>0.5</td>
<td>0.4</td>
<td>0.2</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Semi-Produced</td>
<td>0.3</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
</tbody>
</table>

https://international-aluminium.org/wp-content/uploads/2021/10/1.5-Scenario-Dataset-3.xlsx
Interpolated slopes for casting top-down (based on primary)

- Semis Sectoral Cradle-to-Gate (t CO2e/t Al)
- Fab Sectoral Cradle-to-Gate (t CO2e/t Al)
- Primary Sectoral Cradle-to-Gate (t CO2e/t Al) (IAI/MPP)
- Casthouse Sectoral (cut-off) Cradle-to-Gate (t CO2e/t Al)
OUTPUT BASED APPROACH: CRITIQUES

• Complex, particularly where “mass allocation” approach followed;

• Scrap generators’ slopes could change radically based on allocation approach chosen (emissions stay the same on the numerator, activity changes on denominator depending on stream to which emissions are allocated)
  
  – This is not necessarily a bad thing – can encourage resource efficiency (less pre-consumer scrap generated) and transparency

• ASI rules for when a certain allocation approach can be used tend to favour mass allocation:
  
  – Traceability of (pre-consumer) scrap is limited, footprint data not available (particularly when via Traders), ergo remelters of pre-consumer scrap driven to mass allocation
  
  – However, this is the approach in CoC – pre-consumer scrap only eligible when accompanied by CoC documentation (even if through a Trader)

• Focus of the method at this stage should be on reducing primary emissions and having these reductions flow through the system
<table>
<thead>
<tr>
<th>ASI Member</th>
<th>Supply Chain Activity (ASI Entities)</th>
<th>Broad weight of Scope 3 emissions (up/downstream) as a share of SCA total</th>
<th>Cradle to gate</th>
<th>Recycling gate to gate</th>
<th>Semis gate to gate</th>
<th>Post-semis gate to gate</th>
</tr>
</thead>
<tbody>
<tr>
<td>P&amp;T</td>
<td>Bauxite Mining</td>
<td>➡️➡️➡️➡️</td>
<td></td>
<td></td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>P&amp;T</td>
<td>Alumina Refining</td>
<td>➡️</td>
<td></td>
<td></td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>P&amp;T</td>
<td>Aluminium Smelting (electrolysis)</td>
<td>➡️</td>
<td></td>
<td></td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>P&amp;T</td>
<td>Casthouses</td>
<td>Primary ➡️</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Secondary ➡️➡️</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P&amp;T</td>
<td>Aluminium Re-melting/Refining</td>
<td>➡️</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P&amp;T</td>
<td>Semi-fabrication</td>
<td>➡️➡️</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• P&amp;T</td>
<td>Material conversion</td>
<td>➡️➡️➡️</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IU</td>
<td>Other manufacturing or sale</td>
<td>➡️➡️➡️➡️</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As at 20 September 2023
<table>
<thead>
<tr>
<th>Supply Chain Activity</th>
<th>Applicability</th>
<th>I/O</th>
<th>...of...</th>
<th>...measured at</th>
<th>System boundary</th>
<th>GHG Protocol Scopes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary aluminium (&amp; precursors)</strong></td>
<td>100% electrolytic metal</td>
<td>OUTPUT</td>
<td>Cast electrolytic metal</td>
<td>Smelter casthouse</td>
<td>Cradle to gate</td>
<td>1+2+3 (cats 1, 3 &amp; 4)</td>
</tr>
<tr>
<td>(Secondary) casthouses</td>
<td>Casthouse with non-electrolytic share (scrap, purchased)</td>
<td>INPUT</td>
<td>Purchased metal + purchased scrap</td>
<td>Certification scope (or casthouse if smelter)</td>
<td>Procurement</td>
<td>3 (cat 1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OUTPUT</td>
<td>Cast metal</td>
<td>Casthouse</td>
<td>Gate to gate</td>
<td>1+2</td>
</tr>
<tr>
<td><strong>Semi-fabrication</strong></td>
<td>Any semi-fabrication process (no differentiation between processes)</td>
<td>INPUT</td>
<td>Purchased cast metal</td>
<td>Certification scope</td>
<td>Procurement</td>
<td>3 (cat 1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OUTPUT</td>
<td>Semi</td>
<td>Process(es) – average if multiple</td>
<td>Gate to gate</td>
<td>1+2</td>
</tr>
<tr>
<td><strong>Fabrication</strong></td>
<td>Any process transforming semi-fabricated or fabricated metal</td>
<td>INPUT</td>
<td>Purchased metal</td>
<td>Certification scope</td>
<td>Procurement</td>
<td>3 (cat 1)</td>
</tr>
</tbody>
</table>
### 1.5° Scenario for the Aluminium Sector

<table>
<thead>
<tr>
<th>Activity (Mt Al)</th>
<th>OLD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Casthouse “cut-off method”</strong></td>
<td></td>
</tr>
<tr>
<td>Emissions Mt CO2e (2018, 2030, 2040, 2045 &amp; 2050)</td>
<td></td>
</tr>
</tbody>
</table>

### Table 1: 1.5°GHG Budget Aluminium Sector

<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Casthouse “cut-off method”</strong></td>
<td></td>
</tr>
<tr>
<td>Emissions Mt CO2e (2018, 2030, 2040, 2045 &amp; 2050)</td>
<td></td>
</tr>
</tbody>
</table>

### Table 2: 1.5° Budget Aluminium Sector by Process

<table>
<thead>
<tr>
<th>Activity (Mt Al)</th>
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<tbody>
<tr>
<td><strong>Casthouse “cut-off method”</strong></td>
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<tr>
<td>Emissions Mt CO2e (2018, 2030, 2040, 2045 &amp; 2050)</td>
<td></td>
</tr>
</tbody>
</table>

### Table 3: 1.5° Production

<table>
<thead>
<tr>
<th>Activity (Mt Al)</th>
<th>OLD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Casthouse “cut-off method”</strong></td>
<td></td>
</tr>
<tr>
<td>Emissions Mt CO2e (2018, 2030, 2040, 2045 &amp; 2050)</td>
<td></td>
</tr>
</tbody>
</table>

### Table 4: 1.5° Intensity Data (Process Emissions)

<table>
<thead>
<tr>
<th>Activity (Mt Al)</th>
<th>OLD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Casthouse “cut-off method”</strong></td>
<td></td>
</tr>
<tr>
<td>Emissions Mt CO2e (2018, 2030, 2040, 2045 &amp; 2050)</td>
<td></td>
</tr>
</tbody>
</table>

https://international-aluminium.org/wp-content/uploads/2021/10/1.5-Scenario-Dataset-3.xlsx
# Table 1: 1.5°C Budget Aluminium Sector

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2020</th>
<th>2030</th>
<th>2040</th>
<th>2045</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity (Electrolysis)</td>
<td>670</td>
<td>461</td>
<td>74</td>
<td>15</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Electricity (Other)</td>
<td>33</td>
<td>37</td>
<td>30</td>
<td>14</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Aluminium Industry</td>
<td>279</td>
<td>231</td>
<td>176</td>
<td>130</td>
<td>76</td>
<td>31</td>
</tr>
<tr>
<td>Aluminium in Other Sectors + Transport</td>
<td>77</td>
<td>64</td>
<td>49</td>
<td>34</td>
<td>21</td>
<td>9</td>
</tr>
<tr>
<td>PFC</td>
<td>35</td>
<td>29</td>
<td>22</td>
<td>15</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>Aluminium Sector</td>
<td>1,035</td>
<td>813</td>
<td>341</td>
<td>238</td>
<td>121</td>
<td>53</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2020</th>
<th>2030</th>
<th>2040</th>
<th>2045</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Aluminium</td>
<td>1,037</td>
<td>756</td>
<td>288</td>
<td>155</td>
<td>87</td>
<td>30</td>
</tr>
<tr>
<td>Electrowinning</td>
<td>171</td>
<td>136</td>
<td>98</td>
<td>63</td>
<td>37</td>
<td>13</td>
</tr>
<tr>
<td>Recycled Aluminium</td>
<td>15</td>
<td>22</td>
<td>20</td>
<td>16</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Internal Scrap/Fabrication Scrap</td>
<td>11</td>
<td>9</td>
<td>7</td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Samsa Process</td>
<td>25</td>
<td>25</td>
<td>24</td>
<td>23</td>
<td>21</td>
<td>8</td>
</tr>
<tr>
<td>Aluminium Sector</td>
<td>1,055</td>
<td>813</td>
<td>341</td>
<td>238</td>
<td>121</td>
<td>53</td>
</tr>
</tbody>
</table>

# Table 2: 1.5°C Budget Aluminium Sector by Process

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2020</th>
<th>2030</th>
<th>2040</th>
<th>2045</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Aluminium</td>
<td>64</td>
<td>65</td>
<td>65</td>
<td>71</td>
<td>70</td>
<td>63</td>
</tr>
<tr>
<td>Casthouse Aluminium</td>
<td>22</td>
<td>12</td>
<td>17</td>
<td>65</td>
<td>62</td>
<td>61</td>
</tr>
<tr>
<td>New Scrap/Manufacturing Scrap</td>
<td>22</td>
<td>18</td>
<td>18</td>
<td>16</td>
<td>24</td>
<td>13</td>
</tr>
<tr>
<td>Old Scrap/Post-Consumer Scrap</td>
<td>32</td>
<td>31</td>
<td>42</td>
<td>57</td>
<td>60</td>
<td>68</td>
</tr>
<tr>
<td>Internal Scrap/Fabrication Scrap</td>
<td>33</td>
<td>36</td>
<td>24</td>
<td>32</td>
<td>30</td>
<td>27</td>
</tr>
<tr>
<td>Samsa Shipments</td>
<td>29</td>
<td>31</td>
<td>286</td>
<td>386</td>
<td>244</td>
<td>280</td>
</tr>
<tr>
<td>Final Product Shipments</td>
<td>82</td>
<td>103</td>
<td>112</td>
<td>153</td>
<td>131</td>
<td>137</td>
</tr>
</tbody>
</table>

Emissions Mt CO2e (2018, 2030, 2040, 2045 & 2050)

Activity (Mt Al)

https://international-aluminium.org/wp-content/uploads/2021/10/1.5-Scenario-Dataset-3.xlsx
### Fabrication and Semi-fabrication

#### OLD


**Activity (Mt Al)**

https://international-aluminium.org/wp-content/uploads/2021/10/1.5-Scenario-Dataset-3.xlsx
### Semi-fabrication INPUT (casthouse output)

**NEW**

<table>
<thead>
<tr>
<th>Activity (Mt Al)</th>
<th>Emissions Mt CO2e (2018, 2030, 2040, 2045 &amp; 2050)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Aluminium</td>
<td>1,037, 750, 370, 315, 270, 30, 30, 30, 30, 30</td>
</tr>
<tr>
<td>Recycled Aluminium</td>
<td>123, 159, 159, 98, 98, 63, 63, 63, 63, 63</td>
</tr>
<tr>
<td>Semi-Process</td>
<td>1,035, 813, 341, 298, 298, 298, 298, 298, 298, 298</td>
</tr>
<tr>
<td>Primary Aluminium</td>
<td>64, 65, 65, 71, 70, 70, 70, 70, 70, 70</td>
</tr>
<tr>
<td>Recycled Aluminium</td>
<td>64, 65, 65, 71, 70, 70, 70, 70, 70, 70</td>
</tr>
<tr>
<td>Semi-Process</td>
<td>82, 82, 82, 82, 82, 82, 82, 82, 82, 82</td>
</tr>
<tr>
<td>Semi-Process</td>
<td>15.5, 15.5, 15.5, 15.5, 15.5, 15.5, 15.5, 15.5, 15.5, 15.5</td>
</tr>
</tbody>
</table>

https://international-aluminium.org/wp-content/uploads/2021/10/1.5-Scenario-Dataset-3.xlsx
**Fabrication INPUT**

(semi-fab output)

**NEW**

Emissions Mt CO2e (2018, 2030, 2040, 2045 & 2050)

Activity (Mt Al)

https://international-aluminium.org/wp-content/uploads/2021/10/1.5-Scenario-Dataset-3.xlsx
Agenda

1. Aluminium sector 1.5 degree greenhouse gas pathway(s) and emissions budget 30 mins
2. A “Sectoral Decarbonisation Approach” (SDA) 15 mins
3. ASI Performance Standard methodological gap and method “constraints” 15 mins
4. Evolution of the GHG method and trade-offs 15 mins
5. Discussion/Q&A 15 mins

6. BREAK 30 mins
7. The DRAFT Entity-level GHG method proposed for “ASI endorsement” 30 mins
8. Excel-based tool walkthrough 15 mins
9. Implications for the sector and for ASI 15 mins
10. Discussion/Q&A 30 mins
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Next steps

• ASI Standards Committee meet w/c 25th September
• Will consider draft method for recommendation to ASI Board (Nov/Dec 2023), under PSv3 criterion 5.3
• Standards Committee is ASI decision making body re changes to Standards and Guidance and may also direct amendments to method
• Endorsement by ASI Board would see inclusion of language/tools in Performance Standard Guidance initially (Q4 2023 or possibly Q1 2024), although with potential for normative language changes to embed method in criterion, if Standards Committee direct
• Q1 2024 rollout, including training
• Third party initiatives and products due for delivery in Q4 2023 could see minor (sector slope) amendments to align
  – RMI Horizon Zero Product level Emission Reporting Guidance (Dec ‘23) & Procurement (2024)
  – Center for Climate Aligned Finance aluminium framework (Dec ‘23); see https://home.treasury.gov/news/press-releases/jy1744
  – No revised SBTi Sectoral Decarbonization Approach or Sector Guidance for aluminium coming any time soon, though ASI is in liaison with SBTi Aluminium team (along with IAI and RMI)
The Entity shall:

a. Establish a GHG Emissions Reduction Plan and ensure a GHG Emissions Reduction Pathway consistent with a 1.5°C warming scenario, using an ASI endorsed methodology when available.

b. Ensure that the GHG Emissions Reduction Pathway includes an Intermediate Target covering a period no greater than five years, which:
   i. Addresses all Direct and Indirect GHG emissions.
   ii. Is developed using a Science-Based Approach endorsed by ASI, if available.
   iii. Is publicly disclosed.

c. Review the GHG Emissions Reduction Plan annually.

d. Review the GHG Emissions Pathway on any changes to the Business that alter baselines or targets.

e. Publicly disclose:
   i. The latest version of the GHG Emissions Reduction Pathway
   ii. The latest version of the GHG Emissions Reduction Plan.
   iii. Progress against the GHG Emissions Reduction Plan on an annual basis.
Base Year

- Entities that are developing GHG Pathways for the first time are encouraged to use the most recent year for which data is available as the base year.
- If an Entity has more detailed data for a previous year this is acceptable for validation purposes, as long as most recent year data is also disclosed.
- If the chosen base year is more than 3 years prior to the initial ASI Performance Standard Certification/Re-Certification Audit that is assessing conformance with Criterion 5.3 (e.g. to align with a corporate baseline), the most recent year data should indicate already achieved performance in line with the Entity Pathway in order for the Entity to be in conformance.
- The base year should be fixed for the duration of the Pathway.
  - Intermediate Targets must cover a minimum of 5 years and a maximum of 10 years from the chosen base year.
  - Intermediate Targets must cover a period no greater than five years from the chosen base year.
Demonstrating Conformance

- In addition to articulation of a GHG Pathway that aligns with (is at or below) the generated Entity slope, conformance in subsequent Audits would require demonstration of performance that follows (is at or below) the GHG Pathway, averaged (by production mass) over the certification period.

- For example:
  - Smelter casthouse
    - 2024 initial Audit
      - 2023 base year (8.6 t CO$_2$e/t Al)
      - Pathway slope Intermediate Targets: 2024: 8.4  2025: 8.2  2026: 7.8
    - 2027 re-certification Audit
      - Production 2024: x  2025: y  2026: z
      - Demonstrate an average production weighted emissions performance ($a$), 2023–2026 of:
        - $a = (8.4(x)+8.2(y)+7.8(z)) / (x+y+z)$
        - If $x = y = z$, then $a = 8.1$ tCO$_2$e/t Al
Sectoral average intensities (t CO$_2$e/t Al)
Primary (electrolytic) aluminium & precursors

- Fixed boundary, mine to smelter casthouse (electrolytic metal only)
- Cradle to gate emissions (direct and upstream indirect)
- Slope measured at casthouse OUTPUT (precursors – non-integrated alumina refiners and bauxite miners – will need to in-gather data from customers until SDAs for bauxite and alumina are developed, in 2024)
- Choice of slope:
  - All emissions in a single Pathway
  - Electricity and non-electricity emissions split Pathways (as per Center for Climate Aligned Finance DRAFT)
- Singular portfolio (Entity) slope or individual smelter casthouse slopes
Primary cradle to gate intensity

Electricity-related

Non-electricity-related
Primary cradle-to-gate intensity (single slope)
Non-electrolytic supply chain activities

• Dual slopes: casthouse & semi-fabrication
  – Metal procurement emissions intensity (scope 3 cat. 1)
  – Process emissions intensity (scopes 1 & 2)
• Single slope: fabrication
  – Metal procurement emissions intensity (scope 3 cat. 1)
• Procurement slope measured at supply chain activity INPUT
• Process slope measured at OUTPUT
• Slopes apply at Entity level, with procurement encompassing all metal entering the certification scope (even if from within same corporate system).
### Simplified data entry

- **Casthouse**: 2 base year data points
- **Semi-fab**: 2 base year data points
- **Fab**: 1 base year data point

#### Table:

<table>
<thead>
<tr>
<th></th>
<th>Process Scope 1+2 Intensity (t CO2e/t Al)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Casthouse in Baseline YEAR (2021)</strong></td>
<td>0.315</td>
</tr>
<tr>
<td><strong>Semi-fabrication process in Baseline YEAR (2021)</strong></td>
<td>0.130</td>
</tr>
<tr>
<td><strong>Fabrication process in Baseline YEAR (2021)</strong></td>
<td></td>
</tr>
</tbody>
</table>

#### B

<table>
<thead>
<tr>
<th>Type of INPUT to which column B applies (column A applies to whole process)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scope 3 Cat.1 average intensity of PURCHASED Aluminium (including scrap) (t CO2e/t Al)</strong></td>
</tr>
<tr>
<td>OIl, if smelter casthouse: Average emissions intensity of Aluminium INPUT to the casthouse (including electrolytic tapped from pots, cold metal and scrap)</td>
</tr>
<tr>
<td>5 = purchased scrap (not including internal scrap) plus aluminium metal (cold or liquid)</td>
</tr>
<tr>
<td>10.0 = purchased casthouse products (not including those internally produced in Integrated casthouse)</td>
</tr>
<tr>
<td>12.0 = purchased semi-fabricated &amp; fabricated products (not including those internally produced in integrated semi-fab or fabrication process)</td>
</tr>
</tbody>
</table>
Process slopes (casting & semi-fabrication)
Procurement: casthouse

Non-smelter casthouse:

- Average mass-weighted emissions intensity of input aluminium (cold metal + liquid metal + scrap (with yield factor applied) entering the Entity certification scope (i.e. purchased or transferred from outside the Entity) in the baseline year.

Smelter casthouse:

- Average mass-weighted emissions intensity of input aluminium (cold metal + liquid metal + scrap (with yield factor applied) entering the casthouse process in the baseline year.

Allocation method choice:

- The allocation of an emissions burden to input scrap (i.e. embodied carbon) is a decision for the Entity – the sectoral slope does not change accordingly (although the Entity slope will).

CASTING: casthouse inputs emissions intensity

![Graph showing t CO2e/t Al emissions intensity from 2018 to 2050.]
Procurement: post-casthouse

SEMI-FABRICATION:

• Average mass-weighted emissions intensity of cast aluminium entering the Entity certification scope (i.e. purchased or transferred from outside the Entity) in the baseline year.

• Not including metal from integrated casthouse processes (which is captured in the prior process stage (casthouse))

FABRICATION:

• Average mass-weighted emissions intensity of semi-fabricated and fabricated aluminium entering the Entity certification scope (i.e. purchased or transferred from outside the Entity) in the baseline year.

• Not including metal from integrated semis processes (which is captured in the prior process stage (semi-fabrication))
SEMIS: Casthouse products procurement emissions intensity
FAB: Semis procurement emissions intensity
Agenda

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Some implications/issues

• Increase in non-conformances likely, even among existing certified Entities – some may not ever be able to achieve
  – May be (but not necessarily) regionally specific
• The sectoral slope with shift if action is delayed; this will steepen Entity slopes – how to cope with this (potentially) fast change and shifting targets.
• New facilities – from what base do they plot their slope?
• GHG Plans and relationship with GHG Pathways – auditor “stress tests”
• If primary doesn’t decarbonise at scale, downstream cannot meet the Pathway requirements (at scale) – first movers that can lock in low carbon supply (primary and/or recycled material) will be advantaged;
• Some Entities that were v3 Audited between April 2022 and the method endorsement/publication will not have GHG Pathways that follow an ASI endorsed method and may not have Intermediate Targets that meet the standard.
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