

THE ALUMINIUM INDUSTRY'S  
CONTRIBUTION TO THE UN

# SUSTAINABLE DEVELOPMENT GOALS

IAI SUPPORTS THE SUSTAINABLE DEVELOPMENT GOALS

NOVEMBER 2022



INTERNATIONAL  
**ALUMINIUM**

## **International Aluminium Institute (IAI)**

[international-aluminium.org](http://international-aluminium.org)

Through the IAI, the aluminium industry aims to promote a wider understanding of its activities and demonstrate both its responsibility in producing the metal and the potential benefits to be realised through their use in sustainable applications and through recycling. The key objectives of the Institute are to:

- Increase the market for aluminium by enhancing world-wide awareness of its unique and valuable qualities;
- Provide the global forum for aluminium producers on matters of common concern and liaising with regional and national aluminium associations to achieve efficient and cost-effective cooperation;
- Identify issues of relevance to the production, use and recycling of aluminium and promoting appropriate research and other action concerning them;
- Encourage and assisting continuous progress in the healthy, safe, and environmentally sound production of aluminium;
- Collect statistical and other relevant information and communicating it to the industry and its principal stakeholders; and
- Communicate the views and positions of the aluminium industry to international agencies and other relevant parties.



## About the International Aluminium Institute

The International Aluminium Institute (IAI) is the only body representing the global primary aluminium industry.

Since its foundation in 1972, members of the IAI have been companies engaged in the production of bauxite, alumina and aluminium, the recycling of aluminium and/or fabrication of aluminium, or as joint venture partners.

Current IAI membership represents all major regions of global bauxite, alumina and aluminium production. The IAI has been key to bringing the industry together on shared purpose over the past 50 years.

## OUR MEMBERS



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**Note:** Titles of Goals are taken directly from the United Nations, and contain some international spellings

# INTRODUCTION

The UN Sustainable Development Goals (SDGs) are an urgent call for action and global partnership to address a range of issues from poverty to economic growth to climate change. It is a widely used framework to support engagement with – and monitor progress on – long-term interlinked societal, environmental and economic goals. Whilst the framework was initially intended to focus efforts made by nations towards sustainable development, it has been increasingly used within the business community as a way to ensure a holistic and well-balanced approach to development. The aluminium industry continues to actively engage in discussions around sustainable development and demonstrate its contribution and commitment to global efforts.

## Exploring aluminium's current and potential contribution to the UN SDGs

This report explores the aluminium industry's current and potential contribution to the UN SDGs and considers recent work conducted by the International Aluminium Institute (IAI), activities of companies operating within the aluminium industry and other collaborative efforts. A brief summary of the industry's impact across each of the 17 SDGs along with links to specific industry case studies and other supporting resources are included. Whilst it is intended that the report provides a comprehensive reference for the industry and other stakeholders, the case studies listed do not capture the full suite of activities across the industry, knowledge gaps exist and there are areas where it has not been possible to quantify the contribution of aluminium to all of the goals. Such areas could benefit from further engagement with stakeholders and reflection on potential opportunities for the sector to progress.

The framework presented here is built on the outputs of an IAI-hosted industry workshop held in August 2021, ongoing input from company representatives, desktop research and analysis of publicly available documents and information, to illustrate the range of activities and contributions from the industry in recent years. The IAI has also liaised with regional aluminium associations to provide a comprehensive global overview covering all major aluminium producing regions.

As part of this analysis, three broad levels have been defined with respect to aluminium's contribution. These are as follows:

 **LOW:**

*Aluminium has a limited contribution to the achievement of the targets associated with this goal*

 **MODERATE:**

*Aluminium has a contribution to the achievement of some targets associated with this goal*

 **HIGH:**

*Aluminium has a contribution to the achievement of many targets associated with this goal*

# SUSTAINABLE DEVELOPMENT GOALS

**1** NO POVERTY



**2** ZERO HUNGER



**3** GOOD HEALTH AND WELL-BEING



**4** QUALITY EDUCATION



**5** GENDER EQUALITY



**6** CLEAN WATER AND SANITATION



**7** AFFORDABLE AND CLEAN ENERGY



**8** DECENT WORK AND ECONOMIC GROWTH



**9** INDUSTRY, INNOVATION AND INFRASTRUCTURE



**10** REDUCED INEQUALITIES



**11** SUSTAINABLE CITIES AND COMMUNITIES



**12** RESPONSIBLE CONSUMPTION AND PRODUCTION



**13** CLIMATE ACTION



**14** LIFE BELOW WATER



**15** LIFE ON LAND



**16** PEACE, JUSTICE AND STRONG INSTITUTIONS



**17** PARTNERSHIPS FOR THE GOALS





## GOAL 1

### END POVERTY IN ALL ITS FORMS EVERYWHERE



#### TARGETS & INDICATORS

## Contributions of aluminium and the aluminium industry to the achievement of the Goal

- ✓ The aluminium industry globally supports the livelihoods of approximately 7.5 million employees and their families (see **SDG 8**)
- ✓ The aluminium industry provides a significant contribution to the **economies of several least developed and developing countries**, including billions of dollars' worth of taxes which may be used to support these countries' social and welfare systems
- ✓ The aluminium industry also often has a significant impact on a regional scale as operations are frequently located in **remote areas where the industry is key** to the local economy
- ✓ Sites in remote locations provide **infrastructure and resources for communities**, in addition to work and training opportunities
- ✓ Employers in the aluminium industry undertake regular reviews to ensure they are **paying a living wage** to their employees

Despite the influence that aluminium companies can have in certain regions, overall impact on some of the targets within this goal is considered limited. As such, its contribution is considered **moderate**. The creation of national or regional policy frameworks, development strategies (Target 1.b) and implementation of social protection systems (Target 1.3) tend to be fairly removed from the industry's core business. However, there are targets where the industry currently contributes and could contribute further given their significant influence at a local level within communities and to local economies. For example, opportunities to contribute to the mobilisation of resources (Target 1.a), building resilience of the poor and vulnerable to climate-related events and other environmental shocks (Target 1.5), and enhancing rights to land, natural resources and new technology (Target 1.4).

Below are some specific examples of contribution to this goal.

#### Global Example - Contribution to Countries' Social and Welfare Systems

The production of aluminium and aluminium products contributes substantial amounts to the economies of many countries around the world, including several least developed and developing countries. The indirect and induced impacts provide a further economic benefit. For example, the estimated contribution of the aluminium industry to GDP in

the United Arab Emirates in 2017 was almost US\$5.5 billion<sup>1</sup>. Much of this economic contribution is directed via taxes to the governments and thus may be used to help support social and welfare systems. In Brazil alone, the taxes paid by the aluminium industry were US\$4.6 billion in 2018<sup>2</sup>. According to ICMM, its members – which include bauxite mining companies – paid an effective tax rate of 39.7% in 2020<sup>3</sup>.

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- 1 “The Impact of the Aluminium Sector on the UAE Economy”, Oxford Economics 2018  
 2 “Aluminum Statistical Yearbook 2019”, ABAL 2020  
 3 “ICMM Members' Tax Contribution”, ICMM 2021

### Case Study - Here for Gladstone

Rio Tinto has established a flagship community investment programme programme at Gladstone, Australia, entitled ‘Here for Gladstone’. It is solely focused on improving the health, livelihood and welfare of the Gladstone community. Since its establishment in 2002, the programme has made multiple significant contributions to the region, such as<sup>1</sup>:

- Invested more than \$6.5 million in community initiatives.
- Created 62 employment positions in diverse industries.
- Invested more than \$870,000 into local businesses.

The three aluminium operating sites in Gladstone (Queensland Alumina Limited, Boyne Smelters Limited and Rio Tinto Yarwun) employed 3,797 people in 2020 and make a \$2 billion economic contribution to Gladstone each year<sup>2</sup>.

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- 1 Australian Aluminium Council website <https://aluminium.org.au/news/rio-tinto-here-for-gladstone/>  
 2 Here for Gladstone website <https://www.here4gladstone.com.au/about/>

### Case Study - Living Wages, Alcoa and South32

Aluminium companies regularly undertake reviews of their employees’ salaries to determine if they are paying a living wage. For example, in 2021, Alcoa of Australia Limited, with the support of an external third party, conducted a living wage study of all direct Alcoa employees across all Australian jurisdictions in which they operate. Based on the analysis of 2020 earnings, Alcoa demonstrated that they paid a living wage in all cases<sup>1</sup>. South32, as part of its Human Rights Principles<sup>2</sup> includes the commitment towards embedding a living wage. In addition, living wages are noted within their Sustainability and Business Conduct Supplier Requirements<sup>3</sup> which stipulates “suppliers must ensure wages and benefits satisfy as a minimum national legal standards or local benchmarks” and where there is no minimum wage legislation, the onus is on the supplier “to establish a living wage that provides an adequate standard of living for employees and their dependents”.

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- 1 “Modern Slavery Statement 2020”, Alcoa 2021  
 2 South32 Our Approach to Human Rights: [https://www.south32.net/docs/default-source/community-and-society/our-approach-to-human-rights-for-publication.pdf?sfvrsn=758f0b5a\\_6](https://www.south32.net/docs/default-source/community-and-society/our-approach-to-human-rights-for-publication.pdf?sfvrsn=758f0b5a_6)  
 3 South32 Sustainability and Business Conduct Supplier Requirements: [https://www.south32.net/docs/default-source/suppliers/south32-sustainability-and-business-conduct-supplier-requirements-\(english\).pdf?sfvrsn=cade8b57\\_12](https://www.south32.net/docs/default-source/suppliers/south32-sustainability-and-business-conduct-supplier-requirements-(english).pdf?sfvrsn=cade8b57_12)



**Case Study – Social Programmes in CBA, Brazil**

Companhia Brasileira de Alumínio (CBA)'s social programmes are organised around three priority pillars: Education development, public management support and economic development. Initiatives and investments within these pillars provide capacity building for education and school officials; help to modernise public administration practices in partnership with the Executive and Legislative branches of the municipalities where CBA operates; and advance inclusive business models that create new sources of income and revenue, helping municipalities to achieve economic independence. In addition to the three priority pillars, CBA supports the protection of children's rights by providing capacity building to the Municipal Council for the Rights of Children and Adolescents, so it is better equipped to fulfil its mandate.



## GOAL 2 END HUNGER, ACHIEVE FOOD SECURITY AND IMPROVED NUTRITION AND PROMOTE SUSTAINABLE AGRICULTURE

### 🔗 TARGETS & INDICATORS

### Contributions of aluminium and the aluminium industry to the achievement of the Goal

- ✔ The properties of aluminium make it ideal for packaging to enhance the shelf life of food, drastically reducing food wastage and increasing availability of food around the globe

### Opportunities for industry to improve its impact on the achievement of the Goal

- ➔ The large footprint of open cut bauxite mines may affect the availability of **land available for agriculture or pasture**; and resettlement packages need to include adequate livelihood restoration to enable continued food production in local communities; this provides an important contribution to the sustainability of the agricultural supply chain

Aluminium's contribution to Goal 2 is considered relatively **low**. Although aluminium is a widely used material in food packaging, it has limited impact on many targets for this goal including its contribution to sustainable food production systems (Target 2.4), genetic diversity of seeds, plants and animals (Target 2.5) and measures related to agricultural trade (Target 2.b) or food commodity market functioning (Target 2.c). Aluminium has a contribution to Target 2.1 in ensuring access to safe and nutritious food year round for people through its use as a barrier material in food packaging. The industry itself also contributes both indirectly and directly to agricultural productivity and small-scale food producers (Target 2.3), particularly within the local communities in and around sites. Opportunities exist at a local level to strengthen capacity and adaptation to climate change and extreme weather, along with evaluating access to land and resources. These opportunities could be explored further to increase contribution to the achievement of this goal.

Below are some specific examples of contribution to this goal.

### Global Example - Improved Packaging Solutions to Reduce Food Waste

According to the UN Food and Agriculture Organization, 1.3 billion tonnes of food is wasted globally each year<sup>1</sup>. That amounts to one-third of food produced for human consumption, a large part of which is lost due to poor preservation and packaging. The increased use of appropriate, better food packaging can significantly reduce food waste and increase availability accordingly. Aluminium's qualities, particularly its strength, barrier properties and ability to withstand extremes of heat and cold, make it an ideal material for food packaging<sup>2</sup>.

<sup>1</sup> FAO website <https://www.fao.org/food-loss-and-food-waste/flw-data>

<sup>2</sup> "More Is Less - Better Protection Saves Resources", European Aluminium Foil Association (EAFA)

### Global Example - Importance of Small-Scale Agriculture in Post-Mining Landscapes

The lack of access to finance and falling productivity mean that farming is no longer viewed as a viable livelihood by many in rural communities. Family farms urgently need to be transformed into thriving enterprises to alleviate extreme poverty and hunger and to secure agricultural supply-chains. Globally, however, government spending on agriculture has fallen by almost 50% in relation to its share of GDP. To ensure a sustainable post-mine closure economy, mining companies often invest in small-scale self-sustaining farming, and smallholders in turn form a vital link in many agri-business supply chains<sup>1</sup>.

<sup>1</sup> "Action Brief 1.1- A shared role in poverty alleviation and land stewardship", Global Agri-business Alliance (GAA) 2018

### Case Study - Supporting Agriculture in Mozambique

An agricultural programme introduced by South32 Mozal Aluminium in Mozambique has helped improve the lives of more than 600 farmers and enhanced competitiveness of the agribusiness value chain in the local area. A soil characterisation study was carried out to determine optimal crops and techniques, followed by training for farmers on soil management, vegetable selection, irrigation methods, pest and disease management and financial planning. The project also helps farmers gain access to financial resources such as seeds, irrigation and fertilisers by providing 60% to co-purchase materials and equipment. With a view to longer term agribusiness sustainability, there is support for local production of vegetable seeds and seedlings, greater involvement of young people, and formalisation of contracts between producers and consumer markets. Positive impacts include the provision of nutritious food for local communities, income for local farmers and growth in the local economy, creating foundations for a sustainable agricultural sector in the region.



## GOAL 3

# ENSURE HEALTHY LIVES AND PROMOTE WELL-BEING FOR ALL AT ALL AGES

### TARGETS & INDICATORS

## Contributions of aluminium and the aluminium industry to the achievement of the Goal

- ✓ Aluminium foil's barrier properties enable the manufacture of products that **decrease food and beverage health risks, and preserve and deliver vital medication**
- ✓ The aluminium industry works proactively to ensure the health of its workers, particularly by monitoring and addressing the potential health risks in the workplace and promoting good health practices (see **SDG 8**)
- ✓ In some of the regions in which it operates, industry has directly helped to **address public health crises** such as the outbreak of the Ebola virus and the COVID-19 pandemic
- ✓ Aluminium semi-fabricated products, such as profiles for hospitals and medical instruments and equipment, are vital to the COVID 19 response
- ✓ Industry is evaluating potential **climate change issues that may lead to health hazards and risks** that will impact on the sustainability of specific industry sites and local communities in which they operate, and defining appropriate adaptation measures to mitigate those risks

Aluminium's contribution to this goal is considered **moderate**. Despite the clear role that aluminium, and the industry itself, can play in minimising environmental health risks associated with its operations (Target 3.9) and ensuring healthy lives and promoting well-being for its workers and communities (Target 3.4), its reach relative to these targets is mostly limited to a local level. The use of aluminium in packaging for the delivery of vital medication & treatments (Target 3.4) has an impact on broader society along with activities related to addressing epidemics, health crises and communicable diseases (Target 3.3). There are however some areas where the industry could increase its contribution towards the achievement of this goal, in particular through greater promotion of mental health and well-being (Target 3.4) which has lagged in comparison to other occupational and community physical health programmes, and through the reduction of road traffic accidents (Target 3.6).

Below are some specific examples of contribution to this goal.

### Global Example - Packaging to Deliver Safe Food and Medication

Over 3.5 million tonnes of aluminium is used globally in foil packaging products. The strength, flexibility and barrier properties of aluminium can help to ensure food security and decrease health risks to consumers. Aluminium is also ideal for pharmaceutical packaging, as the same barrier properties exclude moisture, oxygen and other gases, pathogens and light, ensuring the preservation and delivery of vital medication without degradation<sup>1</sup>.

<sup>1</sup> EAFA website <https://www.alufoil.org/en/main-markets/pharmaceutica-packaging.html>

### Global Example - Provision of Medical Supplies and Equipment During the COVID-19 Pandemic

Aluminium is used in vital medical equipment and supplies. In response to the COVID-19 pandemic, it is being used in products protecting key workers (e.g. flexible nose strip in N95 masks) as well as being used widely in medical devices such as ventilators and sterile tools or antimicrobial surfaces being used to fight the pandemic<sup>1</sup>. Hindalco designed and fabricated ready-to-assemble cots from available extrusion profiles and sheet materials, facilitating increased hospital quarantine capacity<sup>2</sup>, and aluminium has also been used to create a prototype for a MAC (Modular Adaptable Convertible) Ward – a temporary hospital ward made from interlocking recycled aluminium panels. Companies individually provide services and equipment to help the COVID response in the municipalities where they operate, such as CBA in Brazil which, with support from the Votorantim Institute, donated personal protective equipment (PPE) for healthcare workers, ICU equipment – such as ventilators – for hospitals, telemedicine services, and three months' worth of food stamps for nearly 6,000 families.

<sup>1</sup> <https://www.constellium.com/inside-aluminium-blog/cut-above-aluminium-medical-devices>

<sup>2</sup> "People-Planet-Prosperty - Integrated Annual Report 2020-21", Hindalco 2021

### Case Study - Climate Change-Mediated Community Health Risks and Adaptation

The global aluminium industry has invested in a study to identify the diverse and important potential health implications of climate change on workers and the communities on which they rely. The demonstration of this potential will include the development of a catalogue of weather and climate related phenomena experienced in primary aluminium sectors, and exposure-risk relationships with associated health impacts. The purpose is to describe a path forward for the regional and then site-level prioritisation of scenarios, to assess their health implications and to explore appropriate adaptation interventions.

**Case Study - UC RUSAL Fight Against Ebola in Guinea**

For several years UC RUSAL has been taking action to address the Ebola outbreak in Guinea, where it has mining concessions. The company funded the construction of a medical research and treatment centre in 2015, and in subsequent years a vaccine has undergone trials at this centre with a view to obtaining certification and the possibility of its use to prevent the spread of Ebola. In terms of treatment, over 60% of patients with an Ebola fever have been successfully treated at the centre<sup>1</sup>.

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1 "Tangible Examples By Business - Toward Society5.0 for SDGs", B2O Tokyo Summit 2019

**Case Study - Support in Times of Need Plenamente Programme in CBA, Brazil**

An initiative introduced in 2020, Plenamente is a confidential channel that employees and their spouses and children can contact 24/7 for counselling on financial, legal, psychological, and other issues. A total of 451 employees sought counselling from the platform in six months, making over 1,400 telephone calls, with a usage rate of 10.5% in 2020. According to the organisation providing the service, that rate is 5% above the market average. CBA believes the extensive use of the Plenamente service can be credited to initiatives to communicate and raise awareness about the services available. User feedback has been positive, with a notable 98% satisfaction with the quality of service.



## GOAL 4 ENSURE INCLUSIVE AND EQUITABLE QUALITY EDUCATION AND PROMOTE LIFELONG LEARNING OPPORTUNITIES FOR ALL



### TARGETS & INDICATORS

## Contributions of aluminium and the aluminium industry to the achievement of the Goal

- ✓ In less developed regions with low rates of literacy, the aluminium industry provides **traineeship and internship opportunities**, resulting in significant improvements in standards of literacy and employment potential in the community
- ✓ To further support the education of children in the local areas in which it operates, and to facilitate school-to-work pathways, the aluminium industry funds the **construction of classrooms and schools**
- ✓ The aluminium industry has established **vocational training centres**, to educate young people with skills needed to find employment in the mining industry or to establish small businesses of their own
- ✓ The aluminium industry also promotes life long learning opportunities within its workforce with **skill development and training initiatives** at all levels

Aluminium's contribution to this goal is considered **low**. The industry, through its employment and training initiatives for workers, contributes notably to Target 4.4, increasing the number of adults with relevant skills for employment, decent jobs and entrepreneurship. In some cases, contribution towards this goal could be considered significant particularly in the locations in and around production sites where the industry may be a significant employer or influence. Through community initiatives and engagement, the industry also contributes to Target 4.1, Target 4.3 and Target 4.a with investment in education facilities which provide access for children to a quality education. Whilst the industry's influence on education and learning opportunities at a global level is limited, there are opportunities to explore how the industry could increase its contribution beyond the immediate vicinity of its operations, for example through scholarship programmes or broader initiatives to encourage higher education and training particularly in developing countries.

Below are some specific examples of contribution to this goal.

### Case Study – Aluminium Company Training and Skills Initiatives

The aluminium sector directly employs an estimated 1.6 million people globally<sup>1</sup>. Companies recognise the importance of ensuring opportunities for lifelong learning opportunities for their workers. There are numerous development programmes across aluminium

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<https://international-aluminium.org/resource/employment-in-the-global-aluminium-industry-2019/>

companies to ensure ongoing training and skills development. Hindalco, for example, has the Hindalco Technical University where senior and middle management can engage in competency development programmes across a range of issues. In 2019-2020, Hindalco noted that training hours increased from 45 to 60 hours per employee. Training and development also includes a diverse range of initiatives from behavioural competency programmes to life enhancement and wellness programmes alongside more traditional technical and skills training. At Hydro, the Hydro Academy, allows employees to browse through an internal course catalogue of training opportunities specific to their development needs. It includes local and global classroom training, webcasts, e-learning, access Leadership library, and more. Hydro also has a number of different development programmes for employees at different stages of their careers ranging from young professional networks for new graduates to radical collaboration to leadership and mentorship initiatives.

### **Case Study - Rio Tinto, Weipa, Australia**

Rio Tinto's Weipa's Indigenous Employment and Training strategy defines their long-term commitment to increasing the participation, retention and advancement of local Aboriginal people in their operations<sup>1</sup>. It includes multiple initiatives designed to improve Indigenous education and employment participation rates, while also ensuring the business has the skills needed to support its operations, including:

- A traineeship programme, helping Aboriginal people gain practical industry experience - more than 250 have taken part, with over 100 transitioning into permanent positions or apprenticeships, and approx. 82 are still working on the site today.
- School-to-work pathways, focusing on providing local education options to build the local talent pipeline, in partnership with Western Cape College. Since the start of partnership, the number of senior certificates awarded to Indigenous students has increased by 186%, along with improved attendance rates.
- A school holiday programme, allowing local Aboriginal boarding school students connected to Rio Tinto's Aboriginal agreements to spend time at Weipa and learn about the different parts of the business and possible career pathways.

<sup>1</sup> "Sustainable Bauxite Mining Guidelines", IAI 2018

### **Case Study - EGA's \$1 Million Vocational Training Centre in Guinea**

EGA's subsidiary Guinea Alumina Corporation (GAC) has opened a US\$1 million vocational training centre to create opportunities for young Guineans. The Advanced Automotive Training Centre, located in the town of Boké near GAC's bauxite mining concession, will provide year-long courses in advanced light vehicle mechanics. The project is aimed to enable people from local communities to develop their skills, education and employment potential<sup>1</sup>.

<sup>1</sup> "EGA's GAC opens \$1 million vocational training centre for young Guineans", Emirates News Agency 2021



### Case Study - Enabling and Supporting Education

There are multiple examples across the globe where aluminium companies have provided financial support and infrastructure for increasing education opportunities in the countries that they operate.

- CBA's Partnership for Education is focused on promoting improved public education in the municipalities where CBA is operating. Through its initiatives, it seeks to qualify both the demand, with social mobilisation to recognise the value of education, and the supply, supporting local management to strengthen public policies. During the COVID-19 pandemic, when schools were closed, CBA supported municipal officials in setting up distance learning for public school students, and organised webinars with specialists to advise municipal education secretaries. To measure the impact of the investments made in Partnership for Education, the main indicator of improvement is the Basic Education Development index of the municipalities.
- Mozal Aluminium (majority shareholder South32) has established the Mozal Community Development Trust in 2000, investing US\$34 million to address major challenges in the region. Part of this investment has been directed towards education – since the establishment, the Community Development Trust has helped build eleven schools in the area, as well as provide training for the school teachers<sup>1</sup>.
- In 2017, UC RUSAL launched an educational project titled 'The School of Urban Change', aiming to identify, train and develop urban change leaders, who can improve the quality of life in the regions through territorial development projects. The goal of the programme is to prepare active residents and representatives of creative communities in the areas of RUSAL's presence for the development and effective implementation of initiatives and projects aimed at solving urgent social problems and developing the urban environment<sup>2</sup>.

<sup>1</sup> South32 website <https://www.south32.net/our-business/southern-africa/mozal-aluminium>

<sup>2</sup> "School of Urban Change", UC RUSAL 2022



## GOAL 5

# ACHIEVE GENDER EQUALITY AND EMPOWER ALL WOMEN AND GIRLS

### TARGETS & INDICATORS

## Contributions of aluminium and the aluminium industry to the achievement of the Goal

- ✓ The aluminium industry supports programmes in developing countries to **educate and empower women** in the local regions in which it operates, providing health and economic benefits for women, their families and entire communities
- ✓ While the employment of women in the aluminium industry has been historically low due to perceptions of the nature of many roles, some companies are proactively instigating programmes to **increase the numbers of women employed** particularly in supervisory or managerial roles

Aluminium's contribution to this goal is considered **low**. There are programmes throughout the industry that seek to improve women's participation and equal opportunities (Target 5.5), however the industry's contribution to other targets related to this goal could be greater. To better monitor progress and identify ways to achieve this goal, a more comprehensive tracking of women's participation in decision-making across the industry at all levels would be useful. Additionally, companies could explore initiatives that empower women within their workforce and local communities, e.g. through access to technology (Target 5.b), sexual and reproductive health services (Target 5.6) or programmes that eliminate harmful practices (Target 5.3) or violence against women and girls (Target 5.2).

Below are some specific examples of contribution to this goal.

### Case Study - Self-help and Vocational Training, Hindalco, India

At Hindalco's Durgmanwadi bauxite mine in India, there are multiple ongoing initiatives that seek to improve health and wellbeing in the community. One of such initiatives includes formations of women's self-help groups in villages, along with provided vocational training to local women. The women now actively participate in the community's economic activities such as a milk co-op dairy, mushroom cultivation, nursery raising, vermi compost, goat-rabbit rearing and handicrafts<sup>1</sup>.

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"Sustainable Bauxite Mining Guidelines", IAI 2018

### **Case Study - Increasing Number of Women in Supervisory Roles, EGA, United Arab Emirates**

Recognising the need to improve gender diversity across the industry, Emirates Global Aluminium are setting a target to increase the number of women in supervisory roles to 25% by 2025. Currently at 18%, EGA plan to focus on developing and progressing their high performing female employees through a mentoring programme for women – focused on personal development and career growth compost, goat-rabbit rearing and handicrafts<sup>1</sup>.

<sup>1</sup> “UAE's EGA to increase number of women in supervisory roles to 25 per cent by 2025”, The National News 2021

### **Case Study - Diversity in Mining and Metallurgical Processes at CBA, Brazil**

Valuing diversity has become increasingly high on the agenda at CBA. Since 2020, diversity has been addressed as a cross-cutting topic organisation-wide. In 2021 a general programme of initiatives was set up to achieve progress on diversity and help build an environment that welcomes different ideas, personalities, cultures and choices. In 2020, to support the goal of increasing diversity and the percentage of women at CBA, a project was launched to train women as metallurgical process operators, in partnership with the National Industrial Training Service (SENAI). That year the course was available in Alumínio City, and provided a total of 200 class hours. In 2021 the programme was extended to other sites in Itapissuma City and Zona da Mata region of Minas Gerais. 253 women trained, more than the target of 146. All participants have been qualified to apply for vacancies at CBA, and some of them have been hired at the company.

- Alumínio City (São Paolo)
  - 210 women certified, 24 have been hired at the Alumínio plant
  - 104 as Metallurgical Process Assistants
  - 30 as Maintenance Mechanic Assistants
  - 4 as Diesel Mechanics
  - 72 as Forklift Operators
- Zona da Mata region (Minas Gerais)
  - 15 women trained on automation
- Itapissuma (Pernambuco)
  - 28 women trained as metallurgical process operators, with an emphasis on the downstream segment

### Case Study – Hydro in Europe

About 19% of Hydro's 30,000 employees are women. Our ambition is to increase that to 25% in 2025. But how? With quotas, strong role models, courageous leadership – all of the above?

Hilde Merete Aasheim is the first female CEO in Hydro's history. She says, "We see diversity as important and necessary for the development of our company, and we need to do more to increase gender balance and diversity."

In a recent Hydro Talks podcast, Hilde Vestheim Nordh, Executive Vice President for People & Safety in Hydro; Ingrid Guddal, Plant Manager of our primary aluminium plant in Karmøy, Norway; and Susanne Rothstein, Vice President of Finance, Hydro Building Systems, who is based in Toulouse, France, discuss the challenges and opportunities in fostering greater gender balance at work (and in the home).

Nordh is responsible for helping develop a new Diversity & Inclusion strategy. "It's proven that diversity gives better business results. The right competence should always be the most important, but it should be possible to attract highly qualified women at all levels of an organization. One way to do that is to ensure that there is always diversity in the final rounds of our recruitment process."

Guddal was educated at a technical university and holds an MBA. She has been plant manager since 2018, and shares what it's like to have a demanding position with a lot of responsibilities – in a working environment once dominated by men.

And Rothstein shares lessons from her professional career and how her part of the business is actually ahead of the curve when it comes to gender diversity: "As finance manager for Hydro Building Systems, I feel that I actually have really good opportunity to impact how we work with gender diversity."



## GOAL 6 ENSURE AVAILABILITY AND SUSTAINABLE MANAGEMENT OF WATER AND SANITATION FOR ALL



### TARGETS & INDICATORS

### Contributions of aluminium and the aluminium industry to the achievement of the Goal

- ✓ Aluminium salts are the coagulant of choice for **water purification** of both domestic and industrial-waste water, effectively removing bacteria and viruses as well as other harmful materials
- ✓ Some of the aluminium industry's facilities are used for the **desalination of water in the Arabian Gulf**, helping to provide the potable water requirements of the local populations
- ✓ The global mining industry has signed up to **minimum water reporting commitments**, ensuring transparency on its operations' interactions with water and the risks and associated responses to ensure good water stewardship

### Opportunities for industry to improve its impact on the achievement of the Goal

- ➔ The direct use of water in aluminium production processes means that **water management** is crucially important particularly in water-stressed regions

Aluminium's contribution to this goal is considered **moderate**. At a global level, aluminium salts used in water purification contribute to the achievement of Target 6.1 in increasing access to safe and affordable drinking water for all. At a local level, however, the industry's contribution could be considered high given the impact sites can have on water ecosystems and infrastructure in certain regions. There are programmes throughout the industry that seek to improve water quality by reducing pollution and minimising releases of untreated wastewater (Target 6.3). In addition, water is recognised by many aluminium companies as a key business risk and most have taken steps to improve water efficiency, particularly in water scarce areas (Target 6.4), and to protect or restore local water-related ecosystems (Target 6.6). These actions are typically part of integrated water resources management plans that consider water risks for the organisation, local communities and the environment (Target 6.5). Many aluminium companies also work closely with stakeholders to build capacity in water- and sanitation-related activities including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies (Target 6.a).

Below are some specific examples of contribution to this goal.

#### Global Example – Aluminium Salts for Water Purification

Aluminium salts are widely used as coagulants in water treatment. They display signifi-



cant removal or inactivation of viruses, and can be cost-effective for the removal of the toxic elements arsenic and fluorine<sup>1</sup>. Aluminium salts are also effective at removing natural organic material, which can act as a vehicle for transporting harmful substances such as toxic metals and organic pollutants. Removal of natural organic materials can prevent the reaction of these materials with chlorine and formation of potentially carcinogenic by-products.

<sup>1</sup> "Coagulation and Flocculation in Water and Wastewater Treatment", IWA 2016

### **Case Study - Water Footprint and Water Management**

Many primary aluminium production facilities rely on electricity generated by hydropower, which is considered to be the second largest water consuming sector after agriculture. Furthermore water is used directly in refineries, smelters and in ancillary services that support production. Recognising water is a valuable shared resource, aluminium producers put in place water management systems and actively seek to reduce water usage, particularly in regions where freshwater resources are scarce. As an example, Oman-based producer Sohar Aluminium reduced its well water extraction in 2020 by 43% despite increased metal production<sup>1</sup>. In Armenia, another region where water stress is rated as high, UC RUSAL's Armenal switched to a closed water circulation system, reducing its net water consumption by 90%<sup>2</sup>.

<sup>1</sup> "Towards a Resilient, Responsible and Reliable Future: Sustainability Report 2020", Sohar Aluminium 2021

<sup>2</sup> "Transforming the Vision: Sustainability Report 2020", UC RUSAL 2021

### **Global Example - Commitment to Water Reporting**

Mining facilities need water to sustain operations, and many will also need to manage substantial volumes of water outside of use due to the alteration of landforms and associated interaction with surface and ground water. Through the International Council on Mining and Metals (ICMM) the global mining industry, including several companies operating bauxite, has signed up to a set of minimum reporting commitments relating to its interactions with water at all sites and separately for operations in water-stressed areas. This reporting includes withdrawals, discharges and net consumption of water for use and other managed water purposes. The industry has also committed to report on the water risks and opportunities, and their commitment to respond to the identified risks<sup>1</sup>.

<sup>1</sup> "Water Reporting Good Practice Guide 2nd Edition", ICMM 2021

### **Case Study - Desalination and Purification of Water in the UAE**

Heat that is generated as a by-product at EGA's power plant in Jebel Ali, United Arab Emirates, is used to power a desalination plant that produces up to 136,000 cubic metres of water per day. As well as serving the needs of the company's operations, this plant contributes 1.5% of the potable water supply for Dubai<sup>1</sup>.

<sup>1</sup> EGA website <https://www.ega.ae/en/products/water>



## GOAL 7 ENSURE ACCESS TO AFFORD- ABLE, RELIABLE, SUSTAIN- ABLE AND MODERN ENERGY FOR ALL



### TARGETS & INDICATORS

## Contributions of aluminium and the aluminium industry to the achievement of the Goal

- ✓ Aluminium's properties make it **essential in renewable energy systems and energy storage**, including being the material of choice for electricity transmission lines, frames of solar photovoltaic panels, and tanks for hydrogen storage and transportation
- ✓ Large electricity consumers such as aluminium smelters have a role in **stabilising electricity supply networks** that are dependent on high levels of intermittent renewable energy generation
- ✓ Particularly in remote regions, industry develops **energy infrastructure** for the purpose of its operations and this infrastructure is often made available for use by the communities in the surrounding regions

## Opportunities for industry to improve its impact on the achievement of the Goal

- ➔ The energy intensity of primary aluminium production is high; there may be instances where competition for energy capacity is high and industry needs compete with those of other consumers; this underscores the need for **efficient demand management** to ensure grid efficiency and stability

Aluminium's contribution to this goal is considered **high**. The aluminium industry has always had a close link to energy systems development and as a major electricity consumer, could play an important role in stabilising modern electricity grids (Target 7.1) that have high variable renewable energy penetration. Additionally, aluminium is an important component in photovoltaic cells, energy storage and other clean energy technologies which will be increasingly needed as the global energy mix over the coming years changes (Target 7.2). Thermal energy and electricity inputs to the aluminium production process account for approximately 80% of the overall sector emissions and as such, many aluminium-producing companies have initiatives focused on clean energy research and technologies (Target 7.a) and are actively investing in clean energy infrastructure and technology with key partners across the globe (Target 7.b). The industry can also continue to contribute to global efforts on energy efficiency by ensuring its processes are as efficient as possible.

Below are some specific examples of contribution to this goal.



## Global Example – Aluminium in the Clean Energy Transition

With global efforts to reduce the use of fossil based energy and transition society towards lower carbon systems, increasing amounts of aluminium will be needed. Clean technologies are expected to be more metals intensive than fossil-based energy systems, and according to the International Energy Agency, aluminium is one of the critical minerals needed for the clean energy transition<sup>1</sup>. Aluminium has high importance for solar photovoltaic and concentrating solar power, and is also highly important for electricity networks, electric vehicles and battery storage. In solar panels in particular, aluminium is important as it is used for the frames which give structural rigidity, protect it from the weather and allow for easy installation. A 2021 report by the World Bank recently estimated that aluminium accounts for more than 85% of most solar PV components. It is also important to a lesser degree for wind, hydroelectric and bioenergy generation, and for storage and transport of hydrogen. Electricity networks are the backbone of the clean energy transition, and the total demand for aluminium in electricity grids is set to double in the next 20 years. Under the IEA's Two Degree Scenario through 2050, aluminium will be essential for solar voltaic energy generation, accounting for as much as 88% of the total mineral demand for this technology<sup>2</sup>.

IEA report “The Role of Critical Materials in Clean Energy Transitions” – need for Al in electricity grid additions and replacements, and most power generating technologies

### CRITICAL MINERAL NEEDS FOR CLEAN ENERGY TECHNOLOGY

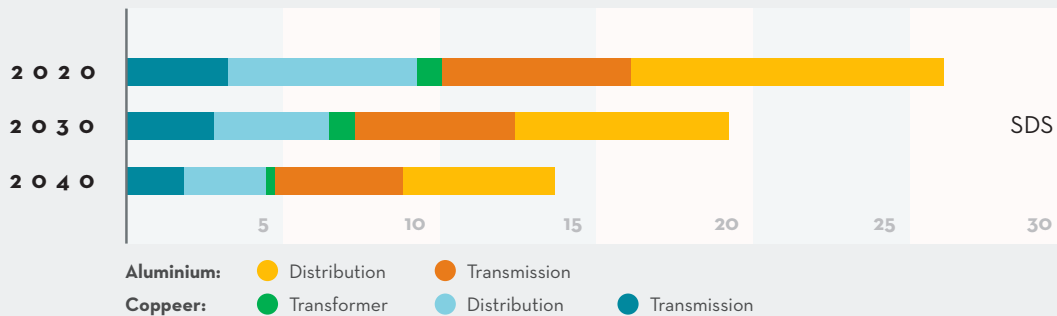
	copper	cobalt	nickel	lithium	REEs	chromium	zinc	PGMs	aluminium
Solar PV	●	●	●	●	●	●	●	●	●
Wind	●	●	●	●	●	●	●	●	●
Hydro	●	●	●	●	●	●	●	●	●
CSP	●	●	●	●	●	●	●	●	●
Bioenergy	●	●	●	●	●	●	●	●	●
Geothermal	●	●	●	●	●	●	●	●	●
Electricity networks	●	●	●	●	●	●	●	●	●
EV's and battery storage	●	●	●	●	●	●	●	●	●
Hydrogen	●	●	●	●	●	●	●	●	●

**Notes:** Shading indicates the relative importance of minerals for a particular clean energy technology ( high, ● moderate, low).  
CSP = concentrated solar power, PGM = platinum group metals.  
Aluminium demand is assessed for electricity networks only and is not included in the aggregate demand projections.

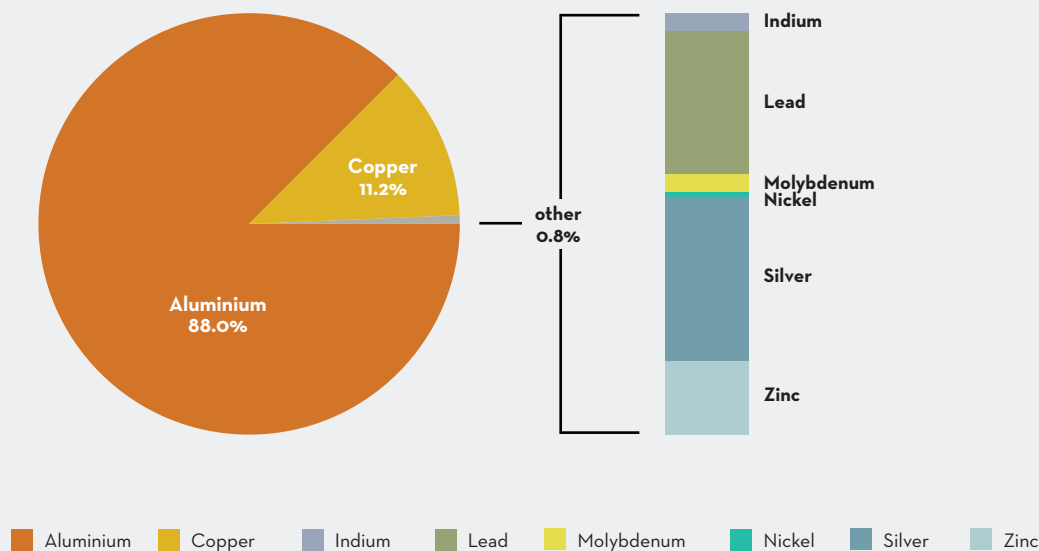
<sup>1</sup> “The Role of Critical World Energy Outlook Special Report Minerals in Clean Energy Transitions”, IEA 2021

<sup>2</sup> “Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition”, World Bank Group 2020



**ALUMINIUM FOR ELECTRICITY GRIDS BY SCENARIO**


World Bank report “Minerals for Climate Action” – need for Al in wind, nuclear and particularly solar power generation, and for energy storage

**SHARE OF MINERAL DEMAND FROM SOLAR PHOTOVOLTAIC  
UNDER THE IEA 2DS THROUGH 2050**


**Note:** 2DS = 2-degree scenario, IEA = International Energy Agency

**Case Study - Electricity Demand Management, Alcoa, worldwide**

Alcoa participates in electricity demand response initiatives at its smelters and refineries worldwide<sup>1</sup>. Demand response entails electricity customers adjusting their electrical load in response to the demand on the grid, making additional capacity available in times of peak demand. Adjustments are also made based on the variability in generation from intermittent sources, i.e. wind and solar power, to ensure the grid remains in balance. One good example of ongoing demand management is the Alcoa operations in Australia, where electricity demand is at its highest on the hottest days of the year, in response to which the company reduces its demand for electricity accordingly.

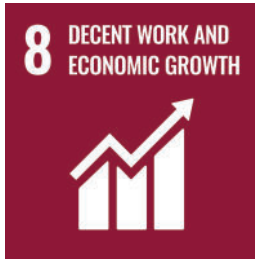
<sup>1</sup> “2020 Sustainability Report”, Alcoa 2021

### Case Study - Energy Generating Transport, Jamalco, Jamaica

In 2007, Jamalco Operations installed a sustainable solution to transport bauxite 3.4 km from the Mount Oliphant bauxite mine to a railway station, before the bauxite is railed to the Clarendon alumina refinery. This is done using a rope conveyor system which moves bauxite through mountainous terrain. In addition to transporting bauxite, the system generates approximately 1,200 kW of electricity per hour, which is used to power the mine and is also fed back into Jamaica's power network. The system has saved approximately \$1.5 million in energy costs in the first five years. The rope conveyor consists of a belt with corrugated side walls and integrated wheel sets running on fixed track ropes guided over 11 towers, driven by two AC induction motors. As the conveying system is loaded with bauxite and begins its descent, the drives begin operating in continuous braking (regeneration) mode, generating the electrical power. In addition to providing an alternative energy source, the system also minimises space requirements, is quiet, dust-free and has a small footprint, using less land than road transport. Switching to the rope conveyor system saves 1,200 truck journeys a day along with the associated greenhouse gas emissions, noise, and dust.



Figure. Jamalco Conveyor in Jamaica



## GOAL 8 PROMOTE SUSTAINED, INCLUSIVE AND SUSTAINABLE ECONOMIC GROWTH, FULL AND PRODUCTIVE EMPLOYMENT AND DECENT WORK FOR ALL

### TARGETS & INDICATORS

### Contributions of aluminium and the aluminium industry to the achievement of the Goal

- ✓ The global aluminium industry is responsible for the creation of approximately 7.5 million jobs worldwide, providing a **significant contribution to employment and economic growth** in developing and least developed as well as highly industrialised countries
- ✓ Aluminium producers are dedicated to creating employment opportunities through training and retraining (see SDG 4)
- ✓ The primary aluminium industry is committed to ensuring a **safe and healthy working environment** for its employees, and has funded collaborative research on health risks as well as projects to develop guidelines on good working practices
- ✓ Industry is developing an asset-level tool for enabling the evaluation of health risks to workers arising from climate change (see SDG 3)

Aluminium's contribution to this goal is considered **moderate**. At a local scale, however, the aluminium industry can be a major employer and so contribution in some jurisdictions may be high. The 7.5 million direct and indirect jobs the aluminium industry is responsible for globally provide decent work and many involve high value add, skilled work (Target 8.2). The industry also, through various corporate initiatives, promotes and supports development within its workforce, communities and surrounding areas with training programmes and activities that encourage progression, entrepreneurship, and innovation (Target 8.3). There is a strong safety culture across the aluminium industry and safe and secure working environments for all workers is recognised as a minimum requirement for operations in many corporate sustainability initiatives and industry guidance (Target 8.8). The industry persistently strives to be inclusive in its approach and should continue to promote productive employment and decent work for all.

Below are some specific examples of contribution to this goal.



#### Global Example - Direct and Indirect Employment

As of 2019, the upstream primary aluminium industry directly employs approximately 350,000 people, while the downstream industries such as rolling, extrusions, castings and recycling directly employ an estimated further 1.25 million workers. Based on estimated multiplier effects in regions around the world, the global aluminium industry indirectly contributes to the creation of a further 6 million jobs<sup>1</sup>. Furthermore producing aluminium products, sustaining employment and further indirect and induced impacts provide a substantial contribution to economic growth. As an example, the calculated economic impact of the aluminium industry in the United States of America in 2020 totalled US\$170 billion,

<sup>1</sup> "Employment in the Global Aluminium Industry, 2019", IAI 2021

with US\$15 billion being paid in direct federal, state and local taxes<sup>2</sup>. Similarly in the United Arab Emirates the total contribution to the GDP was estimated to be almost US\$5.5 billion<sup>3</sup>.

<sup>2</sup> "2020 Economic Impact of the Aluminum Industry", The Aluminum Association 2020

<sup>3</sup> "The Impact of the Aluminium Sector on the UAE Economy", Oxford Economics 2018

### Global Example - Industry Research and Guidance

The aluminium industry has commissioned research into the relationship between physical and chemical exposures and illness in the occupational setting. The industry has also developed guidelines for companies to incorporate programmes that minimise exposures and manage health and safety risks for employees<sup>1,2,3</sup>. As a result of these measures to protect workers, ambient chemical exposures are generally lower than they were historically and, as a result, the incidence of many occupational illnesses associated with the aluminium industry has declined substantially<sup>4</sup>. Similar reductions have been seen in the rates of lost time incidents, as a result of enhanced safety management programmes including the sharing of reports and learnings from accidents within industry<sup>5</sup>. In 2022, Alba celebrated 30 million working hours without a single Lost Time Injury<sup>6</sup>.

<sup>1</sup> "IAI 2020 - Guidelines for Developing Fatigue Risk Management (FRM) Systems", IAI 2020

<sup>2</sup> "Reference Practice for Respiratory Medical Evaluation & Surveillance in Aluminium Smelters", IAI 2021

<sup>3</sup> "Relating Ambient Heat to Heat-Related Illness", IAI 2021

<sup>4</sup> "Primary Aluminium Production and Health", Yale University 2013

<sup>5</sup> "IAI Safety Performance Benchmarking", IAI 2021

<sup>6</sup> "Alba sets unprecedented record of 30mIn safe working hours without LTI", Zawya 2022 <https://www.zawya.com/en/press-release/companies-news/alba-sets-unprecedented-record-of-30mIn-safe-working-hours-without-lti-nj24it79>

### Case Study - Innovative Training Approaches to Enhance Safety in High-Risk Tasks

Aluminium companies are using innovative training methods to help improve the safety of their employees. CBA has begun to use a virtual reality model to train its employees, for example, in fighting fire and in control of hazardous energy (lockout/tagout). This technology allows to role play real-life situations and better train workers, by stimulating learning, and boosting their confidence when carrying out the procedures. Similarly Alcoa has developed virtual reality training modules such as on safe electrical isolation<sup>1</sup>.



Firefighting training at CBA (Brazil - SP) and electrical isolation training at Alcoa (Australia - WA)

<sup>1</sup> "The (virtual) reality of safety", Alcoa 2019



## GOAL 9 BUILD RESILIENT INFRASTRUCTURE, PROMOTE INCLUSIVE AND SUSTAINABLE INDUSTRIALIZATION AND FOSTER INNOVATION

### TARGETS & INDICATORS

### Contributions of aluminium and the aluminium industry to the achievement of the Goal

- ✓ Aluminium plays a crucial role in clean energy infrastructure, being widely used in applications such as solar cells, wind turbines, concentrated solar power, electricity networks, and electric vehicles and battery storage (see SDG 7)
- ✓ The properties of aluminium make it ideal for many transport infrastructure applications, such as bridges, street furniture and mobility hubs, enabling sustainable transport connectivity around the world
- ✓ Providing material for transport infrastructure:
  - Material of choice for construction of airports' infrastructure, mobility hubs, etc
  - Local road connectivity, railways, port infrastructure
- ✓ The aluminium industry also contributes to workforce and community resiliency and sustainability - (see SDG 3, SDG 8, SDG 10)

Aluminium's contribution to this goal is considered **moderate**. Aluminium is used to develop quality, sustainable and resilient infrastructure which supports mobility, communication and economic development (Target 9.1). As an industry, there is a history of upgrading infrastructure and retrofitting technologies to ensure processes are increasingly sustainable, efficient and environmentally sound (Target 9.4). The industry supports these upgrades and developments by fostering scientific research and financing both in-house research centres as well as collaborative research and development projects with universities and institutes (Target 9.5). The aluminium industry is a good example in many parts of the world of an industry which has enabled industrial diversification and value addition to commodities (Target 9.b).

Below are some specific examples of contribution to this goal.



### Global Example – Bridge Construction

Many infrastructure projects such as bridges around the world incorporate aluminium for its light weight, corrosion resistance and durability. Integrating aluminium into both new and existing bridge components such as decks and superstructure can increase the load-bearing capacity by reducing the weight of the bridge construction itself<sup>1</sup>. Manufacture and even assembly of bridge components off-site, together with the light weight of aluminium, allows the construction of bridges where there are time or access constraints<sup>2</sup>. The durability, aesthetic appeal and recyclability of aluminium also make it ideal for street furniture applications such as street lighting, road signs and sound barriers.

1 AAC website <https://aluminium.ca/en/aluminium/infrastructure-and-bridges>

2 “Aluminium Solutions in Transport Infrastructure”, Russian Aluminium Association 2021

### Global Example – Electricity Infrastructure

Aluminium wiring is widely used for electricity transmission and distribution lines due to its corrosion resistance and high conductivity-to-weight ratio. Being three times lighter than copper, aluminium wiring provides twice the conductivity per unit mass compared to copper wiring, and is commonly used for overhead lines<sup>1</sup>. To meet the need for grid expansion under the Sustainable Development Scenario, IEA expects aluminium demand for electricity grids to double in the next 20 years<sup>2</sup>. Another added benefit is aluminium's excellent recyclability properties: overhead lines, underground cables and transformers in electricity grids usually have a lifetime of around 40-60 years; after this period, the displaced grid assets can be either recycled or reused in a semi-fabricated form.

1 The Aluminum Association website <https://www.aluminum.org/electrical>

2 “The Role of Critical World Energy Outlook Special Report Minerals in Clean Energy Transitions”, IEA 2021

### Global Example – Transport Infrastructure

The use of aluminium is integral to the construction of energy efficient and aesthetic railway station buildings, such as Newport Station, Wales<sup>1, 2</sup>. The lightness of aluminium means the buildings require minimal support structures, and enable the conception of bright and airy spaces to the benefit of passengers, while allowing the incorporation of energy efficiency into the design.

1 ArchDaily website <https://www.archdaily.com/111704/newport-station-grimshaw>

2 Inhabit website <https://inhabitat.com/spiraling-superfuturistic-newport-station-in-wales-connects-two-sides-of-the-city/>

### Global Example - Aluminium Industry Investment in R&D and Innovation

The aluminium industry is committed to improving its sustainability profile through research and innovation. Aluminium Corporation of China (Chalco) has established an entire network of R&D institutions under its Zhengzhou Light Metals Institute, including national technology and engineering centres, post-doctoral research bases, and specialised research institutes and laboratories<sup>1, 2</sup>. Alcoa has a global Center of Excellence in Quebec, Canada, tasked with delivering breakthrough smelting technologies. Hindalco employs over 200 dedicated R&D staff at two certified R&D centres, in-plant laboratories and a global network of technology centres<sup>3</sup>. Rio Tinto's Arvida Research and Development Centre (ARDC) has been at the forefront of research into aluminium production technology and products for over 70 years.

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- 1 Chalco website <http://www.chalco.com.cn/en/kjcxen/kyjgen/>
  - 2 Zhengzhou Light Alloy Institute website <https://en.almgcu.cn/>
  - 3 "Research and Development Centres", Hindalco 2022

### Case Study - Industrial Diversification in the Arabian Gulf Region

The Gulf Cooperation Council (GCC) countries have long had a strong dependence on oil and gas exports, presenting a long-term economic concern. Burgeoning aluminium production in the region – with operations in five of the six GCC member countries – is a key industry in the region's strategic diversification pillar of sustainable economic policy, particularly given the aluminium companies' global rather than regional outlook<sup>1</sup>.<sup>2</sup> Production of metal has been steadily increasing, reaching 5.9 million tonnes in 2021<sup>3</sup>, supporting local employment and increasing the share of non-hydrocarbon revenues to GDP.

- 
- 1 "Arabian Gulf Steps Up Resources Usage in Driving Economic Diversification", The National News 2013
  - 2 "Global Business Reports - Industry Explorations", GCC Aluminium 2016
  - 3 IAI website <https://international-aluminium.org/statistics/primary-aluminium-production/>



## GOAL 10

### REDUCE INEQUALITY WITHIN AND AMONG COUNTRIES



#### TARGETS & INDICATORS

### Contributions of aluminium and the aluminium industry to the achievement of the Goal

- ✓ The operations of primary aluminium companies in least developed and developing countries bring much-needed investment into deprived regions, and can generate significant social and economic development in some of the poorest areas
- ✓ Bauxite mines owned and operated by indigenous peoples provide economic and social benefits and opportunities
- ✓ Bauxite mining companies are committed to transparency particularly in the area of revenues from mineral resources via involvement in the Extractive Industries Transparency Initiative

Aluminium's contribution to this goal is considered **low**. The industry has some contribution to empowering and promoting the social and economic inclusion of all through its participatory processes and diversity, and inclusion policies and initiatives at a corporate level (Target 10.2, Target 10.3). At a global level, however, the aluminium industry is limited in its influence on progressing income growth of certain populations (Target 10.1) or facilitating orderly migration (Target 10.7). It also has limited contribution to enhancing representation of developing countries voices (Target 10.6) and improving regulation and monitoring of financial markets (Target 10.5), but can arguably have some impact to the achievement of these through corporate actions such as ensuring decision-making within its own entities is representative. This is particularly the case where the industry operates in developing countries, and through the provision of data or information to global financial markets and institutions to support informed regulation and policymaking.

Below are some specific examples of contribution to this goal.

#### **Global Example - Commitment to Transparency on Mineral Revenues**

Bauxite mining companies have many operations in least developed and developing countries. Several of these bauxite mining companies are members of the International Council on Mining and Metals (ICMM), one requirement of which is the implementation of Mining Principles on ethical business, sound governance and transparency. In addition to adherence to these Mining Principles, the ICMM members have separately committed to align with the Extractive Industries Transparency Initiative (EITI)<sup>1</sup>, specifically around the disclosure of revenues from mineral resources<sup>2</sup>.

<sup>1</sup> EITI website <https://eiti.org/>

<sup>2</sup> "Transparency of Mineral Revenues Position Statement", ICMM 2021



### Case Study – Alcoa, Juruti, Brazil

Alcoa's bauxite mining project in the Juruti region of Brazil has been recognised as a sustainability benchmark by generating social and economic effects in the local community. The Juruti region is home to 47,000 people, with the economy being traditionally based on fishing, cattle-raising and agriculture. The average per capita income is US\$23 per month, and the population has an illiteracy rate of 21%. Alcoa sought to deepen its understanding of potential impacts of the Juruti project, resulting in a creation of multi-stakeholder council, the Sustainable Juruti Council, serving as a channel for dialogue between civil society, the company and the public authorities. The Council contains eight sustainability-related working groups: environment, health, education, security, infrastructure, culture & tourism, economy & labour & rural development, and citizenship. Throughout the years, Alcoa have led multiple sustainable infrastructure initiatives that would directly benefit the local community:

- Construction of the Juruti Community Hospital and the construction, refurbishment, or expansion of other health facilities throughout the region. Prior to this, many people in Juruti had to travel by boat for up to 12 hours to medical attention.
- Construction of 16 classrooms in eight municipal schools and an elementary school in the district.
- Construction of a legal complex, including the municipality's first courthouse, and associated offices.
- Creation of three deep water wells to provide fresh, clean water to city residents.
- The New Business Training Programme, in partnership with the Juruti Trade and Business Association and the Supplier Development Programme of the State of Para Federation of Industries.
- Establishment of a Juruti Cultural Centre.

As a result, from 2009 to 2017, after Alcoa's investments in partnership with the government and stakeholders, the enrolment in middle school increased by more than 400 %, and the Human Development Index (HDI) jumped from 0.39 to 0.59. This has also had influence towards employment and economic growth, with the number of formal jobs rising from 185 to 4,948, thus reducing the inequalities within Juruti<sup>1</sup>.

<sup>1</sup> "Alcoa's Juruti Mining Project Seeking to Set Sustainability Benchmark", World Resources Institute

### Case Study – Indigenous-Owned and Operated Mine, Gulkula Mining, Australia

Established and operated with support from Rio Tinto<sup>1</sup>, Gulkula Mining Company is Australia's first Indigenous-owned and operated bauxite mine<sup>2</sup>. Located in East Arnhem Land, Northern Territory, the mine is situated on the traditional land of the Yolnu people. More an instrument of social change than a mining operation, Gulkula employs local Yolnu people, often with no formal qualifications, and trains them to operate machinery, undertake maintenance activities, and assist in environmental management practices. The lack of English language, literacy, numeracy, and digital (LLND) skills among Yolnu employees were a significant factor that limited their ability to access other potential learning opportunities and career advancements. Gulkula has therefore established an LLND programme to help its Indigenous staff expand their learning potential, and to observe a trend towards community empowerment such that Yolnu Traditional Owners have a deeper understanding of all matters and can provide independent, informed opinions to aid decision-making regarding management of East Arnhem Land. The LLND

<sup>1</sup> Aluminium Insider website <https://aluminiuminsider.com/aboriginal-owned-bauxite-operation-supported-rio-tinto-opens-australias-north-coast/>

<sup>2</sup> "Sustainable Bauxite Mining Guidelines", IAI 2022

initiative will form the basis of the broader programme to upskill the Gulkula workforce and will allow employees to graduate into the RTO or Driving School. Also, as Indigenous literacy and other skills increase, it is then anticipated that the RTO and Driving School will lose dependency on the LLND programme and thereafter function as independent domains that can sustain Yolnu education and employment in the future<sup>3</sup>.



Figure. A team member undergoing language, literacy, numeracy and digital (LLND) skills training.

<sup>3</sup> "Gulkula - The Indigenous Mine Pioneering Sustainability in the Aluminium Supply Chain", ASI 2021



## GOAL 11 MAKE CITIES AND HUMAN SETTLEMENTS INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE



### TARGETS & INDICATORS

## Contributions of aluminium and the aluminium industry to the achievement of the Goal

- ✓ Aluminium has many qualities that make it ideal for applications within architecture and the built environment, particularly its durability and recyclability which can give rise to **resilient and sustainable buildings**
- ✓ The transition to green mobility, and the associated reduction in atmospheric pollution in urban environments, relies on aluminium which has the properties to serve structural and safety functions whilst enabling **lightweighting**
- ✓ Aluminium is considered essential for the generation and distribution of renewable energy, and for energy storage (see SDG 7)

Aluminium's contribution to this goal is considered **moderate**. Aluminium's properties make it a material of choice for many aspects in the built environment and it contributes to providing adequate, safe and affordable housing and basic services through its use in building and construction (Target 11.1) and sustainable transport systems (Target 11.2). As an industry, it also contributes to Target 11.4 with many companies committed to protecting and safeguarding cultural and natural heritage in close proximity to the areas within which they operate. At a local level, many companies have operations in developing countries and through financial and technical assistance, support the construction of sustainable and resilient buildings utilising local materials for local communities (Target 11.c). The industry has less of a contribution to planning targets and disaster mitigation efforts related to this goal (Target 11.a, Target 11.3, Target 11.5) as these tend to be managed at a local or national government level.

Below are some specific examples of contribution to this goal.

### Global Example - Durable, Energy Efficient and Sustainable Buildings

Aluminium architecture should be considered to be very durable and have a very long life expectancy, with external components such as windows expected to last at least 80 years and perhaps over 120 years, with no practical limit on the life expectancy of internal features<sup>1</sup>. Aluminium also has an important role in improving existing building performance, and reducing the demolition of buildings, via its use in over-cladding, reglazing and

<sup>1</sup> "Towards Sustainable Cities: Aluminium and Durability", IAI 2015

retrofitting. The use of aluminium for solar shading contributes to the energy efficiency of modern buildings. Furthermore aluminium's high value and almost infinite recyclability means that it is routinely recovered and recycled following demolition or disassembly<sup>2</sup>.

2 "Towards Sustainable Cities: Aluminium Recyclability and Recycling", IAI 2015

### Global Example - Lightweighting for Green Mobility

The specific weight of aluminium is approximately one third that of iron and copper, and therefore provides a large potential for increased sustainability by allowing significant weight reductions in transport applications:

- Modern buses with aluminium bodies are several hundred kilograms lighter than those built using conventional methods of construction. This increases the number of people that can be transported for a given maximum permitted weight and reduces running costs, the benefits of which are reaped to the full given the large distances buses travel and the frequent stops and starts they make at bus stops<sup>1</sup>.
- Transportation is still responsible for 24% of direct CO<sub>2</sub> emissions from fuel combustion, and three quarters of this is from road vehicles<sup>2</sup>. Aluminium offers substantial reduction in vehicle weight, with 1 kg of aluminium replacing up to 2 kg of steel and cast iron in many application areas. A lower vehicle weight leads to less fuel consumption and thus less pollution emitted to the atmosphere<sup>3</sup>. Each kilogram of aluminium replacing steel or iron in automotive applications saves up to 20 kg of greenhouse gas emissions over the life of the vehicle<sup>4</sup>.
- For electric vehicles (EV), aluminium is one of the key materials adopted by manufacturers to help reduce the weight of a vehicle. Lightweighting provides the potential to increase the driving range from the battery pack, or maintain the driving range with less (i.e. smaller and lighter) battery capacity<sup>5</sup>.

1 IAI website <https://transport.world-aluminium.org/modes/buses/>

2 "Tracking Transport 2020", IEA 2020

3 IAI website <https://transport.world-aluminium.org/modes/automotive/>

4 "Analysis of Greenhouse Gas Emissions Related to Aluminium Transport Applications", The International Journal of Life Cycle Assessment, 2009

5 "Electric Vehicles to Drive Metals Demand Higher", ING Think 2021

### Sustainable Aluminium Solutions in CBA, Brazil

Working on the development of solutions in automatic structural components in partnership with customers, in a pioneering way in Brazil, CBA developed a solution in aluminium door protection bars to increase vehicle safety. High strength extruded aluminium provides strategic geometric flexibility and eliminates the high investments required in steel stamping tools, reducing, and even eliminating additional process steps. In simulations performed, the aluminium door protection bar was able to achieve a rigidity superior comparing to that of steel. This change in material, besides financial gains, brings improvements to sustainability, as the lower the weight of the vehicle, the less fuel it uses and, therefore, there is a reduction in carbon emissions.



## GOAL 12

# ENSURE SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS

### TARGETS & INDICATORS

## Contributions of aluminium and the aluminium industry to the achievement of the Goal

- ✓ The Aluminium Stewardship Initiative provides certification using an international standard encompassing priority issues for the sector related to environmental, social and governance performance at individual entities and across the aluminium value chain
- ✓ The aluminium industry has a long history of transparent reporting of sustainability data, and regularly publishes its Life Cycle Inventory and Impact Assessment to inform policy, material and design choices as well as provide a foundation to support broader sustainability efforts
- ✓ The recyclability of aluminium reduces demand for alternative raw materials, and leads to massive savings in the emissions of greenhouse gases
- ✓ Increased use of aluminium packaging for preserving food and beverages can increase shelf life in storage and transport, and can dramatically reduce food wastage while avoiding significant increases in packaging waste by means of its recyclability
- ✓ Use of certain by-products from primary aluminium production in cement manufacturing avoids the generation of waste material and reduces the consumption of natural resources (see SDG 17)

Aluminium's contribution to this goal is considered **high**. The aluminium industry seeks to contribute to the sustainable management and efficient use of natural resources (Target 12.2) through a variety of means including the establishment of sustainable management guidelines for key issues, the implementation of sustainable solutions at sites, as well as the development of a certification scheme (ASI) which fosters responsible production, sourcing and stewardship of aluminium. The industry has made significant efforts to ensure its production processes are environmentally sound with the integration of environmental management systems for chemicals and wastes (Target 12.4), and continues to strive for ways to reduce releases to air, water and soil to minimise any adverse impacts on human health and the environment. Many producers are guided by the waste mitigation hierarchy in their efforts to reduce, recycle and reuse waste (Target 12.5) with a number actively pursuing opportunities to utilise waste such as spent pot lining and bauxite residue in other industries. Aluminium's use in packaging also contributes to the waste reduction in other industries, notably food waste, offering a significant contribution to Target 12.3 to reduce global food waste and losses. As sustainable production and consumption concepts have matured across the industry over the past decade, there is increasing integration of sustainability information into corporate reporting cycles (Target 12.6) with a number of organisations now integrating ESG information into annual reporting and



investor briefings. Additionally, the industry has in recent years adopted an increasingly transparent approach to sustainability and many companies take an active role in raising awareness of sustainable production and development (Target 12.8) so that all stakeholders are able to make informed choices.

Below are some specific examples of contribution to this goal.

### **Global Example - Aluminium Stewardship Initiative Certification**

The Aluminium Stewardship Initiative (ASI) is a non-profit, multi-stakeholder organisation which exists to administer an independent third-party certification programme for the aluminium value chain. The ASI Performance Standard aims to support responsible and sustainable supply chains throughout the aluminium industry. Key aspects include providing a common standard on environmental, social and governance performance, establishing requirements that can be independently audited, and serving as a reference for the establishment and improvement of responsible production, sourcing and material stewardship initiatives in metals supply chains<sup>1</sup>.

<sup>1</sup> "ASI Performance Standard", ASI 2017

### **Global Example - International Aluminium Institute Collection and Publication of Life Cycle and Environmental Metrics**

LCA provides a systematic framework to compile and evaluate the inputs, outputs and potential environmental impacts of a product throughout its life cycle, and can be used to inform policy, material and design choices as well as provide a foundation to support broader sustainability efforts. IAI has been collecting energy and other relevant data for over 40 years, and in 1998 initiated the collection of full global industry data for use in LCAs in recognition of the importance of robust and up-to-date information on key stages in the product system.

### **Global Example - Reducing Food Waste Through Use of Aluminium Packaging**

According to the UN Food and Agriculture Organization, 1.3 billion tonnes of food – equivalent to one-third of food produced for human consumption – is wasted globally each year<sup>1</sup>. A significant amount of food loss can be avoided by the increased use of adequate packaging, contrary to conventional wisdom that 'packaging should be reduced as much as possible'<sup>2</sup>. Furthermore food waste has at least ten times the environmental impact of packaging waste; investment in the right food packaging can lead to major environmental savings through reducing food waste and extending product shelf life. Aluminium is highly suitable for food packaging due to its strength, barrier properties and ability to withstand extremes of heat and cold, and furthermore it is readily and infinitely recyclable, which means the production of unsustainable volumes of waste may be avoided.

<sup>1</sup> FAO website <https://www.fao.org/food-loss-and-food-waste/flw-data>

<sup>2</sup> "More Is Less - Better Protection Saves Resources", EAFA



### Global Example - Recycling of Aluminium

Aluminium is infinitely recyclable without any loss of its inherent properties, which benefits present and future generations by conserving energy and other natural resources. In 2019, 75% of all aluminium ever produced was still in productive use<sup>1</sup>:

- 1.5 billion tonnes produced since 1888
- 1.1 billion tonnes still in productive use, of which:
  - 750 million tonnes in first life
  - 370 million tonnes recycled and reused

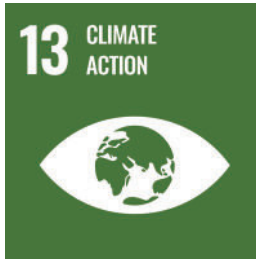
Global aluminium recycling rates are high, with 20 million tonnes of post-consumer scrap intake in 2019, and the average recycling rate of aluminium beverage containers around 70%<sup>2</sup>. Recycled production has now exceeded one-third of total production, and is projected to pass 50% within the next 25 years. Aluminium recycling requires up to 95% less energy to recycle aluminium than to produce primary metal and thereby avoids corresponding emissions, including saving over 100 million tonnes of CO<sub>2</sub> annually<sup>3</sup>.

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- 1 "IAI Material Flow Model - 2021 Update", IAI 2021  
 2 IAI website <https://recycling.world-aluminium.org/home/>  
 3 "Aluminium Recycling", IAI

### Case study - Emissions Management and Air Quality

The aluminium industry strives for continuous improvement in its performance on air emissions. One example of the achievement of emission reductions is Alba, Bahrain, which has reported progressive decreases in emission intensities of particulates, VOC, PFCs, SO<sub>2</sub> and NO<sub>x</sub> in the period from 2017 to 2020<sup>1, 2, 3</sup>. This includes a reduction in the emissions intensity of NO<sub>x</sub> from 12.7 to around 5 kg/tonne aluminium in this three year period, and of PFCs from 289 kg/tonne aluminium in 2018 to 118 kg/tonne aluminium in 2020

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- 1 "Alba Sustainability Report 2018", Alba 2018  
 2 "Towards a Sustainable Future: 2019 Sustainability Report", Alba 2019  
 3 "2020 Sustainability Report", Alba 2020



## GOAL 13

# TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS

### TARGETS & INDICATORS

*For Goal 13, the industry recognises the significant impact of emissions from its processes on climate change and as such, analysis of the opportunities to improve on this in achievement of the Goal are explored in the first instance.*

## Opportunities for industry to improve its impact on the achievement of the Goal

- ➔ The aluminium industry contributes approximately 1.1 billion tonnes of CO<sub>2e</sub> to global emissions, which is approximately 2% of total anthropogenic emissions, and the industry is taking active steps towards reducing emissions across all parts of its production processes
- ➔ The IAI has identified three pathways to reducing greenhouse gases from the aluminium sector: (1) Electricity decarbonisation; (2) Direct process emissions reduction and (3) Increased recycling and resource efficiency; aluminium producers are taking action across all three pathways
- ➔ Recycling aluminium brings significant emissions savings, requiring up to 95% less energy than production from ore, therefore industry continues to seek ways to increase collection

## Contributions of aluminium and the aluminium industry to the achievement of the Goal

- ✔ The use of aluminium in the lightweighting of vehicles provides significant savings in CO<sub>2</sub> emissions from the transportation sector
- ✔ Aluminium has a key role to play in low carbon energy solutions, where it is widely used in clean technologies and renewable energy infrastructure, especially solar panels, energy storage and electrical cabling (see SDG 7)
- ✔ In addition to mitigation efforts, the aluminium industry is also assessing possible adaptation measures that might be needed in a changing climate for example through evaluating the health risks from climate change to local communities and workforces at sites around the world (see SDG 3)

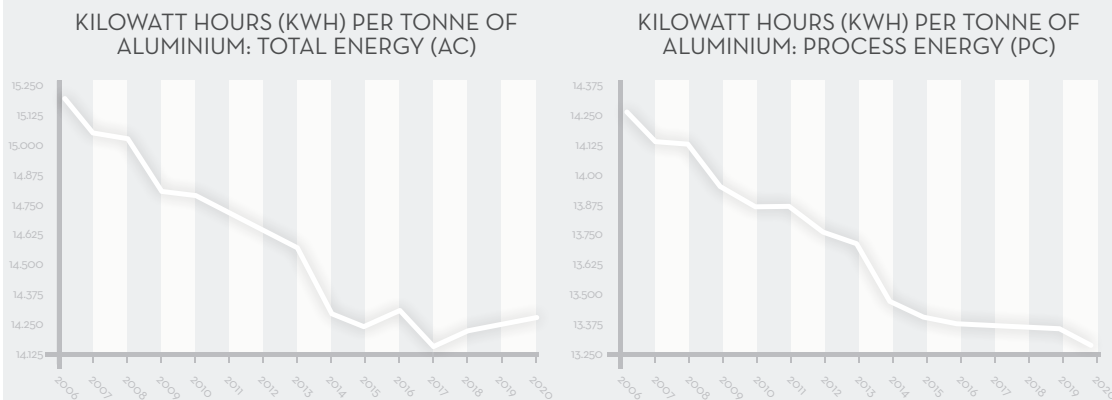


Aluminium's contribution to this goal is considered **high**. The aluminium sector emits approximately 2% of total annual greenhouse gas emissions which contribute to climate change. There are sector-specific technology pathways that have been identified, along with numerous corporate roadmaps which integrate climate change measures into long term strategies and planning (Target 13.2). The industry is actively investing in research and technology and building capacity on climate change mitigation, adaptation, and impact reduction solutions (Target 13.3) from increasing use of renewable electricity sources to working with consumers to find emissions savings through increased use of recycled material. The use of aluminium in other sectors also contributes to emissions reductions efforts (e.g. transport) and so aluminium's contributions towards this goal extend beyond the sector itself. The industry is also increasingly working with stakeholders to strengthen resilience and adaptive capacity to climate-related hazards (e.g. extreme heat) and natural disasters (e.g. floods) in countries of operation (Target 13.1). These adaptation efforts will need to continue alongside efforts for deep emissions reduction across the sector (an estimated 80% to 95% reduction is needed) to align with the goals of the Paris agreement.

Below are some specific examples of contribution to this goal.

### Global Example - Industry: Energy efficiency

Aluminium production is an energy intensive process. Recognising that reduced energy usage, results in reduced emissions, the industry has made a concerted effort to improve its energy efficiency through process improvement and upgrades to technology. Since 2006, the total electricity intensity (AC) per tonne of aluminium has decreased from 15,206 kWh/tonne to 14,280 kWh/tonne. The direct electricity intensity (DC) per tonne of aluminium has also decreased from 14,286 kWh/tonne to 13,283 kWh/tonne<sup>1</sup>.



<sup>1</sup> "Aluminium Sector Greenhouse Gas Pathways to 2050", IAI 2021

### Global Example - Industry: Action Across the Supply Chain

Around the world, the aluminium industry is investing in projects, new technologies and building critical partnerships that are playing a key role in reducing emissions that contribute to climate change. In all regions, aluminium producers are pursuing innovative solutions that will reduce their environmental impact and enable continued production of a metal vital to low carbon solutions. Aligned with the IAI's three GHG pathways, we have seen increasing renewable energy integration, movement from coal-fired production to hydropower in China; the creation of smelters as virtual batteries; the use of alternative energy sources, such as hydrogen and recycled steam; the use of lighter vehicles for transporting goods; and ideas for taking the recycling agenda further. A variety of different technologies will be needed to cater to different operations across the globe<sup>1</sup>. In addition, to support this work, the IAI is working with the [Mission Possible Partnership](#) to develop a [Sector Transition Strategy](#) that considers technical and economic feasibility, value chain collaboration as well as necessary financial and policy support.



<sup>1</sup> "Aluminium Sector Greenhouse Gas Pathways to 2050", IAI 2021

### Global Example – Reduction in Emissions by Use of Recycled Material

Three-quarters (75%) of the 1.5 billion tonnes of aluminium ever produced is still in use today and available for recycling and reuse in the future. Recycling aluminium can reduce the need for primary aluminium and bring significant emissions savings. Recycling aluminium requires up to 95% less energy than production from ore, therefore recycling one tonne of aluminium saves over 16 tonnes of greenhouse gas emissions, globally<sup>1</sup>. The global collection rate of aluminium across all segments is over 70%, with some applications in some regions at near 100%<sup>2</sup>. The industry continues to look at ways it can increase collection rates to near 100% through technology and policy levers that would allow for better collection, sorting and processing. Increasing collection rates to near 100% as well as other resource efficiency progress by 2050 would reduce the need for primary aluminium and could reduce the sector's emissions by 300 million tonnes of CO<sub>2e</sub> per year. The availability of post-consumer end-of-life scrap for recycling is projected to more than triple by 2050, whilst pre-consumer (industrial) scrap will almost double<sup>3</sup>.

<sup>1</sup> "Aluminium Recycling", IAI

<sup>2</sup> Alucycle website <https://alucycle.international-aluminium.org/public-access/>

<sup>3</sup> "IAI Material Flow Model - 2021 Update", IAI 2021

### Global Example – Aluminium: Lightweighting of Vehicles

Approximately 26% of aluminium semi-fabricated products are used in the transportation sector. Aluminium benefits from a high strength to weight ratio making it ideal to use in vehicles where it can replace heavier materials. 1 kg of aluminium replacing heavier materials in a car saves 20 kg CO<sub>2</sub> over the vehicle's life. A new survey in 2020 by DuckerFrontier highlighted the expected growth of 12% from 2020 to 2026 in aluminium content in North American light vehicles up to 233 kg per vehicle. Increasing use of aluminium to lighten vehicle components and help automakers meet fuel efficiency standards has seen increased use of aluminium in vehicle closure parts, body-in-white and chassis applications<sup>1</sup>. There is also expected to be a growing role for aluminium with increasing battery electric vehicles (BEV). By reducing the weight of vehicle components, aluminium can offset the increased weight from new features and heavy batteries. A full-aluminium EV emits 1.5 tonnes less in greenhouse gas emissions over its complete life cycle (including production, driving use and recycling) compared to a full-steel EV<sup>2</sup>.

<sup>1</sup> "2020 North America Light Vehicle Aluminum Content and Outlook", DuckerFrontier 2020

<sup>2</sup> "Electric Vehicles to Drive Metals Demand Higher", ING Think 2021

### Case Study – Investment in Decarbonisation Technologies for Alumina Refineries

Alumina producers are continually seeking to reduce carbon emissions via the use of cleaner technologies at their refineries. One key approach is replacement of boilers: In March 2020, CBA's alumina refinery in Brazil started operation of a new boiler system fuelled by wood-chip biomass, replacing natural gas- and oil-fired boilers. This significantly lowered CO<sub>2e</sub> emissions compared to 2019 (from 0.55 to 0.31 tCO<sub>2</sub>/t aluminium oxide), and was largely responsible for the 43% reduction in alumina refinery emissions<sup>1</sup>. Also in Brazil, Hydro commissioned an electric boiler for its Alunorte alumina plant, saving around 100,000 tonnes of CO<sub>2</sub> emissions per year<sup>2</sup>. Rio Tinto and Sumitomo are exploring the potential construction of a hydrogen pilot plant and use of hydrogen at a refinery in Gladstone, Australia<sup>3</sup>. Alcoa is researching novel technologies to design a new generation of refineries, including mechanical vapour recompression (MVR) and potentially electric calcination<sup>4,5</sup>.



- 1 CBA website <https://appsiterelatorioanual2020prd.azurewebsites.net/environmental/?lang=en>
- 2 "Alunorte Alumina Plant Fires Up First Electric Boiler", Hydro 2022
- 3 "Rio Tinto and Sumitomo to Assess Hydrogen Pilot Plant at Gladstone's Yarwun Alumina Refinery", Rio Tinto 2021
- 4 "Alcoa to Design an Alumina Refinery of the Future", Alcoa 2021
- 5 "Alcoa Explores Technology to Reduce Carbon Emissions", Alcoa 2021



## GOAL 14 CONSERVE AND SUSTAINABLY USE THE OCEANS, SEAS AND MARINE RESOURCES FOR SUSTAINABLE DEVELOPMENT



🔗 TARGETS & INDICATORS

### Contributions of aluminium and the aluminium industry to the achievement of the Goal

- ✓ The high recycling rate of aluminium packaging reduces the amount of unrecyclable waste globally, and displaces the use of materials with a negative impact on the world's oceans, e.g. less plastic pollution
- ✓ The aluminium industry is responsible for local marine life conservation programmes, in particular the **protection of critically endangered hawksbill** turtles in the Arabian Gulf

### Opportunities for industry to improve its impact on the achievement of the Goal

- ➔ It has been found that **bulk cargoes of bauxite can liquefy** during maritime transport which can affect the stability of vessels
- ➔ There are instances in coastal locations where the industry has **deposited wastes into seas or estuaries**, potentially having an impact on the local marine environment

Aluminium's contribution to this goal is considered **low**. Many targets related to this goal (Target 14.4, Target 14.6, Target 14.7) relate to fishing practices, fisheries management and marine resources management. The aluminium industry typically has little involvement with such issues and as such its contribution is minimal to fishing-related global goals. There are some examples, however, where corporations may support local communities in developing fishing skills and small scale, artisanal fisheries. Through these initiatives, education on sustainable fishing practices can be shared and contribute to Target 14.b. The industry also has contributions to Target 14.1 and Target 14.2 through its efforts to reduce marine pollution from its own processes. Aluminium is also a highly recyclable material and where it is used instead of other materials, e.g. plastics, aluminium recycling efforts can in turn reduce plastic pollution in marine environments. The industry should continue to monitor discharges, consider aquatic ecosystems and take actions to prevent adverse impacts to ensure it continues to contribute to the achievement of this goal.

Below are some specific examples of contribution to this goal.

### Global Example - Displacement of Unrecycled Consumer Materials

Around the world, one million plastic drinking bottles are purchased every minute, and many end up in landfill or the natural environment. Indeed drinks bottles and caps are among the most common plastic waste found in the environment. 8 million tonnes of plastic ends up in the world's oceans every year<sup>1</sup>. Aluminium beverage cans are the most recycled drinks package in the world – with an average recycling rate of 72%, compared to polyethylene terephthalate (PET) at 33% and glass at 40%. Over 2.5 million tonnes of post-consumer aluminium beverage packaging scrap is collected and recycled from five major global regions every year<sup>2</sup>.

<sup>1</sup> “Our Planet Is Drowning in Plastic Pollution - It's Time for Change”, UNEP

<sup>2</sup> “IAI 2022 - A Circularity Case for Aluminium Compared With Glass and Plastic”, IAI 2022

### Global Example - Disposal of Waste Products at Sea

There are instances in coastal locations where the industry has deposited wastes into the marine environment or estuaries under controlled conditions and in line with applicable laws. Such waste products include materials such as spent pot lining, and leachates from wastes including bauxite residue. Increasingly the industry is moving towards alternative forms of waste disposal, exploring innovative approaches in line the waste mitigation hierarchy. Continuing to review waste management practices and adopting novel approaches to waste either through minimisation or utilisation opportunities will ensure that the industry can contribute to conserving the marine environment in and around its operations.

### Case Study - Liquefaction of Bulk Cargoes of Bauxite

Many millions of tonnes of bauxite are transported annually by sea. Following the sinking of a bulk cargo vessel in 2015, the International Maritime Organization (IMO) has identified the possible risk of “dynamic separation” of bauxite cargoes when excess moisture is present<sup>1</sup>. This is when a liquid slurry is formed on the surface of the cargo, which can affect the stability of the vessel and increase the risk of capsizing. To address this potential risk, the global bauxite industry formed a Global Bauxite Working Group to undertake research and ensure safe shipping in conjunction with IMO<sup>2</sup>. A new cargo schedule has been developed for bauxite fines that might liquefy, and compliance became mandatory in 2021<sup>3</sup>. Research is ongoing with testing on the characteristics and behaviours of press filtered bauxite residues from around the world to classify into the appropriate schedules, and regular review of good practice is important to minimise maritime impacts.

<sup>1</sup> “Carriage Of Bauxite Which May Liquefy”, IMO 2017

<sup>2</sup> “The Global Bauxite Working Group Final Report and Peer Review Letter”, IMO 2017

<sup>3</sup> “Resolution MSC.462(101) Amendments to the International Maritime Solid Bulk Cargoes (IMS-BC) Code”, IMO 2019



### Case Study - Conservation of Critically Endangered Turtles

In 2011 the critically endangered hawksbill turtle was discovered on the beach adjoining Emirates Global Aluminium's facility in the United Arab Emirates. Since then, the company has maintained a conservation programme to protect the turtles' nesting sites, including setting up access restrictions, daily inspections of the beach, and removal of waste and marine debris from the beach and surrounding seas by company employees. Sick turtles or hatchlings are rescued by the company and released back into the sea following rehabilitation by the Dubai Turtle Rehabilitation Project. Since 2011, the company has monitored the hatching of almost 7,000 baby turtles from around 100 nests on its beach<sup>1, 2</sup>.

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1 EGA website <https://www.ega.ae/en/media-releases/2014/june/ega-celebrates-world-environment-day-with-rare-turtles-returning-to-nest-at-the-taweelah-site>

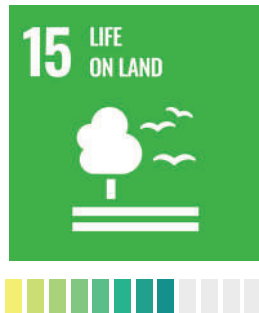
2 EGA website <https://www.ega.ae/en/media-releases/2021/august/turtle-hatching>

### Case Study - High-Performing Aluminium Components for Offshore Fish Farming

Aluminium has been used to replace steel in the floating ring around the top of fish farm nets. Since aluminium does not rust, this new technology requires little maintenance and eliminates associated water-pollution. Aluminium also has a third of the weight of steel, making it highly cost-efficient and practical for floating applications in offshore fish farming<sup>1</sup>.

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1 FACE website <https://face-aluminium.com/resources/aluminium-coming-soon-to-a-fish-farm-near-you/>



## GOAL 15 PROTECT, RESTORE AND PROMOTE SUSTAINABLE USE OF TERRESTRIAL ECOSYSTEMS, SUSTAINABLY MANAGE FOR- ESTS, COMBAT DESERTIFICATION, AND HALT AND REVERSE LAND DEGRADATION AND HALT BIODIVERSITY LOSS

### 🔗 TARGETS & INDICATORS

## Contributions of aluminium and the aluminium industry to the achievement of the Goal

- ✓ Aluminium's ability to be recycled means its use can reduce unrecyclable waste globally, and divert products away from landfill (see SDG 14)

## Opportunities for industry to improve its impact on the achievement of the Goal

- ➔ As bauxite is commonly found in (sub-)tropical areas, its mining often has an **impact on biodiversity** in the immediate area of the mine, however industry works within guidelines to minimise the broader impact and protect habitats of high conservation value
- ➔ Due to the need for clearance of vegetation from the mined land, and the removal of large volumes from the ground, bauxite mines do cause disturbance to the landscape, therefore the **rehabilitation of the landscape** is critical, particularly in forested and wetland areas

Globally, aluminium's contribution to this goal is moderate. In some regions, however, particularly in those with significant bauxite mining, the contribution may be high. Many corporations have taken steps to conserve, restore and sustainably manage freshwater ecosystems, forests and wetlands as part of their biodiversity action plans (Target 15.1, Target 15.2, Target 15.9). Remediation and rehabilitation efforts related to both bauxite mining and bauxite residue storage areas also contribute to Target 15.3 and Target 15.4 where the restoration of degraded land and soil can re-establish natural habitats and prevent further biodiversity loss. As climate change and related biodiversity impacts have become an increasingly important issue for the sector, corporations have invested significant financial resources to finding ways to conserve and sustainably use biodiversity and ecosystems in and around their operations (Target 15.a).

Below are some specific examples of contribution to this goal.

### Case Study - Creation of an Oasis in the Desert at Alba Smelter, Bahrain

Alba has set aside an area at its smelter in the Kingdom of Bahrain as a green space, named the e Her Royal Highness (HRH) Princess Sabeeka Oasis<sup>1</sup>. Industrial waste water from cooling moulds in the casthouse is treated and used to maintain two large lakes and for irrigation purposes. The oasis, with its lakes and over 7,600 trees and shrubs,

<sup>1</sup> "Towards a Sustainable Future: 2019 Sustainability Report", Alba 2019



provides a habitat for wildlife including many kinds of fish and migratory birds that feed on them. There is also a two-hectare vegetable garden containing many vegetables and local fruit trees, sustained by traditional Bahraini methods of irrigation.

### **Case Study - Industry Activities to Minimise Biodiversity Loss**

Bauxite is commonly found in tropical and sub-tropical regions, therefore mines are often found in areas with high biodiversity, and overlap or border areas of high conservation value. Sustainable mines have a biodiversity management plan, and understand the potential effects on sensitive habitats and organisms. Surveys of flora and fauna are conducted to identify rare or endangered species, and native vegetation is left as nature corridors and seed sources. Buffer areas are used to minimise the impact on areas of particularly high conservation value, and dust and noise are controlled at source when sensitive organisms might be affected<sup>1</sup>.

<sup>1</sup> "Sustainable Bauxite Mining Guidelines", IAI 2018

### **Case Study - Rehabilitation of Rainforest**

Mineração Rio do Norte has the mining rights to 25,000 hectares of Amazonian rainforest in Trombetas, Brazil. In preparation for mining all the vegetation has to be cleared, however the topsoil containing seeds and fertile organic matter is retained. The restoration of mined areas then begins as soon as the bauxite has been removed, with the reuse of the seed-bearing soil and the planting of native seedlings. As the reforested areas recover, they are also repopulated with other endemic rainforest species such as orchids that have been rescued. Beehives have also been introduced to help the forest regenerate and provide an income for surrounding communities. Over 7,000 hectares have been rehabilitated in this way, and the older areas are approaching the appearance of their original state<sup>1</sup>.

<sup>1</sup> Mineração Rio do Norte website <https://www.mrn.com.br/index.php/en/sustainability/socioenvironmental-conditions/reclamation-of-mined-out-areas-2>

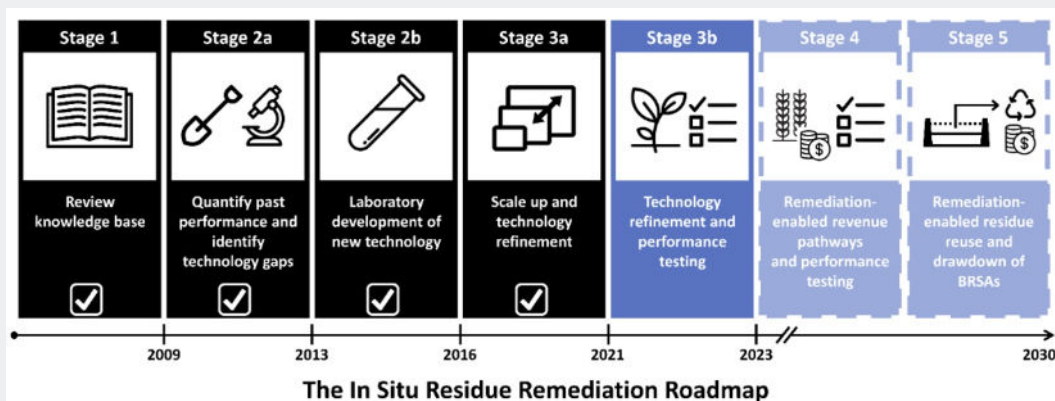
### **Case Study - Relinquishment of mines to State Government, Alcoa, Western Australia**

In the eucalypt (jarrah and marri) forests of south-western Western Australia, Alcoa developed "completion criteria" for the rehabilitation of closed bauxite mine sites. These mines are in an area of high biodiversity and with a high value placed on the ecosystem, and the company therefore needs to achieve compositional criteria approximate to unmined sites, and to demonstrate processes of self-perpetuation of the restored forests. Between 2005 and 2007, Alcoa handed back 1,355 hectares of the decommissioned Jarrahdale mine site and received Certificates of Acceptance from the Western Australia State Government<sup>1</sup>.

<sup>1</sup> "Sustainable Bauxite Mining Guidelines", IAI 2022

### Case Study - IAI and Australian Research Council (ARC) Linkage Project for In Situ Remediation

The mining of bauxite creates a twofold environmental footprint, where the extraction occurs and where the waste product from refining is stored. To minimise this environmental footprint, often mines have bauxite residue back-filled into the mine, although this back-filled material has experienced a degradation due to processing. Addressing the restoration of the land by reversing degradation, this project is piloting a revegetation strategy to create a viable soil utilising natural processes alone.



### Case Study - Constructed Wetlands for Treating Bauxite Residue Leachate

The IAI has funded two projects related to wetlands and bauxite residue leachate. The first focused on the use of constructed wetlands for treating bauxite residue alkaline leachate (also a link to Goal 14) and second led to the installation of a constructed wetland at UC RUSAL's Aughinish refinery. This pilot scale technology demonstration is essential for the industry to learn more on this emerging technology and represents current good practice for the industry's approach to minimising impacts associated with bauxite residue management residue rehabilitation.

### Case Study - Protecting and Developing Biodiversity

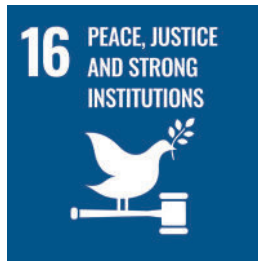
Many bauxite mining companies are working to minimise impacts and preserve biodiversity in their areas of influence, with a focus on recognising and managing environmental impacts from operations and returning the areas in the same or in a better state than before mining. One example is CBA in Brazil, which has implemented biodiversity management plans and developed a partnership with the Federal University of Viçosa for research and development; more than of 84 papers have been published as part of the partnership to date, including 16 in scientific journals. As part of its biodiversity conservation initiatives, CBA owns the 32,000-hectare Legado Verdes do Cerrado ("Cerrado Green Legacy") reserve in Goiás, and is a co-founder of the 31,000-hectare Legado das Águas ("Water Legacy") reserve in São Paulo. Another company undertaking actions to achieve the ambitions of its biodiversity policy is Hindalco<sup>1</sup>. The company's Baphlimali mines

<sup>1</sup> "Sustainable Bauxite Mining Guidelines", IAI 2022

in Odisha, India, were identified as one of several priority sites for managing biodiversity, and activities are ongoing to increase native vegetative cover in backfilled mines, develop wetland areas in mined out areas, create green belts and enhance habitats for wildlife. To ensure longer-term biodiversity benefits, the company has established community and livelihood programmes to engage and increase awareness in local populations.



Coffee plantation in recovery area at Mirai unit (left) and Atlantic Forest at Legacy of Waters (right)



## GOAL 16 PROMOTE PEACEFUL AND INCLUSIVE SOCIETIES FOR SUSTAINABLE DEVELOPMENT, PROVIDE ACCESS TO JUSTICE FOR ALL AND BUILD EFFECTIVE, ACCOUNTABLE AND INCLUSIVE INSTITUTIONS AT ALL LEVELS

### TARGETS & INDICATORS

### Contributions of aluminium and the aluminium industry to the achievement of the Goal

- ✓ The aluminium industry can have a key role to promoting peaceful and inclusive sustainable development especially when sites are located in remote regions or have significant influence within the areas in which they operate
- ✓ A multi-stakeholder approach to decision making with the balanced involvement of Civil Society and industry actors, including the participation of indigenous peoples, is a core component of the Aluminium Stewardship Initiative
- ✓ IAI member companies provide awareness-raising and financial support to organisations that work to prevent domestic violence and accompany victims
- ✓ rates through technology and policy levers

### Opportunities for industry to improve its impact on the achievement of the Goal

- ➔ Since bauxite is generally extracted by open cast mining, it requires huge tracts of land, and this has sometimes resulted in the **resettlement of habitations** and the violation of ancestral land rights, therefore engagement with the affected communities is critical

Aluminium's contribution to this goal is considered **moderate**. Many of the targets associated with this goal are related to corporate governance, and the aluminium industry has an important role to play in areas where it is a major industry or an influential stakeholder particularly in remote regions. Corporations have governance structures in place which contribute to reducing corruption and bribery (Target 16.5), developing effective, accountable and transparent processes (Target 16.6) and ensuring public access to information through regulatory disclosures, annual reports and information sessions for local communities and other stakeholders (Target 16.10). Non-discriminatory policies along with policies related to inclusive, participatory and representative decision-making are also in place across the industry, contributing to Target 16.7 and Target 16.b. Where these policies are implemented in interactions with local communities, customers, suppliers and other stakeholders, the industry can contribute to the achievement of this goal beyond its own operations.

Below are some specific examples of contribution to this goal.

### Global Example – Industry Guidance and Good Practice

The IAI works closely with its members and other stakeholders to establish industry guidance and good practice across various areas including environmental and social impacts as well as governance<sup>1, 2, 3</sup>. These guidance documents promote, amongst other things, good governance across the industry by recommending transparent approaches and engagement with key stakeholders including local communities. As a minimum, compliance with local and national regulations is also expected but good practice often goes beyond compliance. For example, disclosure of key decision-making processes or hosting public information forums can enable more inclusive participation which is essential for peaceful, just and strong institutions.

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- 1 “Sustainable Bauxite Mining Guidelines”, IAI 2018
  - 2 “Maximising the Use of Bauxite Residue in Cement”, IAI 2020
  - 3 “Sustainable Spent Pot Lining Management Guidance”, IAI 2020

### Global example – Aluminium Stewardship Initiative

The Aluminium Stewardship Initiative was established in 2015, bringing together producers, users and stakeholders in the aluminium value chain to maximise the contribution of aluminium to a sustainable society<sup>1, 2</sup>. Working collaboratively, responsible production, sourcing and stewardship of aluminium is at the heart of the initiative. ASI has a multi-stakeholder approach with a balance of Civil Society actors and industry actors as part of the decision-making process. It also encourages and supports the participation of indigenous peoples through its Indigenous Peoples Advisory Forum. The forum has provided opportunities for Indigenous groups to engage with mining companies and other Indigenous groups around the world to have open dialogues about local experiences and situations. The IPAF is not a separate body but is embedded in ASI's Constitution with resources allocated for activities, including translation, technical support and participation in the ASI's key decision making processes within its Standards Committee and ASI Board<sup>3</sup>.

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- 1 “ASI Chain of Custody (CoC) Standard”, ASI 2017
  - 2 “ASI Performance Standard”, ASI 2017
  - 3 “Indigenous Peoples Advisory Forum”, ASI 2021

### Case Study – Rio Tinto Fight Against Domestic and Family Violence

Care is one of Rio Tinto's core values, which translates into prioritising the physical and emotional safety and wellbeing of employees, contractors, their families and community members. Rio Tinto is taking action by contributing a total of CAD \$355,000 to 14 organisations that provide shelters, counselling, education and training, workshops and activities for women, children and the LGBTQQIP2SAA community. Rio Tinto will also organise activities for its employees to raise their awareness of the various facets of domestic violence. They will get the opportunity to hear testimonies from survivors, talk with representatives from local organisations and learn how to recognise the signs of violence so that they can better help those around them.

### Case Study - Land Owned by Indigenous or Customary Landholders

Bauxite has been mined on aboriginal-owned land in Australia for many years, and many are still seeking redress for historical land seizures and damage. In Guinea, the mining of bauxite is rapidly expanding in areas occupied by communities with ancestral customary land rights, and Guinean families frequently do not receive adequate compensation to re-establish the subsistence agriculture on which they are dependent<sup>1</sup>. The global primary aluminium industry has established guidelines which highlight the need to understand the role, customs and decision-making practices of Indigenous Peoples impacted by mines, and to consult with indigenous communities prior to commencement of mining or mine construction<sup>2</sup>.

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1 "Aluminum: The Car Industry's Blind Spot", Human Rights Watch 2021

2 "Sustainable Bauxite Mining Guidelines", IAI 2018

### Case Study - Votorantim Programme for Childhood and Adolescence in CBA, Brazil

The programme combats violations of children and adolescent rights by working to strengthen the Social Protection Network and the Children and Adolescent Rights Advocacy System. The project works closely with the Municipal Council for the Rights of Children and Adolescents, the Social Services Center and the Child Protection Service. During 2020 the programme played a crucial role in protecting the rights of children and adolescents while sheltering in place because of the COVID pandemic.





## GOAL 17 STRENGTHEN THE MEANS OF IMPLEMENTATION AND REVITALIZE THE GLOBAL PARTNERSHIP FOR SUSTAINABLE DEVELOPMENT

### TARGETS & INDICATORS

### Contributions of aluminium and the aluminium industry to the achievement of the Goal

- ✓ The aluminium industry has come together to promote multilateralism and global dialogue on a range of cross-cutting issues throughout the value chain at global, regional, national and local level over the last 50 years
- ✓ The aluminium industry is keen to further develop partnerships with other sectors and stakeholders to find mutually beneficial areas of cooperation and to improve contributions to several of the Goals

Aluminium's contribution to this goal is considered **moderate**. Aluminium is used to develop quality, sustainable and resilient infrastructure which supports mobility, communication and economic development (Target 9.1). As an industry, there is a history of upgrading infrastructure and retrofitting technologies to ensure processes are increasingly sustainable, efficient and environmentally sound (Target 9.4). The industry supports these upgrades and developments by fostering scientific research and financing both in-house research centres as well as collaborative research and development projects with universities and institutes (Target 9.5). The aluminium industry is a good example in many parts of the world of an industry which has enabled industrial diversification and value addition to commodities (Target 9.b).

Below are some specific examples of contribution to this goal.

#### Global Example – International Aluminium Institute, Partnerships and Collaboration

The International Aluminium Institute was founded in 1972 and it brings together members from across the global value chain. Data was one of primary drivers behind the formation of the IAI and remains a critical component in the organisation's mandate. Collecting, monitoring and disseminating industry data, expertise and knowledge has led to strong partnerships across the aluminium sector and beyond. Currently the IAI has 25 member companies and over 30 official collaborators who operate at global, regional, national and local level.

## Global Example – Aluminium Refinery and Smelter Partnerships with the Cement Industry

The aluminium industry is calling for closer collaboration with the cement industry, for mutual sustainability performance towards multiple Goals<sup>1</sup>. The reuse of the main by-product from alumina refining, bauxite residue, as a feedstock in cement can keep substantial amounts of material out of landfill, can reduce the need for natural resources in cement production, and can significantly reduce the CO<sub>2</sub> emissions in cement production – by almost 125 kg CO<sub>2</sub>-e/tonne of cement<sup>2</sup>. The replacement of coal fuel with spent pot lining (SPL) from the aluminium smelting process can also bring benefits to cement clinker production, with significant energy and CO<sub>2</sub> savings and reductions in the emissions of NO<sub>x</sub> and SO<sub>x</sub>, while also minimising the use of natural raw materials and diverting by-products from disposal<sup>3</sup>. A GBP1.3 million research project has been approved in the UK to maximise the economics and resource efficiencies of both industries for the benefit of environment and society<sup>4</sup>.

- 1 “Vedanta Invites Partnership from Cement Companies for By-Products”, India Times 2021
- 2 “Maximising the Use of Bauxite Residue in Cement”, IAI 2020
- 3 “Sustainable Spent Pot Lining Management Guidance”, IAI 2020
- 4 “The Key Aims of New Foundation Industries Projects”, UKRI 2021

## Case Study – European Union Funded Consortia Research Project on Removing Waste from Alumina Production

In collaboration with 26 partners worldwide, practitioners, academics and regulators alike have participated in the RemovAL project to reduce waste from the production of alumina<sup>1</sup>, 2. There are four key principles underpinning the project:

1. Treat waste with waste
2. Recover valuable critical metals
3. Develop marketable products
4. Customise the solution to the industrial ecosystem of each alumina plant

### Facts & figures



#### H2020

RemovAL is a European Commission funded Innovation Action, under EASME, answering to the call on Raw materials Innovation actions H2020-SC5-2017-TwoStage



#### 48 months duration

RemovAL kicked off its activities on May 2018 and is expected to be completed in 2022



#### 11 mil.

RemovAL has been granted a total budget of 11,481,599.13 euros



#### 26 partners

The RemovAL consortium is comprised by large production industries, SMEs, academic and research institutions and industrial associations



#### 6 pilot plants

Combined they will form a network of technological nodes, enabling optimum processing flow sheets 2 for valorising the produced bauxite residue



#### 1 demo house

Built exclusively with bauxite residue building products

- 1 “Horizon 2020 Fact Sheet” – European Commission 2021
- 2 RemovAL website <https://www.removal-project.com/>



### Case Study - European Pact for Sustainable Industry

The European aluminium industry, represented by European Aluminium, has committed to the targets of the European Pact for Sustainable Industry. This initiative aims to ensure the sustainability of European industries by facilitating sector- and cross-sectoral collaborations, and by measuring and ensuring progress against the SDGs across the European Union using tools such as the Sustainable Industry Barometer<sup>1</sup>.

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<sup>1</sup> CSR Europe website <https://www.csreurope.org/our-campaign>

### Case Study - Sustainable Procurement Programmes

Supplier relations are key to building engagement across the value chain on sustainable production of aluminium and raising awareness about the role that the supply chain can play in sustainability. Many companies have implemented sustainable procurement programmes, as a way to demonstrate that they are delivering against sustainability commitments through the materials and services they purchase, and to highlight important issues besides pricing, quality and lead times. Environmental, social and governance considerations are included in supplier assessments, including aspects with the potential to generate significant impacts on the environment and local communities (such as biodiversity, water and waste), safety performance, supplier engagement around carbon footprint and climate change, and the level of ethics and transparency that suppliers demonstrate in doing business. Examples are Alcoa's Supplier Standards<sup>1</sup>, the Sustainable Procurement Policy adopted by CBA<sup>2</sup>, and Rio Tinto's START programme which employs blockchain technology to enable provenance tracking<sup>3</sup>.

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<sup>1</sup> "Supplier Standards", Alcoa 2020

<sup>2</sup> "Sustainable Procurement Policy", CBA 2021

<sup>3</sup> "How do you make a nutrition label for aluminium", Rio Tinto 2022

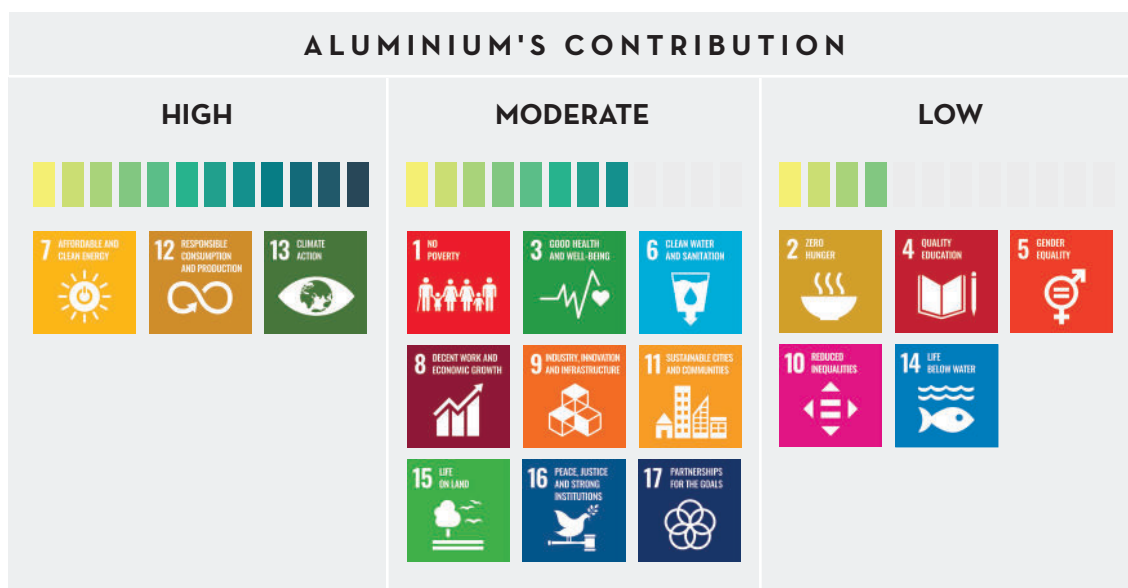
# CONCLUSIONS

Sustainable development and ESG issues are at the forefront of the metals and mining industry at present. With the UN's Sustainable Development Goals as a framework, the aluminium industry, through the International Aluminium Institute, has evaluated its contribution across a comprehensive and holistic suite of global goals and targets. This analysis is intended to inform the industry's understanding of its current status and to encourage dialogue about measures that can be taken to accelerate action and progress over the coming decade.

The Goals are an urgent call for action across a range of issues and they inherently recognise the interlinked nature of sustainable development. It is clear that environmental action must go hand-in-hand with approaches that tackle social inequalities and incentivise economic growth. Indeed, there are many examples where the aluminium industry's contribution impacts multiple goals or are closely linked.

One of the key challenges in this analysis has been the evaluation of contribution at the global or sector level. The goals were developed to focus national efforts and in some cases, application at the sector or corporate level has not been straightforward. For some goals, particularly where contribution is notable at a global scale, there is sufficient data or information to quantify and clearly define the contribution. For other goals, particularly those where the impact is on a regional or local scale, it is more challenging to evaluate a global or sector level contribution. In such instances, case studies or local scale impacts have been included to demonstrate these are still areas where the industry or aluminium contributes to sustainable development.

This analysis has demonstrated that aluminium has contributions across all 17 UN SDGs. There are however some areas where the industry contributes more to some goals than others. These areas can be broadly split into three groups:



The industry recognises that contributing to sustainable development requires both responsibility in producing the metal and realisation of the metal's benefits through use in sustainable applications and recycling. It also requires continued and combined effort from a variety of stakeholders. With this in mind, and to build on this work, the IAI will continue to seek ongoing, open dialogue with stakeholders engaged in activities across the goals. This will assist the industry in better understanding where it can increase its contribution as well as find new ways to measure, monitor and track contribution towards the UN SDGs.

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