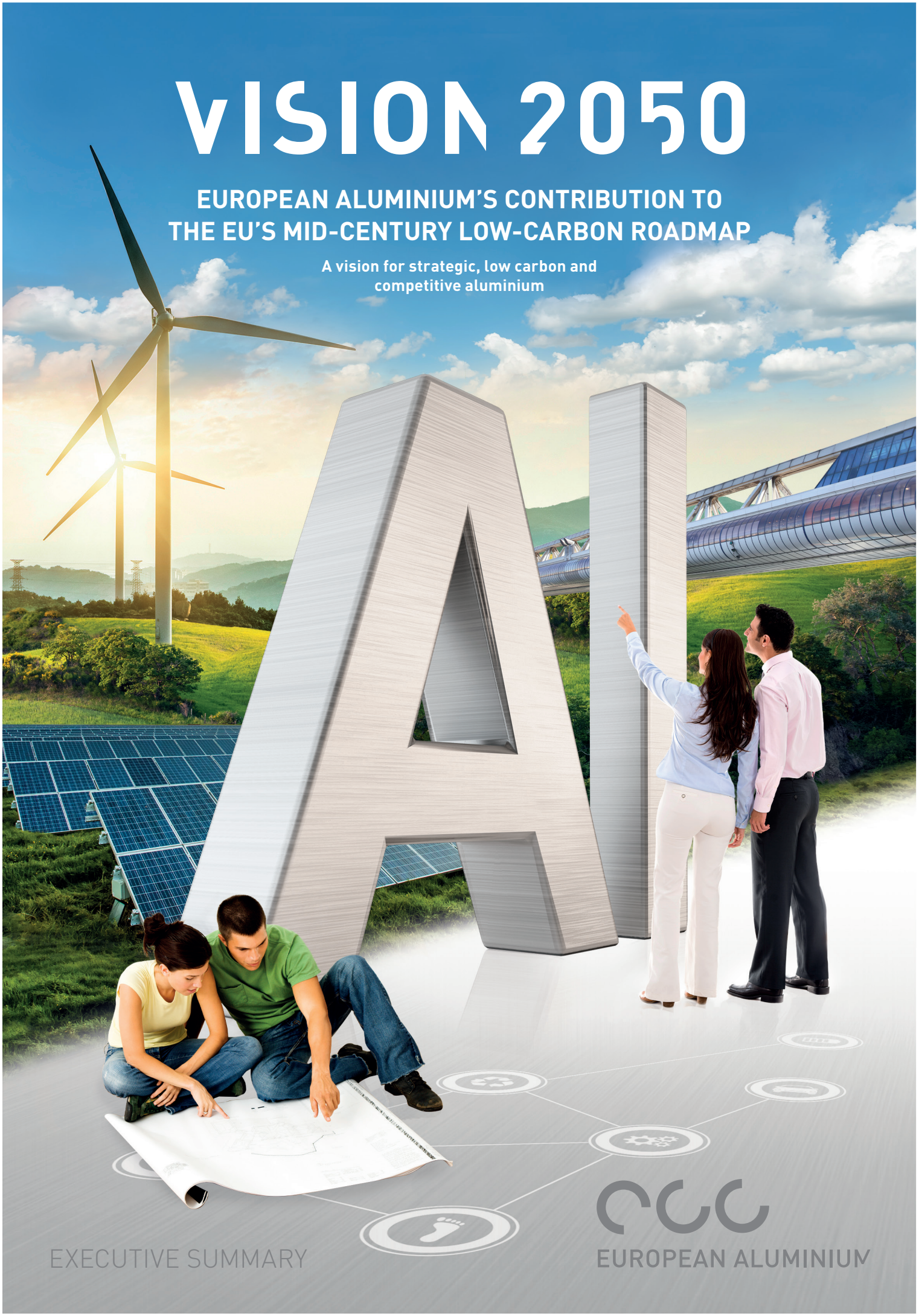
VISION 2050

EUROPEAN ALUMINIUM'S CONTRIBUTION TO THE EU'S MID-CENTURY LOW-CARBON ROADMAP

A vision for strategic, low carbon and competitive aluminium



EXECUTIVE SUMMARY

EUROPEAN ALUMINIUM

Executive summary

Introduction

Today, the European Union is well advanced in reaching its objective of cutting its domestic GHG emissions by at least 40 percent by 2030 from 1990 levels. This is in line with the EU objective to reduce its emissions by 80-95 percent by 2050 compared to 1990. With its recent publication on the EU mid-century strategy the European Commission opened a thorough debate to ensure that the EU's climate policy is in line with the goals of the Paris Agreement, while aligning action in key areas such as industrial policy, finance, or research.

Vision 2050 is European Aluminium's contribution to the debate, setting out different scenarios how the sector can contribute to the EU mid-century strategy and outlines the conditions necessary for the sector to realise its full potential for decarbonisation.

The aluminium industry has a long-standing commitment to sustainability and fighting climate change. Since 1990, European primary aluminium production has delivered a massive 55 percent reduction in direct CO_2 emissions per tonne. The sector is committed to contributing to the achievement of the Paris Agreement goals of delivering emission reductions while creating jobs, growth and inclusiveness. Today, the carbon footprint of European domestic primary aluminium production is one of the lowest in the world, around three times lower than the global average.

Global demand for primary aluminium is expected to remain strong in Europe and worldwide by 2050, growing by a further 50 percent by 2050 and reaching 107.8 million tonnes. Europe will need around 9 million tonnes of primary aluminium each year. The main drivers of this growth will be increasing demand in applications where aluminium's unique properties make it the material of choice - mobility (up 55 percent), building and construction (up 28 percent) and packaging (up 25 percent).

The sector also understands that the circular economy plays a vital role in achieving the goals of the Paris Climate Agreement. To achieve the objectives of the Paris Agreement, improving energy efficiency of production processes won't be enough. Developing circularity of materials already in use could reduce emissions further.

The adoption of new, circular business models based on material recycling and improved efficiency will bring benefits and give the sector a competitive edge.

Increasing the amount of recycled aluminium, rather than importing more primary aluminium from third countries, will reduce GHG emissions between 2020-2050 by 880 to 1 500 million tonnes of CO_2 equivalent emissions (i.e. 29 - 51 million tonnes of CO_2 equivalent per year).

For the primary aluminium industry to achieve the envisaged emission reductions, incremental improvements in energy efficiency will not be enough but will require breakthrough innovations. The direct carbon emissions from the production of primary aluminium can be drastically reduced through new technological options for the smelting process. However, to develop this technology at a commercial scale, does not only require important investments from industry but also political support, a predictable policy framework and focused funding opportunities. Keeping primary aluminium production in Europe and ensure that it significantly reduces its carbon emissions is a major element to ensure that aluminium can contribute its share to fight climate change.

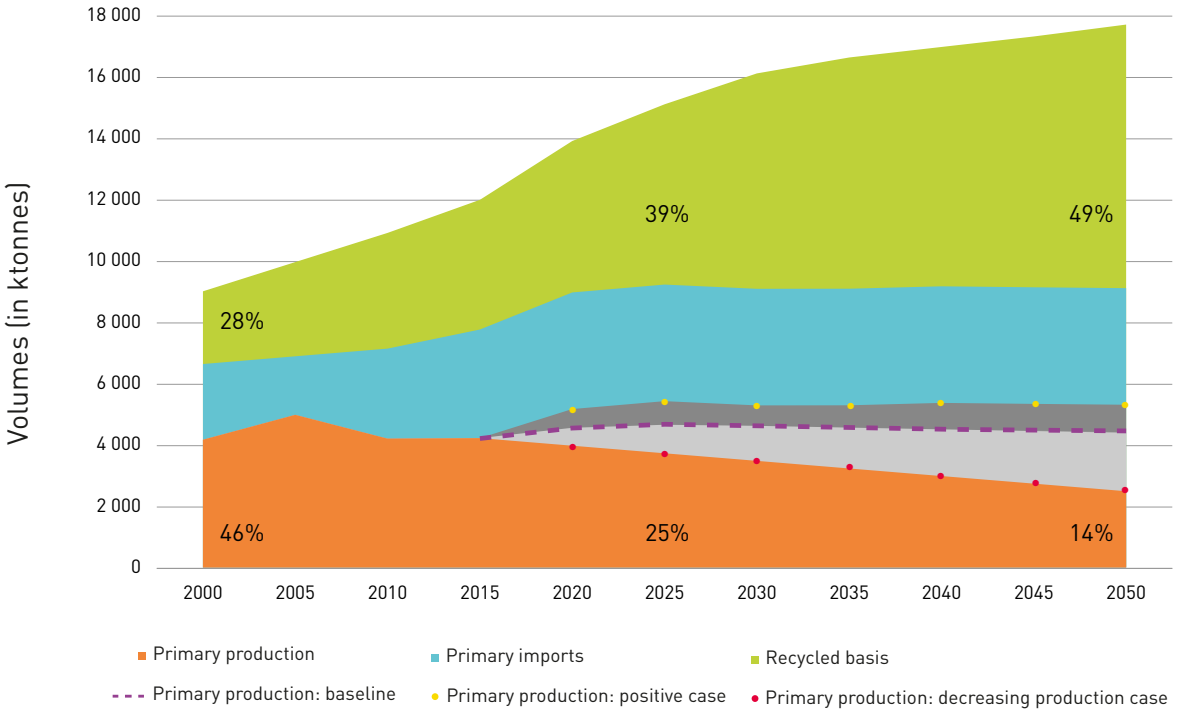
Potential scenarios for primary production in Europe

The Vision 2050 sets out three potential scenarios for the evolution of primary production in Europe:

1. A baseline scenario would see primary aluminium production in Europe at 4.5 million tonnes, sufficient to meet 25 percent of demand. For this scenario, there is a critical need for policy support during the transition phase (2020-2030). This is particularly important for the levels of ETS indirect costs compensation, through state aids and the EU innovation fund. Without adequate policy measures, primary production will not reach the predicted levels.
2. In the pessimistic scenario, primary production will only meet 14 percent of demand, with the remainder (35 percent) likely imported from countries with a higher average carbon footprint. European primary production will drop by 43 percent compared to the 2018 level and be limited to Norway and Iceland with a production of 2.5 million tonnes. At the same time, imports will increase by around 6.6 million tonnes, an increase of 74 percent on current levels. In the decreasing production scenario, the increased level of primary aluminium imported would increase GHG emissions between 2020 and 2050 by 158 to 529 million tonnes compared to the baseline scenario.
3. If ETS indirect costs are fully compensated by 2030, primary production in Europe could grow by 30 percent, restricting imports from third countries. In this optimistic scenario, as domestic primary production has a lower footprint than imported, GHGs would fall between 2020 and 2050 by 94 - 314 million tonnes of CO_2e compared with the baseline scenario.

Our scenarios for the Vision 2050 are ambitious but realistic. However, to move to an optimistic scenario, the sector will require an enabling policy framework.

European aluminium demand for aluminium ingot (2000 - 2050)
Including a decreasing production case, a positive and a baseline scenario for the primary production in Europe (i.e. EU28+EFTA)



Source: European Aluminium based on CRU 2018 datasets

The enabling framework to drive climate neutrality and the circular economy with a strong industrial policy

As outlined in the I+Manifesto, the European economy must rapidly transition to carbon neutrality, greater resource efficiency and circularity. Our call to policy makers is to fundamentally change how to design policy, creating the conditions that will allow our industries to thrive and become the most innovative economy in the world. What is a stake is to manage the transition to a decarbonised economy by 2050. Policy measures in the transition phase 2020-2030 will be critical. A new governance for industrial policy is needed to coordinate regional, national and European policy efforts. The EU needs a fully-fledged EU industrial strategy with its vision and goals rooted in its wider strategy of sustainable development and commitments under the Paris Agreement.

In particular, EU authorities should recognise strategic value chains that are instrumental for Europe in accelerating its transition to a sustainable economy. There should be tailor-made policies and incentives defined for these strategic value chains. Large-scale breakthrough pilot projects require considerable upfront capital investment. The EU should earmark a significant, specific fund (EU 4.0) that empowers it to drive long-term technological transition in the regional ecosystems of large industries, SME's and research institutions.

Policy recommendations to incentivise technology development

The European aluminium industry will ensure that its investments will drive sustainability, circularity and carbon neutrality. However, EU Regulation plays a fundamental role in creating the right conditions to drive technology development. There are fundamental policy-related factors to be considered for any type of investment in Europe:

For primary aluminium production, the electricity representing around 38 percent of production costs and indirect costs of the EU ETS are seven times greater than the direct costs. These costs cannot be passed through to the customers, as aluminium is an internationally-traded commodity. The risks of carbon leakage are high for a sector like aluminium.

- The ongoing revision of the ETS State aid guidelines for indirect costs compensation is essential for protecting our industry against carbon and investment leakage and for encouraging innovation in the aluminium industry. With the price of EU Allowance Units (EUAs) expected to rise significantly between 2021-2030, it is imperative that industry can access an adequate compensation system for the indirect costs of the EU ETS in Phase IV.
- Guidelines on State Aid for environmental protection and energy (post-2020): Producers need to know whether the exemption from renewable energy surcharges will continue post-2020, and if so, to what extent.

Thanks to the growing demand for aluminium, the value of aluminium scrap is similar to that of primary aluminium. However, access to aluminium in terms of quantity and quality is the biggest challenge. More recycling should be encouraged in Europe:

- To radically decarbonise industry and stimulate circular business models, our industry encourages smart design to make traceability, disassembly and recycling easier and more cost efficient. Sorting should preferably be done by specific product and by alloy family to provide the best conditions for reuse and recycling and to satisfy future demand. Investments in dismantling, sorting and melt treatment technologies are also important to further close the loop.
- Removal of barriers to the functioning of the internal market, for example by improving the definition and implementation of end-of-waste criteria in the EU Member States.

- The permanent and circular properties of aluminium should be recognised and rewarded under Extended Producer Responsibility (EPR) schemes. Implementation of deposit return systems should be fair, equitable and transparent towards all competing containers and recognise the potential for multiple recycling offered by aluminium within such collection systems.
- A level playing field with third countries when it comes to health, safety, labour rights conditions in recycling facilities.

We are fully committed to collaborating with other industries and policymakers to deliver our Vision 2050 and to be a major player of the long term industrial and climate solution for Europe.

ABOUT EUROPEAN ALUMINIUM

European Aluminium, founded in 1981 and based in Brussels, is the voice of the aluminium industry in Europe. We actively engage with decision makers and the wider stakeholder community to promote the outstanding properties of aluminium, secure growth and optimise the contribution our metal can make to meeting Europe's sustainability challenges. Through environmental and technical expertise, economic and statistical analysis, scientific research, education and sharing of best practices, public affairs and communication activities, European Aluminium promotes the use of aluminium as a material with permanent properties that is part of the solution to achieving sustainable goals, while maintaining and improving the image of the industry, of the material and of its applications among their stakeholders. Our 80+ members include primary aluminium producers; downstream manufacturers of extruded, rolled and cast aluminium; producers of recycled aluminium and national aluminium associations are representing more than 600 plants in 30 European countries. Aluminium products are used in a wide range of markets, including automotive, transport, high-tech engineering, building, construction and packaging.

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