



ASIA-PACIFIC PARTNERSHIP On Clean Development and Climate

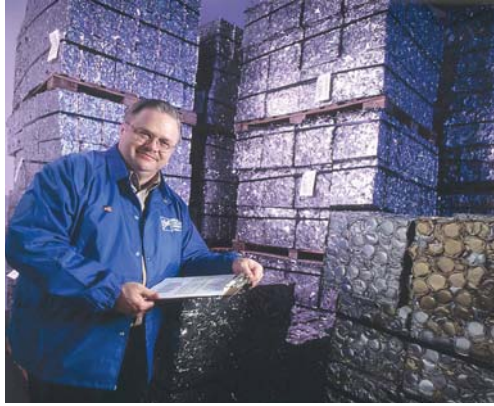


ALUMINUM TASK FORCE

OVERVIEW



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Top: A worker takes inventory of aluminium on its way to be recycled. APP Partner countries are working together to increase recycling rates in order to save energy and reduce pollutants involved in alumina production.

Bottom: A worker guides a large aluminium ingot. Use of best practices in alumina production by APP Partners has led to fewer PFC emissions and lower contamination effects by Red Mud.

Front Cover: Aluminium scrap remelting. APP Partners have increased technology levels in production facilities, lowering Fluoride Emissions and other particulates from aluminium production.

The Asia-Pacific Partnership on Clean Development and Climate (APP) brings together the governments and private sectors of Australia, Canada, China, India, Japan, Korea, and the United States in an innovative effort to promote and create an enabling environment for the development, diffusion, deployment and transfer of existing and emerging cost-effective, cleaner technologies and practices, through concrete and substantial cooperation so as to achieve practical results. The Partners also cooperate on the development, diffusion, deployment, and transfer of longer-term transformational energy technologies that promote economic growth while enabling significant reductions in greenhouse gas intensities. In addition, the Partners will share experiences in developing and implementing our national sustainable development and energy strategies, and explore opportunities to reduce the greenhouse gas intensities of Partner economies.

The APP leverages the expertise of public and private partners in five key energy-intensive sectors – aluminum, buildings and appliances, cement, coal mining, and steel – and three energy supply sectors – cleaner fossil energy, power generation and transmission, and renewable energy and distributed generation. Together, APP partners are promoting a cleaner energy future by identifying and taking advantage of opportunities for international collaboration to commercialize and deploy cleaner technologies, particularly in Partners China and India.

APP Partner Countries account for more than half of the world's economy, population and energy use.

ALUMINIUM TASK FORCE

APP Partners account for 52% of the world's aluminium production. The aluminium industry is one of the fastest-growing sectors, with rapid growth in developing countries. The industry can make further improvements in environmental performance, while reducing costs, through best practice use of existing equipment (in particular perfluorocarbons (PFC) emissions management), increased uptake of best available and affordable technology (including improved instrumentation), the continued development and deployment of new technologies, and by increasing levels of recycling. Through the APP, countries can advance industries towards global PFC reduction objectives and address energy efficiency and other CO₂ emissions by promoting best practices, increasing technical support and identifying impediments to the deployment of best available and affordable technology.

The global aluminium industry is changing in response to increased input costs, environmental performance requirements and other global pressures. As a result, the aluminium industry has been exploring ways of reducing energy consumption and increasing productivity. Through the APP, Aluminium Task Force members are seeking to enhance current aluminium production processes through uptake of best-practice use of existing equipment. They are also working together to advance the development and deployment of new best practice aluminium production process and technologies across Partnership economies. Together, APP countries are collaborating to enhance sector-related data and exploring means to increase recycling rates.

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Representative Aluminium Task Force (ATF) activities include:

Aluminium Measuring and Benchmarking

This project is intended to develop a procedure and indices for benchmarking and measuring aluminium sustainability and to provide Partners with baseline knowledge to facilitate data collection. The new indices, updated by participating Partners, are to be used in concert with other project plans that support perfluorocarbons emissions management, fluoride emissions management and recycling, providing an essential foundation for future projects. Progress in emission management, as defined in the industry Memorandum of Understanding, will be monitored on a three-year basis. To date, the project has released an analysis of collated and de-aggregated 2008 data against six indicators that is now available to the Aluminium Task Force for further use.

Management of (PFC) emissions

Aluminium production generates an extremely large amount of perfluorocarbon (PFC) emissions, and Australia, China and the United States account for approximately 39% of world primary aluminium production. PFC's are not generated during normal smelting operating conditions – they are only produced during brief upset conditions known as “anode effects.” These conditions occur when the level of the dissolved aluminium oxide (the raw material for primary aluminium) in the cell drops too low and the electrolytic bath itself begins

to undergo electrolysis. The difficulty in controlling the stability of alumina content of the electrolyte in smelter pots allows for the formation of PFCs. This project has significant potential to reduce current and future greenhouse gas emissions from aluminium smelting by providing relevant tools for developing PFC inventories and reporting regimes in order to facilitate the development and adoption

Management of Bauxite Residue (Red Mud)

Worldwide, aluminium is generated from alumina, which is produced from an ore called bauxite. For every ton of alumina produced around 1.5-2.5 tons of bauxite residue “red mud” is generated. As a consequence billions of tons of red mud are stored worldwide. Currently, there are few economically viable and environmentally acceptable solutions for effective use of the large volume of residue generated in bauxite production. APP Partners are working to develop technically and economically sound options for bauxite residue in various end uses, including applications in the steel and cement industries. Partners are also working together to identify and develop economically viable and environmentally acceptable technologies to physically and chemically stabilize the residue, and minimize both the amount of land and the time necessary for residue storage.

High Silica Bauxite Processing

Increased worldwide demand for alumina, currently at more than 160 million tons per year, is expected to lead to

a gradual global decline of high-grade bauxite, the ore from which alumina is generally produced. Due to higher demand and declining supply, there is a need to develop new environmentally friendly and economically viable processes and technologies for alumina production from lower-grade bauxite, which is high in silica minerals that need to be removed. In this project, APP Partners are working together to improve processing of high silica bauxite. This includes increasing the amount of alumina recovered by reprocessing of byproduct residues, recovering and subsequently reusing chemicals required for processing, and producing commercially and economically viable products from residues in order to reduce the environmental impact and defray overall costs of the processes currently used processes.

Fluoride Emissions Management

Fluoride emissions (as gases and particulates) result from the aluminium smelting process, which requires fluoride. These emissions are an important environmental concern for the smelting sector since, depending on local conditions, they can have serious impacts on local flora and fauna. APP Partners are working to manage fluoride emissions in order to minimize or eliminate environmental impacts by providing smelters with information on their operation's fluoride emissions performance as it relates to the global average. Partners are also working toward implementing best practices and employing technologies that can reduce fluoride emissions across primary aluminium smelters in all Partner countries. A Fluoride Emissions Management Guide

has been developed, and is available in English and Chinese, as a resource for Partners in these efforts.

Aluminium Recycling

Aluminium recycling uses only five per cent of the energy required for primary metal production and avoids emissions of perfluorocarbons and other harmful pollutants associated with alumina processing and aluminium production. APP Partners are working together to track baseline aluminium recycling rates, focusing on aluminium beverage cans and utilizing used beverage can recycling rates. The reporting component of this effort has been incorporated into the Aluminium measuring and benchmarking project.

Linkages to Technology Providers

The implementation of activities under the Aluminium Task Force relies on the application of new and existing technology to enhance both environmental and commercial performance. APP Partners created a publicly available register of technology providers in order to ease access to necessary resources for implementing change, which is available via the APP website at www.asiapacificpartnership.org/. It will also enable participants to link to industry and environmental experts and foster a competitive market environment that cultivates more environmentally friendly activities.

Development of Generic Computer Software for Automated Anode Effect Control

PFCs have a long atmospheric lifespan and a global warming potential (GWP)

several thousand times greater than that of CO₂. Managing PFC emissions is an important step towards mitigating climate change. Production of primary aluminium emits PFCs, but introducing technology which automatically detects anode effects could reduce this process' PFC emissions in China - which conducts 32% of the world's primary aluminium production - an estimated 22 to 29%, or 1.1 to 2.1 MMTCO₂-equivalent. This project will upgrade several aluminium smelters in China from manual anode effect kill to automated kill sequence, also building capacity within industry, academia, and government to help increase the rate of the transition of the remaining smelters in China.

CURRENT ALUMINIUM TASK FORCE PROJECTS

Aluminium Measuring and Benchmarking ■ Management of PFC Emissions ■ Management of Bauxite Residue (Red Mud) ■ High Silica Bauxite Processing ■ Fluoride Emissions Management ■ Aluminium Recycling ■ Linkages to Technology Providers ■ Development of Generic Computer Software for Automated Anode Effect Control



For more information on these projects and the Aluminium Task Force, please visit:

www.asiapacificpartnership.org