



Aluminium Task Force – Flagship Review

Purpose

This paper seeks agreement from the Aluminium Task Force (ATF) to present the attached paper *Aluminium Task Force: Flagship Review* to the Policy and Implementation Committee (PIC) proposing two recommendations in response to the Flagship Review:

- that the Policy and Implementation Committee (PIC) of the Asia-Pacific Partnership on Clean Development and Climate (APP) adopts the findings and recommendations of the Flagship Review,
 - noting that the Flagship Review recommendations should apply to *all APP projects*; and
- that the PIC Secretariat establishes a working group to implement the Flagship Review recommendations for all APP projects.

Background

Following the PIC meeting held in Australia in May 2009, the Australian Government organised for a review of APP Flagship Projects to be undertaken by an independent consultant. This Review has been completed and a report was presented at the recent PIC and Ministerial Meetings held in China, October 2009. The Review provides recommendations for strengthening the APP Flagship projects and the APP overall.

As a follow-up to the China PIC meeting, PIC has sought comments from Task Force Chairs and Co-Chairs on the recommendations in the Flagship Review, including how the report's recommendations would apply to projects under each Task Force, and whether the recommendations would address barriers faced by all Task Force projects (other than those with Flagship status).

PIC will use the information received from Chairs and Co-Chairs to coordinate and develop a forward action plan on the implementation of the Flagship Review's recommendations. The forward action plan will be discussed at the next PIC meeting this year.

The Aluminium Task Force Secretariat has sought the views of Aluminium Task Force members and prepared this paper for PIC's consideration. This paper, including the Aluminium Task Force's recommendations to PIC, was endorsed at the Aluminium Task Force meeting held on 22 March 2010 in Vancouver, Canada.



Aluminium Task Force

Flagship Review: Report to the Policy Implementation Committee

Overview

The *Independent Review of Asia-Pacific Partnership Flagship Projects* examined twenty projects under the APP. Of those, two Aluminium Task Force projects were reviewed:

- ATF-06-02 Management of PFC Emissions; and
- ATF-06-03 Management of Bauxite Residue (Red Mud).

The Flagship Review highlighted that these and other Flagship Projects have helped APP partners achieve the APP's aims, but there is scope to do more. In particular, further progress could be achieved through:

- increasing project financing;
- consolidating structures and strategies; and
- improving communication.

The Flagship review noted that there is an ongoing need to continue developing and using cleaner and lower emissions technology in the aluminium sector. The Aluminium Task Force agrees that industry can make further improvements in environmental performance, while reducing costs, through:

- best practice use of existing equipment;
- increasing uptake of the best available and affordable technology;
- continuing development and deployment of new technologies; and
- reducing energy use by increasing levels of recycling.

The Flagship Review findings and recommendations are at [Attachment A](#).

For reference, a summary of all Aluminium Task Force projects is at [Attachment B](#).

The Aluminium Task Force considers that the overall conclusions of the Flagship Review report reflect accurately experiences within the Aluminium Task Force.



Flagship Review recommendations – Aluminium Task Force responses

- (a) *Establish a Finance and Investment Task Force under the APP.*
- (b) *Undertake a review and identify the specific financing and investment needs of Flagship Projects and all other APP projects to identify those that require funding, and present those projects to potential financiers.*
- (c) *Conduct a forum under the auspices of the APP showcasing APP projects, technologies and investment opportunities to the finance and investment community.*

Given the inter-connected nature of the first three Flagship Review recommendations, the Aluminium Task Force has considered these recommendations together.

One of the major successes of the APP has been the collaboration between industry and governments, and the Aluminium Task Force considers that this approach should be maintained into the future. Certainly, in the Australian context there is no other such 'model' involving public funding that brings industry so significantly into the delivery of clean energy policy. This partnership has provided a balance between allowing the market to develop technological solutions to clean development and lowering carbon emissions, while providing incentives to encourage industry to invest in risky and sometimes expensive technologies.

The need to continue to address the impacts of environmental degradation and greenhouse gas emissions remains critical. Accordingly, the Aluminium Task Force agrees that developing a finance strategy to attract private investment in clean technologies should be a priority of the APP. The Task Force notes, however, that there are a number of strategies that could be considered by PIC in addressing the financing challenges of developing and deploying clean technologies.

Establishing a Finance and Investment Task Force is one option recommended by the Flagship Review, however the Aluminium Task Force notes that this option could limit the effectiveness of such a body by the requirement to adhere to the governance rules that apply to APP task forces that have different objectives.

PIC may wish to consider alternative options such as a working group/advisory council consisting of members appointed by APP countries from the government, finance and investment sectors (including venture capitalists). Such a body could identify projects with strong environmental and commercial potential and match them with relevant financiers. This body could also play a role in identifying existing government programs that support industry facilitation, research and development, commercialisation and climate change funding programs.

Such a body could also co-ordinate technology showcases that could coincide with PIC or Task Force / Joint Task Force meetings or other industry events that bring together projects and investors.



Benefits of improving financing capabilities - example

The environmental and economic benefits of matching promising projects with available financiers are significant. For example, consider the global impact of a full-scale commercialisation of the Aluminium Task Force project ATF-09-08, *Development of Generic Computer Software for Automated Anode Effect Control*. In this project, aluminium smelters can be upgraded to reduce the amount of perfluorocarbon emissions by switching from manual to automated control systems. This technology increases efficiency, reduces energy consumption, and reduces the unnecessary emission of perfluorocarbons, which are very damaging to the environment.

While a project like this has clear benefits, current funding levels prevent wide-scale rollout of this technology due to the large number of smelters in APP countries.

Nevertheless, the project already has existing operational elements in place that could showcase its environmental and financial benefits. Matching this project with an appropriate financier could result in an extensive rollout of the technology across the many aluminium smelters in APP countries and accordingly deliver wide-spread environment benefits.

(d) *Develop and implement intellectual property management plans for Flagship Projects.*

The Aluminium Task Force considers that it is important that intellectual property protocols are established and applied to all APP projects, noting that Aluminium Task Force projects currently have well developed IP management plans in place.

Rules around the handling of background and foreground intellectual property need to be clearly agreed. In keeping with the clean development and climate change objectives of the APP, the Aluminium Task Force considers that all international collaboration on technologies with the potential for significant environmental benefits should seek to result in the wide-scale global deployment of such technologies.

The Aluminium Task Force considers that PIC could play an important role in promoting the transfer of technologies and dissemination of information by agreeing to adopt recommendation (d) of the Flagship Review and providing guidance on how intellectual property could best be managed within the APP, possibly through the creation of a working group to address intellectual property issues.



Benefits of effective intellectual property management - example

An example of the importance of effective intellectual property management is Aluminium Task Force project ATF-06-04, *High Silica Bauxite Processing*. This project ranges across three different countries and many alumina refineries. The project aims to increase the amounts of reprocessed alumina from by-product residues and recovering and subsequently reusing chemicals for processing.

A well-managed intellectual property plan for a project like this would encourage the transfer of technologies from country to country, and from smelter to smelter, while ensuring appropriate safeguards are placed on the ownership of that technology.

- (e) *Increase capacity-building initiative, within both Task Forces and relevant complementary sectors.*

The Aluminium Task Force agrees with the Flagship Review's observation that increased capacity building, in the sense of better coordination and communication, could potentially give rise to a number of benefits that may not otherwise be captured, including:

- (i) increasing knowledge sharing; and
- (ii) strengthening relationship networks between Task Forces

Members of the Aluminium Task Force have noted that when looking at collaboration in the broad sense, it has mainly taken place within projects, for example through activities such as international site visits. Lessons learned within task force projects could certainly be better communicated across all clean development and climate change projects where relevant outcomes could be shared. Accordingly, the Aluminium Task Force agrees that moves towards greater interaction between projects task forces would be both welcome and productive.

The Aluminium Task Force agrees that the purpose of developing linkages is to facilitate the advancement of projects and knowledge sharing across sectors and that knowledge sharing need not be limited to discussions about technologies. It may include project methodologies; opportunities to advancing projects (and impositions) and how to consolidate on the success of projects. Further, more collaborative projects may result in projects obtaining greater exposure and may lead to greater private sector investment.

The Aluminium Task Force sees that PIC could play a role in facilitating communication about commonalities across task forces and sectors through a structured approach to joint task force meetings, workshops and 'master-classes' designed and developed specifically for respective stakeholder audiences.



For example, the Aluminium Task Force and the Building and Appliances Task Force could share knowledge and identify opportunities, such as using bauxite residue in building materials (such as bricks or blocks) and recycling of aluminium from demolished buildings. Similarly, the Aluminium Task Force could benefit from collaborating with the Renewable Energy and Distributed Generation Task Force on possibilities for utilising more solar power in refineries and smelters. In both these examples, the Aluminium Task Force sees a role for PIC in encouraging such collaboration and finding opportunities for joint or concurrent Task Force meetings.

Benefits of increased capacity building – example

The benefits of increased capacity building within task forces and within the aluminium sector more broadly, can be seen in Aluminium Task Force project ATF-06-01, *Aluminium Measuring and Benchmarking*. By developing measurement indices that allow for benchmarking and baseline data, this project provides a mechanism for the aluminium industry to adopt a whole-of-sector approach to measuring and reporting emissions.

Beyond the direct benefits that this specific project delivers in the measurement of emissions, the project's learnings in developing indices and data collection and monitoring could be disseminated across other APP task forces, countries and industry sectors. For example, the aluminium and cement sectors have commonalities such as high-energy consumption, issues around waste management, quality of base ingredients and greenhouse gas emissions (this can be seen in the Cement Task Force's project CTF-07-07 *Hazardous Wastes - Best Practices for Co-Processing and Management in Cement Kilns* which is an umbrella project for the use of cleaner alternative fuels). Sharing new learnings about managing these issues will lead to the broader achievement of APP goals.

(f) *Continue to support projects that contribute to the development of enabling regulatory and policy environments.*

The Aluminium Task Force agrees that sound policies and appropriate regulatory environments play a critical role in the development and deployment of clean technologies as well as addressing the challenges of climate change.

The question of ongoing government funding for APP projects as well as broader government policies and programs around clean technologies need to be considered by APP countries going forward.

The Aluminium Task Force recommends that PIC could play a lead role in stimulating debate about domestic regulatory measures and policy initiatives that complement and further the APP's vision and objectives. This debate could consider:



- (i) ways to create a level playing field for new technologies entering existing markets; and
- (ii) promoting the development and deployment of new technologies both by directly supporting project activities, and by increasing certainty as to how different activities will be treated, such that project participants and private sector investors can better understand projects risks and benefits.

Projects contributing to good policy and regulation – an example

A project within the Aluminium Task Force, ATF-06-05 *Fluoride Emissions Management*, is an example of how the APP can contribute to improving international regulatory and policy environments. The project's *Fluoride Emissions Management Guide*, published in English and Chinese, provides a clear and easy to understand technical manual that shows how the implementation of smelter management plan policies can contribute to increased efficiency and decreased emissions.

Projects like this can produce tools that can be adopted as policy by APP countries; in this case to encourage consistent management of aluminium smelters across APP countries (promoting the use of economically efficient and clean technologies), but also consistent reporting and comparative information collection and storage.

- (g) *Adopt professional project management practices for all APP projects.*

The Aluminium Task Force considers that its projects are currently well managed and that there is clear reporting of project progress and deliverables. In a broader context however, the Aluminium Task Force notes that projects with transparent and detailed project management practices will inspire confidence and improve their prospects of attracting private sector investment.

The Aluminium Task Force agrees with the Flagship Review's observation that all APP projects would benefit from rigorous project management, and suggests that PIC consider developing a project management framework to assist those projects that would benefit from better project management.



Attachment A

Flagship Review findings - summary

- (a) The Flagship Projects have helped the APP to make progress towards achievement of its vision and intended actions.
- (b) The APP represents an important complement to market-based mechanisms under the Kyoto Protocol.
- (c) Flagship Projects have contributed to the development and demonstration of new technologies, but these technologies have yet to be deployed at scale.
- (d) During the four years since its inception, the structures and strategies utilised by the APP have helped it to make progress towards achievement of its vision, including through the implementation of Flagship Projects.
- (e) There is scope to increase coordination and communication within and between Taskforces and Flagship Projects.
- (f) Flagship Projects would benefit from stronger alignment between Partner Country domestic regulatory and policy measures and the vision of the APP.
- (g) Many APP Flagship Projects have been successful in securing private sector involvement and expanding and strengthening both public and private relationship networks.
- (h) Barriers to effective networking exist within the APP and Flagship Projects.
- (i) Although a majority of Flagship Projects reported contributing to the APP's capacity building objectives, capacity building activities may in fact be under-represented among Flagship Projects.
- (j) Some Flagship Projects have helped create an enabling environment to assist in the achievement of development and deployment of clean technologies.
- (k) As many clean technologies utilised in Flagship Projects are of an emerging nature, the range and extent of technical impediments to scaling them up may be unknown.
- (l) APP Flagship Projects incorporate technologies at very different stages of technology maturity and scalability potential.
- (m) For facilities such as major steel and cement plants and coal mines, technology improvement projects are generally of significant capital intensity.
- (n) To fully realise the vision of the APP, significant investment will need to be captured from global capital markets and new avenues of funding channelled from government budgets.



Flagship Review recommendations

- (a) Establish a Finance and Investment Taskforce under the APP.
- (b) Undertake a review and identify the specific financing and investment needs of Flagship Projects and all other APP projects to identify those that require funding, and present those projects to potential financiers.
- (c) Conduct a forum under the auspices of the APP showcasing APP projects, technologies and investment opportunities to the finance and investment community.
- (d) Develop and implement intellectual property management plans for Flagship Projects.
- (e) Increase capacity building initiatives, within both Taskforces and relevant complementary sectors.
- (f) Continue to support projects that contribute to the development of enabling regulatory and policy environments.
- (g) Adopt professional project management practices for all APP projects.



Aluminium Task Force projects - summary

Project ATF-06-01 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. Australia, Canada, China, India, Japan, and the United States are participating Partners in this Project.

Project ATF-06-02 Management of PFC Emissions
(Flagship project)

This project enables all primary production facilities in each of the Partner countries to identify and implement cost-effective, technically-feasible opportunities to optimize anode effects in electrolytic cells, the primary source of perfluorocarbons (PFCs) during aluminium production. This is accomplished by providing relevant tools for developing PFC inventories and reporting regimes in order to facilitate the development and adoption of smelter-specific PFC emission reduction strategies. This project has significant potential to reduce current and future greenhouse gas emissions from aluminium smelting. Australia, Canada, China, and the United States are participating Partners in this project.

Project ATF-06-03 Management of Bauxite Residue (Red Mud)
(Flagship project)

Worldwide, aluminium is generated from alumina, which is produced from an ore called bauxite. Approximately 1.5 to 2 tons of bauxite residue (also known as red mud), an environmentally problematic substance, are generated per ton of alumina produced. While a number of potential uses have been suggested for the residue, currently there are no economically viable and environmentally acceptable solutions for effective use of the large volume of residue generated. In this project, participating countries focus on developing technically and economically sound options for bauxite residue in various end uses, including applications in the steel and cement industries, physically and chemically stabilizing the residue, and minimizing both the amount of land and the time necessary for residue storage. Australia, China, and India are participating Partners in this project.



Project ATF-06-04 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, Australia, China, and India are working together to improve processing of high silica bauxite. This includes increasing the amount of alumina recovered by reprocessing alumina recovered by reprocessing of by-product residues, recovering and subsequently reusing chemicals required for processing, and producing commercially and economically viable products from residues in order to defray the environmental impact and overall costs of the currently used processes. Australia, China, and India are participating Partners in this project.

Project ATF-06-05 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. In this project, participating countries will work 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. The project also works toward implementing best practices and employing technologies which can reduce fluoride emissions across primary aluminium smelters in all of the Partner countries. Australia, China, and the United States are participating Partners in this project.

Project ATF-06-06 Aluminium Recycling

Aluminium recycling uses only five percent of the energy required for primary metal production and avoids emissions of perfluorocarbons and other harmful pollutants associated with alumina processing and aluminium production. In the first step of this project, participating countries will track baseline aluminium recycling rates, focusing on aluminium beverage cans, and develop an annual reporting mechanism to monitor progress. The project also plans to develop a database of best practices for collection and recycling operations, including environmental and safety practices to enhance sustainable recycling operations. Australia, Canada, China, India, Japan, and the United States are participating Partners in this project.



Project ATF-06-07 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. Australia, China, India and the United States plan to create a publicly available register of technology providers in order to ease access to necessary resources for implementing change. It will also enable participants to link to industry and environmental experts and foster a competitive market environment that cultivates more environmentally friendly activities. In the first phase, an internet-based register for Partner country national industry associations and governments involved in the Task Force will be generated. Australia, Canada, China, India, and the United States are participating Partners in this project.

Project ATF-09-08 Development of Generic Computer Software for Automated Anode Effect Control

PFCs have a long atmospheric lifetime 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-eq. 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 speed the transition of the remaining smelters in China. The United States and China are participating Partners in this project.