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FACT SHEET

Asia-Pacific Partnership on Clean Development and Climate

**Coal Mining Task Force
Summary of Action Plan and Projects**

The Asia-Pacific Partnership on Clean Development and Climate is a unique public-private initiative among government and private sector partners from Australia, China, India, Japan, the Republic of Korea and the United States. In remarks delivered to experts representing all Partner nations gathered at the American Electric Power facility in Columbus, Ohio, Under Secretary of State for Democracy and Global Affairs Paula Dobriansky today announced that the Partnership has begun a new implementation phase with the start of a series of multifaceted programs designed to promote cleaner, cost-effective energy technologies and practices among the Partner nations. The Partnership is identifying policies and deploying technologies that reduce greenhouse gas emissions, promote healthier air quality, advance sustained economic growth, and reduce poverty. It is now embarking on implementing voluntary practical measures to create new investment opportunities, build local capacity, and improve economic and energy security. The Partnership involves countries that account for about half of the world's population and more than half of the world's economy and energy use.

Summary of Coal Mining Task Force Action Plan

Coal is the world's most abundant and widely distributed fossil fuel. Although coal deposits are widely dispersed, over 58% of the world's recoverable reserves are located in four Asia-Pacific countries: Australia, China, India, and the United States. According to the International Energy Agency (IEA), by 2030, coal-based power generation is projected to more than triple while providing roughly one third of global electricity generation. The Task Force's goal is to promote sustainable mining practices through improved coal preparation (beneficiation), methane capture from active and abandoned coal mines, underground coal gasification, and improved mine health and safety. To meet this goal the Task Force has developed 16 initial projects and activities.

Sharing Best Practices in Cleaner Coal Mining

Coal beneficiation prepares coal for the intended end use by removing or reducing impurities that interfere with clean combustion. This process reduces the ash content of coal, thereby improving power plant efficiency and reducing air emissions, coal transportation costs, power plant maintenance costs, and ash disposal. This process can potentially remove between 40-50 percent of the total sulfur, leading to a 20-25 percent reduction in emissions of sulfur dioxide. The United States is leading the Coal Mining Task Force in facilitating technology transfer through

workshops, demonstrations, and site visits among Partner countries to improve coal quality, increase recovery, and reduce costs.

Australia is compiling a “Leading Practice Sustainable Development Program for the Mining Industry” project with information provided by Partner countries. This project will provide an essential compendium of coal mining best practices and most efficient coal mining technologies.

Australia will facilitate the demonstration of coal drying technology to Partner countries as a way of sharing best practices and possibly transferring this technology to Indian coal beneficiation plants.

Transforming Markets for Coal Mining Technologies

The Coal Mining Task Force seeks to accelerate the deployment of appropriate technologies and practices that can improve Partner countries’ market access to better and more efficient coal mining technologies.

Methane has become a valuable resource in both active and abandoned coal mines and is being captured and sold to natural gas providers. The United States leads the world in coal mine methane capture and utilization at active mines and is exchanging leading practices on their experiences with Partner countries. This technology has the potential to transform markets by providing an opportunity that not only reduces greenhouse gas emissions, but also is an economically viable venture for coal mining companies.

In addition, the Task Force is exploring Underground Coal Gasification (UCG) as an appropriate economically sound technology to access the energy resources in deep or unminable coal seams through the production of syngas for power generation; or through the production of synthetic liquid fuels, natural gas or other chemicals. UCG, when combined with CO₂ sequestration, offers important economic and environmental benefits. A first workshop is planned for Kolkata, India, in November that will bring together decision makers in government, industry, research institutions, and academia from the Partner countries. The goals of the workshop will be to accelerate the implementation of UCG projects in India and to use the lessons learned from the experience in other Partner countries.

The Task Force plans to identify current mining and reclamation activities in each country and to exchange shared practices on maximizing resource recovery and reclamation of surface mined lands.

Summary of Coal Mining Task Force Projects

Project 1. Information Sharing on Coal Processing Technologies

This project seeks to initiate an inter-Partner country flow of information on best practices in coal preparation technologies. There are wide variations in pre-combustion coal treatment concepts and technologies used in different countries. In order to streamline suboptimal systems

of coal preparation used in some Partner countries it is essential to share the experience gained in other Partner countries. Until now, individual countries have pursued bilateral cooperation for adoption of best practices. The Partnership provides an opportunity to share the best practices of each country with others.

Project 2. Coal Beneficiation: Economic Modeling, Analysis, and Case Studies

This project seeks to develop a coal cost model with appropriate input parameters to determine coal effective coal-beneficiation strategies. It is associated with a coal-beneficiation project that will focus on India (see also Project 3). This model will be part of the deployment of coal cleaning technologies and practices to improve the economics and efficiencies of coal processing. Coal beneficiation contributes to energy security, reduces pollution, and directly improves quality of life.

Project 3. Fine Coal Beneficiation – Joint Venture Project

This project, encompassing all Partner countries, seeks to address coal beneficiation issues in India. Coal beneficiation requires the crushing of coal to an optimum size, which will vary according to the beneficiation technology employed. During the crushing process coal “fines” are generated, which are difficult to beneficiate/wash. This problem is particularly significant in India where higher ash content in the fine coals and ultra-fine coals makes it difficult to separate them from inert material. This problem of fine coal washing is faced by most of the coal producing countries. As such, there is need for developing a suitable process for upgrading fine coal to recover maximum clean coal, preferably without application of costly reagents by adopting improved and enhanced gravity separation technologies.

Project 4. Information Sharing on Coal Drying

This project will share information and experience among Partner countries regarding coal drying post-processing after coal beneficiation. It will draw substantially on Australian experience in coal drying technology. Thermal drying is generally not part of coal beneficiation nor is it practiced at the bulk consumer’s facility or at coal preparation plants. However Australian coal drying studies have shown its implementation leads to reduced greenhouse gas emissions. Partner countries will have a technology exchange on coal drying to realize the environmental benefits consistent those found possible in Australian studies.

Project 5. Joint Venture Project on Waste Coal Management

This project centers on management of unusable coals generated by coal beneficiation. In particular its focus will be on coal beneficiation projects in India. Coal beneficiation plants produce enormous amounts of unusable coal depending upon the beneficiate coals use. These rejects contain substantial amount of carbon, which, when disposed in mined out areas in hot and humid countries, create environmental problems due to self oxidation. There is also substantial loss of a potential source of energy. This project seeks to reduce the loss of energy due to non-utilization of rejected coal from the beneficiation process

Project 6. Extraction of Steep Seam Coal

Coal seams that are angled more than about 30 degrees are known as “steep seam” coal. Mining such seams presents special challenges. The overall objective of this work is to achieve improved production performance and extraction percentage of steep seam, higher value coal by utilizing improved mining technology. This project will focus on India, in particular in the context of the unique characteristics of the coal bearing strata of the North East Region of India. It is expected that steep seam coal production will be enhanced through evaluation of the application of alternative mining methods such as those used in the United States.

Project 7. Leading Practice Sustainable Development Program for the Mining Industry

The Leading Practice Sustainable Development Program is being developed in consultation with mining regulating agencies, the mining industry, research organizations and community groups to provide guidance for sound mining practices. The Program recognizes community expectations of the mining industry and is consistent with industry standards for sustainable development, including the *Ten Principles for Sustainable Development Performance* released by the International Council on Mining and Metals in 2003. Australia has proposed this project to provide leading practice guidance and support for the sustainable development of the minerals industry. The Leading Practice Sustainable Development Program will provide this guidance to industry and government, and information on specific issues for the community in general.

Project 8. Overburden Slope Stability

This project seeks to design and develop engineered mine planning that integrates proper removal and placement of overburden, complex pumping systems installation, monitoring overburden piles and successful deployment of sensors within the overburden piles to detect slope failures. The project will focus on Indian open case mining sites. Several technical characteristics of the overburden dump will be evaluated including items such as pheratic surface, dump slope, rate of slope movement and predictions of dump failure. Cost effective installation of sensors within the dump, and laser-based surveying exterior to the dump will be a part of the technology transfer associated with this project.

Project 9. Coal Mine Health and Safety

This project seeks to develop a strategic approach toward risk management and to advance toward the goal of zero fatalities and injuries in the coalmining industry. It is envisioned that the project will include work in automation, enhancement of rescue operations, improved communication and regulation capabilities, and monitoring procedures. Partners will provide suggestions for an overarching legislative framework for health, safety, and risk management. It also seeks to identify leading practices to control health and safety risks, while finding expertise and resources within the Partner countries. If funding permits, these themes will be reinforced by one or more demonstration projects in an area that will be selected by the Task Force.

Project 10. Reclamation of Legacy Coal Mines to Abate Hazards

This project seeks to abate hazards associated with the reclamation of coal mining areas, in particular reclamation of legacy coal mines. More specifically this project aims to establish nationwide programs to protect society and the environment from the adverse affect of coal mining by striking a balance between this protection, the country's agricultural productivity, and the Partner country's essential energy requirements. The project will promote reclamation of mined areas left without adequate reclamation, which in their unreclaimed condition continue to substantially degrade the quality of the environment, damaging water resources and endangering the health and safety of the public.

Project 11. Increasing Recovery and Use of Coal Mine Methane

This project seeks to improve mine safety and increase coal mine methane and coal bed methane production and utilization in the Partner countries, primarily in China and India. It will do so by promoting use of more effective drilling and mine drainage technologies and techniques in advance of mining, and the recovery or use of low-grade coal mine methane sources, such as ventilation air methane.

Project 12. Integrated Coal and Methane Extraction

This project seeks to improve mine safety and increase coal mine methane and coal bed methane production and utilization in the Partner countries, primarily in Australia and China, by demonstrating and promoting the use of (1) an integrated coal production and methane extraction approach; (2) reliable planning and optimization of the joint production processes; and (3) effective operational control and risk management technologies. The proposed project will apply and demonstrate an advanced approach and technologies to support and promote integrated coal production and methane extraction.

Project 13. Thick Coal Seam Extraction

The major outcome of this project is optimization of extraction methods and/or designs to substantially improve recovery rates and safety of mining operations in Indian thick seam environments. It will focus on thick seam environments in India and Australia. There is an urgent need for comprehensive investigation of various options for thick seam mining and to develop optimum extraction technologies and designs for improving coal recovery in thick seam environments in these two countries.

Project 14. Underground Coal Gasification in India

This project centers on India's interests in underground coal gasification. Underground coal gasification (UCG) is an appropriate technology to access the energy resources in deep and/or unminable coal seams and to extract these reserves economically through production of synthetic gas (syngas) for power generation, production of synthetic liquid fuels, natural gas, or chemicals. The project will provide India with the Partners' best practices, such as experiences with

regulatory arrangements, gasification impacts on the ground water, and adopted mitigation measures.

Project 15. Workforce Assessment and Training Needs

The desired outcome of this project is the development of a strategic approach to address mining skills shortages in Partner countries, including the identification of skills shortages and opportunities for training to reduce technology gaps. This includes sharing information on current strategies and practices existing in Partner countries, identifying areas for capacity building, and information transfer and developing models to work toward addressing the issue. A collaborative approach undertaken by the Task Force will equip member countries to deploy strategies that deal effectively with the problem in their own country.

Project 16. Technical Improvement for Control of Coalfield Firing

This project seeks to accurately quantify the depth of a burning coal seam to within one meter while at the same time determine the spatial distribution of such fires. It will focus on the Xinjiang area of China. In China, coalfield fires are most severe in Xinjiang due to its unique geological and geographical conditions. It can be difficult to determine the depth and range of the burning field due to the limitations of current technology, especially in complex geological conditions where the fire is more than 100 meters deep and the temperature above 500 degrees centigrade. This will provide China important information to determine what adjustments and improvements must be made to existing coalfield fire technology.