

THE ASIA PACIFIC PARTNERSHIP: ITS ROLE IN PROMOTING A POSITIVE CLIMATE FOR INVESTMENT, ECONOMIC GROWTH AND GREENHOUSE GAS REDUCTIONS

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EXECUTIVE SUMMARY

Background: The Asia Pacific Partnership on Development and Climate, an agreement signed in 2005 by India, China, South Korea, Japan, Australia and the United States offers an approach to climate change policy that can reconcile the objectives of economic growth and environmental improvement for developing countries. Together, the Partners have 45 percent of the world's population and emit 50 percent of man made CO₂ emissions. Projections of very strong growth in greenhouse gases in developing countries over the next 20 years means that there is enormous potential for reducing emissions through market based mechanisms for technology transfer.

Promoting a Favorable Investment Climate: Institutional reform is a critical issue for the Partnership, because the lack of a market oriented investment climate is a principal obstacle to reducing greenhouse gas emissions in China, India and other Asian economies. China and India have both started the process of creating market-based economic systems, with clear benefits in the form of increased rates of economic growth. But the reform process has been slow and halting, leaving in place substantial institutional barriers to technological change, productivity growth, and improvements in emissions. The World Bank and other institutions have carried out extensive investigations about the role of specific institutions in creating a positive investment climate. These include minimizing corruption and regulatory burdens, establishing effective rule of law, recognition of intellectual property rights, reducing the role of government in the economy, removing energy price distortions, providing an adequate infrastructure and an educated and motivated labor force.

Role of Foreign Direct Investment in Technology Transfer: One of the key mechanisms by which developing countries gain access to resources for capital investment and technologies that support growth in productivity is through direct investment (FDI) by firms based in already-industrialized economies. FDI can provide the receiving country with multiple benefits: investment for expansion of production, opportunities to enhance technology and increase productivity, exposure to innovative

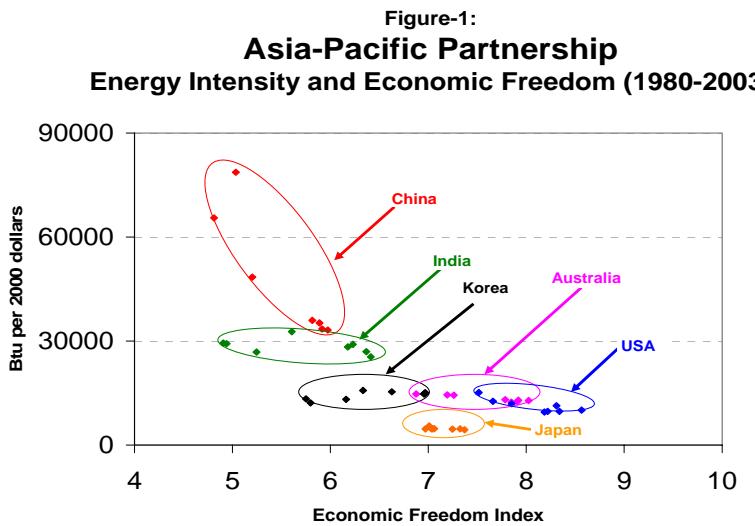
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managerial skills, access to potential export markets through the conduits of the foreign investor network, and spillover benefits that increase market competitiveness.

Since productive technology is largely embodied in capital investment (whether that capital be personal computers, chemical processes or high tech machinery), the process of technology transfer requires that foreign companies actually build factories and machinery using technology not possessed by the developing country. The foreign investor also gains through increasing its potential pool of human capital and natural resources. These benefits ultimately provide the impetus for economic growth.

Quantifying the Importance of the Investment Climate for Reducing Energy Intensity: The same institutional factors that are prerequisites for sustained economic growth – laws protecting property and contracts, fair and efficient administration of justice, reduction of the government’s role in the economy, minimization of regulatory burdens and corruption, and openness to foreign investment – are closely associated with efficient use of energy and low greenhouse gas emissions per unit of output.

Two of the Partners, China and India, have far higher energy use and greenhouse gas emissions per dollar of output than the other partners and lag in technology. They also have relatively low scores on the Fraser Institute’s Economic Freedom of the World which measures how well a country’s institutions support a free and open market economy (see Figure 1). A large part of the difference in “emissions intensity” (or the amount of energy required to produce a dollar or euro of output) between China, India, and the rest of the Partnership is attributable to an institutional setting that creates pricing distortions and an unfavorable investment climate.



Our new analysis uses data on 91 countries from 1980 to 2003 and a regression model which assumes that energy intensity is a linear function of economic freedom or its subcomponents. We find an environmental “Kuznets curve” in the case of the poorest countries, as they emerge from subsistence agriculture and local production into a market

economy. In the initial stages of economic growth brought about by greater economic freedom, rapid industrialization leads to increasing emissions per dollar of output for this group of countries. However, the ability of energy related institutional factors to explain energy intensity becomes quite large when we control for income level and economic structure in the country. Our analysis shows that almost 40 percent of the variation in energy intensity is explained by a country's economic freedom ranking. Thus, as countries develop, if they have market-based economies and a favorable investment climate, they use less and less energy to produce each dollar or euro of output.

Quantifying the Importance of Technology Transfer for Emission Reductions: As described above, technology is critically important because emissions per dollar of income are far larger in developing countries than in the United States or other industrial countries. This is both a challenge and an opportunity. It is a challenge because it is the high emissions intensity – and relatively slow or non-existent improvement in emissions intensity – that is behind the high rate of growth in developing country emissions.

Opportunities exist because the technology of energy use in developing countries embodies far higher emissions per dollar of output than does technology used in the United States; this is true of new investment in countries like China and India as well as their installed base (See Figure 2). The technology embodied in the installed base of capital equipment in China produces emissions at about 4 times the rate of technology in use in the United States. China's emissions intensity is improving rapidly, but even so its new investment embodies technology with twice the emissions intensity of new investment in the United States. India is making almost no improvement in its emissions intensity, with the installed base and new investment having very similar emissions intensity. India's new investment also embodies technology with twice the emissions intensity of new investment in the United States.

Our calculations show that emission reductions can be achieved by closing the technology gap. The potential from bringing the emissions intensity of developing countries up to that currently associated with new investment in the United States is comparable to what could be achieved by the Kyoto Protocol (See Table 1). These are near term opportunities, from changing the nature of current investment and accelerating replacement of the existing capital stock. Moreover, if achieved through transfer of economic technologies it is likely that these emission reductions will be accompanied by overall economic benefits for the countries involved.

Figure 2: Greenhouse Gas Emissions Associated with Existing and New Investment in 2001
(Million tons C per \$Billion GDP at Market Exchange Rates)

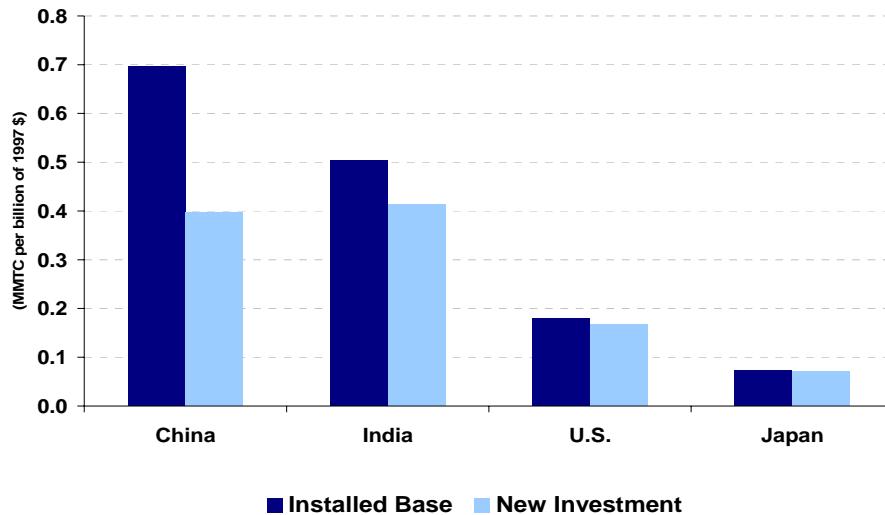


Table 1: Greenhouse Gas Emission Reductions Achievable Through Technology Transfer and Increased Investment

| | To 2012 (MMTCE) | To 2017 (MMTCE) |
|--|--------------------|--------------------|
| Adopt US technology for new investment in China and India | 2600 | 5200 |
| Adopt US technology with accelerated replacement in China and India | 4200 | 7700 |
| Adopt continuously improving technology with accelerated replacement in China and India | 5000 | 9800 |
| <i>EU under Kyoto Protocol (without hot air)</i> | 600 | 1400 |
| <i>All Annex B countries under Kyoto Protocol (including US and hot air)</i> | 2800 | 7300 |

The potential emission reductions estimated in Table 1 are derived from a study my colleagues and I performed using a model of economic growth based on the idea of “embodied technical progress.” In the first case, we assumed that in 2005 new investment in China and India immediately moves to the level of technology observed in the United States, and calculate the resulting reduction in cumulative carbon emissions through 2012 and 2017. This is the technology transfer case. In the second case, we

assume that policies to stimulate foreign direct investment accelerate the replacement of the oldest capital with new equipment, giving even larger savings. In the third case, we assume that the new technology continues to improve over time, as it will if policies to stimulate R&D into less emissions-intensive technologies are also put in place. Even the least aggressive of these policies has potential for emissions reductions comparable to those that would be possible if all countries (including the U.S.) achieved exactly the emission reductions required to meet their Kyoto Protocol targets.

How Can the Asia Pacific Partnership bring about Institutional Change? Although it is clear that there is a relationship between institutions, economic growth, and greenhouse gas emissions, there is no general formula that can be applied to identify the specific institutional failures responsible for high emissions per unit of output in a specific country. Answers to four key questions would provide a basis on which the Partnership could move forward on an agenda of institutional reform:

- How can cost-effective opportunities for improving energy efficiency and reducing carbon emissions in each country be identified?
- What types of institutional reform are most pressing in each country?
- How can institutional change be brought about?
- How large are the potential emission reductions and enhanced prospects for economic growth that could be achieved through institutional reform?

It is particularly challenging to design ways in which Australia, Japan, and the United States can make needed reforms more likely to happen in countries like China and India. Such reforms are clearly the prerogative of each sovereign country. However, China and India have clear interests in encouraging investment, gaining access to the world financial system, and acquiring new technology that can sustain productivity improvement and growth. This creates internal incentives for China and India to be interested in continued reform, as they clearly are. If incremental reforms are likely to occur where the greatest need is perceived, one important role of the APP is to make that need and the benefits of changes in energy-related institutions apparent.

Business Sector Has a Key Role in Achieving the Partnership's Goals: Experts, the private sector, and governments all have key parts to play in the Asia Pacific Partnership, if it is to be successful in bringing about fundamental institutional reform. However, the business sector's role is likely to be the key factor in the Partnership's success. Private companies will be best able to identify the most important opportunities for technology transfer and the institutional reforms needed to make them possible. The private sector will also of course be the source of the actual investments and technologies desired by China and India. The expectation of greater flows of investment and technology from the private sector is likely to be the most important factor making institutional change sufficiently attractive to lead to institutional reforms by the host country.

Businesses that are, or have been, active in China and India have the most direct experience on what institutional, legal and other practices are discouraging investment and technology transfer. Identification of problems and proposals for what would be an improved investment climate need to originate with the businesses that make the decisions on investment and technology. This seems obvious, but when a government-to-government initiative is developed and staffed, there is a natural tendency to turn to studies done by government agencies and contractors rather than asking those who have actually tried to do business and apply technology in China and India. In the Partnership there is an opportunity to bypass the usual route of task forces and studies, and to involve the international business community directly in the diagnosis of needs for institutional reform. It may be that business needs to volunteer for this role rather than waiting to be asked, by recounting the history of their past ventures and the lessons they have learned.

A Plan for Institutional Reform: If there is to be progress on institutional reform, at minimum the key actors or stakeholders -- concerned businesses, other groups with influence on opinion and policy in China and India (including local and regional governments), and national governments -- must agree on the nature and scope of the problems and on reforms required to address the problems. There are four key steps in moving ahead: (1) Characterizing the investment climate and opportunities to reduce greenhouse gas emissions through growth-enhancing institutional reform;(2) developing proposals for specific institutional reforms, together with estimates of what they could achieve by way of emission reductions,(3) understanding the obstacles to change, in particular the opposition to the proposed reforms; and (4) identifying concrete actions that each government will take to bring about institutional reforms.

Making progress on the four steps can be accelerated if the governments of Australia, Japan and the United States would fund research on topics such as the investment climate, the level of technology embodied in new investment, the role of FDI and potential energy savings from technology transfer, and the nature and impacts of pricing distortions on energy supply, demand and greenhouse gas emissions in China and India. Government support for research to make clear the direct consequences of proposed reforms for energy efficiency and the benefits of a market based investment climate for the overall process of economic growth would also be helpful.

Turning Plans into Reality: To be successful, the negotiating process will need to bring forth a sufficient set of offers from each party to bring about meaningful changes in institutions with significant and quantifiable effects on greenhouse gas emissions. These offers would be embodied in an agreement on actions to be taken by all parties, and a framework under which actions would be monitored and additional steps could be agreed. This is the place where the current efforts of the Partnership's taskforces on clean fossil energy, renewable energy and distributed generation, power generation and transmission, steel, aluminum, cement, coal mining and building and appliances to identify technologies and investments that have profit potential and could also reduce emissions would become most useful. These investments would become in a way the

reward to China and India for progress on institutional reform. The voluntary nature of private sector actions in the Partnership underscores the need for institutional reform to turn these potentially profitable investments into real projects.

Conclusions: This recommendation follows a long line of recommendations that to be successful climate negotiations need to follow the pledge and review model rather than the targets and timetables model. The pledge and review model deals directly with the unenforceability of future targets in an agreement among sovereign nations, and provides incentives to carry out promised actions by providing credible consequences for failure to do so. The Marshall Plan is a good example of such a process. After World War II, Europe pledged various actions with the money provided by the U.S., and when it made good on those pledges the program was extended and broadened. Exactly the same could be undertaken by the members of the Asia Pacific Partnership. Future actions by Australia, Japan and the United States desired by China and India would be contingent on success in implementing near term reforms agreed in the process.