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Development Imperatives for the Asian Century

Peter Petri and Vinod Thomas

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Peter Petri is Carl Shapiro Professor of International Finance at Brandeis University and Vinod Thomas is Director General of Independent Evaluation at the Asian Development Bank.

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ABSTRACT

Evidence-based economic policies—pragmatic policies that work—played a major role in Asia's success in raising its living standards in the last half century. However, growth prospects are now threatened by rising income inequality and environmental degradation if Asia continues on its established growth path. Evidence strongly argues for Asia to broaden its development priorities into a triple bottom line: that is, a focus on growth, social inclusion, and environmental sustainability

The paper focuses on how Asia can manage this ambitious goal. Possible resistance from vested interests is to be anticipated, but pursuing this path could bring large overall gains. The paper looks at how Asian governments and their development partners can make a difference in promoting the three policy objectives. Innovations in governance for better accountability, transparency, and feedback will be necessary for achieving these priorities.

Societies in Asia and the international community will also need rigorous evidence and analysis to establish the benefits of this strategy and to make informed policy choices. International financial institutions and the donor community can provide financial lubricants for cooperation, as well as knowledge to help governments counter vested interests and champion regional perspectives on transborder issues.

Reversing the negative social and environmental trends has to become a real development priority rather than a mere aspiration. Progress is possible on the three bottom-line goals, but it will require focusing Asia's vaunted methods of learning and innovation to meet the new challenges.

Keywords: evidenced-based policy, governance, institutions, inclusive growth, Kuznets curve, sustainability

JEL classification: D6, D62, E02, F64, O1, O19, O44

I. EVIDENCE-BASED APPROACH TO POLICY

Asia's diversity defies the easy generalizations that are sometimes used in proposing an "Asian development model." Still, there is an underexplored commonality behind the region's remarkable economic successes: the adoption of evidence-based policy making. This concept[1] is relatively new in the development literature, but pragmatism, flexibility, and gradualism—fundamental elements of evidence-based policies—have been long recognized as characteristic of Asia's successful economies. In these countries, policies were based on results and adjusted to changing circumstances.

The trial-and-error approach spread across many Asian countries, eventually leading to a cluster of growth-promoting measures that featured outward orientation, stable macroeconomics, and high savings and investments, including in human capital. In the 1960s Japan modernized its war-torn economy, developed export markets for increasingly sophisticated products, and sharply raised income levels. Later, the Hong Kong, China; the Republic of Korea; Singapore; and Taipei,China adopted similar strategies, at times through the purposeful imitation of Japanese policy (Petri 1988, Petri 1993). With variations, similar strategies also emerged in Indonesia, Malaysia, and Thailand, and still later in the People's Republic of China (PRC), the Philippines, and Viet Nam. The approach is now being emulated in South Asia, Central Asia, and West Asia, particularly in countries with low income levels and limited natural resource endowments. It is unclear why the evidence-based approach spread so easily in Asia, but the reasons may include high population densities, resource scarcity, and exceptionally low incomes a half century ago.

Governments played a central role in most Asian success stories. They did not necessarily do so with direct expenditures or state-owned sectors, but those examples also exist. More generally, they focused on economic goals and mobilized massive resources, with savings rates at times reaching half of output. Some governments made large investments themselves; others made investment resources available for market agents. Governments assembled capable bureaucracies and monitored performance, and reacted quickly to poor results and new challenges. Research suggests that government effectiveness was unusually high in Asia, and this factor, more than others, is closely correlated with growth. Asia assembled a toolkit for making economies grow—of course not automatically, but more reliably than would have been possible a half century earlier.

Colorful examples illustrate how the approach worked. In the Republic of Korea, former president Park Chung Hee launched his economic growth campaign by arresting 24 business leaders to underline their accountability for results and to government (Jones and Sakong 1980). The government later monitored the largest exporting companies on a daily basis and provided access to credit and other forms of government support based on export results. Some measures were provided selectively, while others, such a generous trade credit, were directly tied to performance.[2]

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[1] Evidence-based policy making originated in the United Kingdom in an effort to improve the effectiveness of national policy decisions (Pawson 2006). In turn, some of its key concepts were borrowed from evidence-based medicine (Sackett et al. 1996).

[2] The government mobilized savings and used them to fund investments by large-scale enterprises. In the terminology of modern economics, it filled in for missing financial markets, a common market failure in emerging economies. It avoided the negative consequences of such interventions by monitoring the productivity of investments. It may have even amplified the consequences of market signals (such as export success) by using them to drive lending policy.

In the PRC, reforms began as experiments in smaller subregions and were later scaled up as part of a "scientific development" strategy. Agricultural reforms—and specifically the household responsibility system—were based on models practiced by some collective units. Industrial reforms were also rolled out through a sequence of experiments. Financial experiments are currently underway in centers such as Shanghai and Guangdong. It has been observed that, responding to uncertainties inherent in the development process, Chinese policy followed "a process of learning, selective adaptation, and innovation" (Lin and Wang 2012).

An especially intense wave of learning followed the Asian financial crisis of 1997–1998, focusing on financial regulation, market oversight, and foreign exchange policies.[3] Affected countries scrutinized their own policy results, as well as those of others in similar circumstances. Mechanisms were developed to manage bankruptcies and bank failures, to monitor financial markets, and to foster macroeconomic resilience. Exchange rates were allowed to settle at relatively favorable levels and substantial foreign exchange reserves were built up to defend against currency runs. Some countries adopted contingency plans to manage capital flows. They also joined in mechanisms such as the Chiang Mai Initiative to establish collective defenses (Park and Wang 2005).

To be sure, Asian governments did not always learn from experience, and economic results were not always positive. There were many prominent failures, ranging from the Great Leap Forward in the PRC and the dominance of the License Raj in India, to major setbacks in the Democratic People's Republic of Korea, missed opportunities in the Philippines, and missteps in virtually all countries. Clearly, the common denominator of success was not luck or culture (as some would say, "what's in the water"), since successes typically emerged from adversity, failure, and hard experience.

In effect, the Asian recipe for growth was built up gradually and experimentally. It now includes stable macroeconomic policies, competitive exchange rates, integration with world markets, high rates of saving and investment, including in human capital, technology, and infrastructure. Most countries prioritized widespread education and no country achieved sustained growth without it. Education still generates high returns—skill and education premiums have risen in Cambodia, the PRC, India, Indonesia, Mongolia, the Philippines, and Viet Nam (ADB 2007, Son 2010, World Bank 2012b). And the toolkit is not complete: the quality of education is now a concern, and health problems present challenges ranging from high rates of maternal and child mortality to gaps in sanitation.

As growth progressed, the detailed strategies varied. Singapore and Taipei,China specialized in small- or medium-scale, innovative industries, often in services and in managing enterprises abroad. Japan and the Republic of Korea became leaders in large-scale technology. Special industry clusters developed in Southeast and South Asia, and the PRC came to dominate global manufacturing. Some countries emphasized domestic innovation while others attracted foreign investment. What remained constant is evidence-based policy—an increasingly purposeful feedback cycle between policies and results.

Evidence-based policy has served Asia well and remains its guide to the future. In low income economies, growth is still the top priority. Exports in labor-intensive industries are driving growth in Cambodia, the Lao People's Democratic Republic, and Viet Nam, the latest Asian success stories. Countries in Central Asia and Myanmar could join them. Policies at this stage can be patterned on those of more advanced Asian economies (Lin 2012). But in middle-income

[3] For an analysis of post-crisis Asian financial systems, see ADB 2000.

countries, new efforts will have to be developed to avoid deceleration in growth, focusing on upgrading technology and competitiveness in factor and product markets (Kohli, Sharma, and Sood, 2011). And as this paper argues, similar tools can also address social inclusion and environmental sustainability.

II. CHALLENGES: INCLUSION AND SUSTAINABILITY

Staying close to evidence has led to exceptional economic growth, but this strategy is now delivering a mixed message. Alongside economic gains, many countries face deteriorating trends in the distribution of income and environmental outcomes that jeopardize progress. This is not unexpected—the United States (US) encountered similar problems as its industrial takeoff matured in the 19th century. The consequences then included social unrest and eventually reform, leading to the adoption of modern regulations on externalities associated with industrialization, including antitrust laws, anticorruption rules, and the establishment of agencies such as the Food and Drug Administration (Hofstadter 1955).

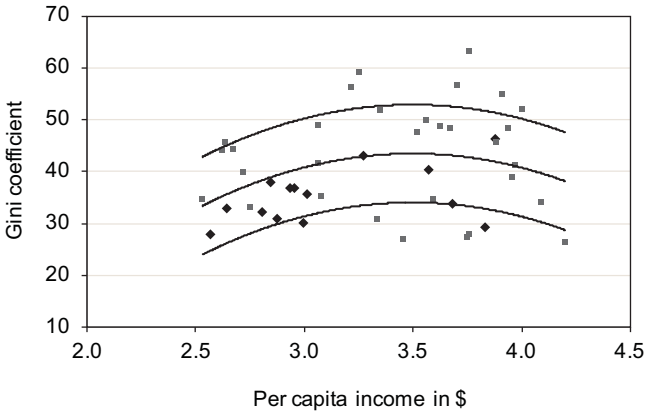
The adverse side effects of growth accumulate slowly, but once they do, they affect not only economic progress but also social cohesion and the legitimacy of governments. Perhaps these side effects could be neglected in the past, in the context of smaller, less globalized economies. But Asian economies are huge and growing at unprecedented speed. Global conditions are also less forgiving.

A. What do Kuznets Curves Predict?

Nobel laureate Simon Kuznets offered an optimistic view of the social and environmental implications of growth: outcomes may deteriorate as incomes first rise, but they will improve in later stages of development. Kuznets made this point for income distributions (Kuznets 1955), but the concept was later extended to environmental externalities (Shafik 1994). The Kuznets curve has become a staple of the development literature, but it is hardly a law, because it merely summarizes historical experience, albeit with useful analytical underpinnings. Countries can try to bend the curve if they are dissatisfied with its shape. It is therefore useful to assess the strength of Kuznets-type relationships. Are the projected long-run improvements large and quick enough to justify postponing interventions?

Figure 1 plots the Kuznets relationship for recent data for 45 countries. The curve follows the expected inverse-u shape, but does not fit accurately ($R^2 = 0.09$). Asian observations tend to be lower than non-Asian data points—perhaps because of the region's labor-intensive growth patterns—but both subsets of observations follow similar curvatures. The curve peaks at an income level somewhat above $3,000 per capita. Variations around it are significant, probably reflecting country differences in economic structure and policy. Finally, the curve is declining slowly over time (based on similar estimates for earlier data); over the last decade the Gini coefficient fell by about 3 points at its peak.

Figure 1: The Kuznets Curve for Gini Coefficients, 2009



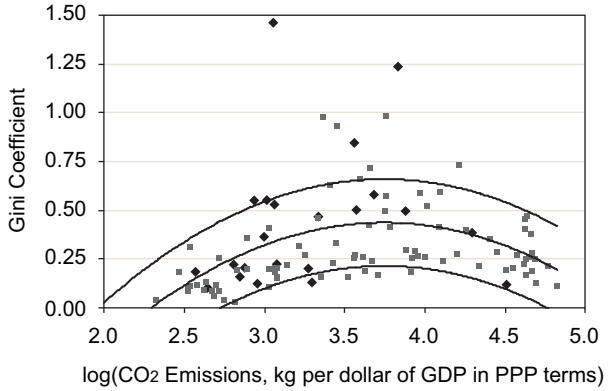
Note: black = Asian countries, grey = other countries. The bold central curve is a quadratic function of log(income per capita), plotted along the horizontal axis. The other two curves show +/– one standard error.

Source: Authors' calculation based on World Bank data.

Figure 2 shows a similar curve for carbon dioxide (CO_2) emissions per dollar of gross domestic product (GDP) in 108 countries. This curve depicts emission intensity, the main technical relationship between production and emissions. An alternative curve, showing emissions per capita, has no such technological basis, but it is useful in demonstrating the disproportionate share of advanced economies in overall emissions.

The Kuznets curve for CO_2 is similar to those for other types of air pollution, but not all types of pollution follow this pattern. It fits reasonably well (R^2 = 0.45) and peaks at around $5,000 per capita. Country-level differences in economic structure and policy are still large: for example, the extreme points far above the curve are those for Kazakhstan and Uzbekistan, economies dominated by energy extraction.

Figure 2: The Kuznets Curve for CO_2 Emissions, 2009



kg = kilogram, PPP = purchasing power parity.

Note: The bold central curve is a quadratic function of the log of CO_2 emissions (kg per dollar of GDP in PPP terms), plotted along the horizontal axis. The other two curves show +/– one standard error.

Source: Authors' calculation based on World Bank data.

Both Figures 1 and 2 are disappointing in an important respect: they are nearly flat in the middle range of observations that apply to Asia's developing countries. For example, on the CO_2 curve doubling income from $5,000 to $10,000 per capita would reduce the estimated intensity of emissions by only 3%, from 0.437 kilogram (kg) per dollar of GDP to 0.424 kg. When multiplied by the relevant income levels, this implies a rise in per capita CO_2 emissions from 2,184 kg to 4,239 kg, a 94% rise. The implication is that the Kuznets process is too slow given Asia's scale and the world's carrying capacity.

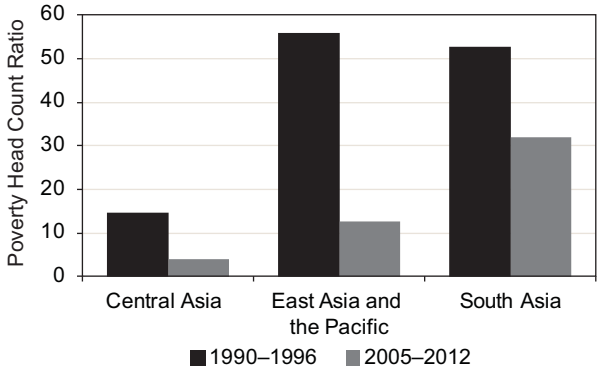
Encouragingly, both the Gini and CO_2 Kuznets curves are falling over time. For CO_2 emissions the decline is rapid. Over the last decade, the curve has shifted down by a third, sharply lowering emission intensities in most countries. These 10 years—probably reflecting technological progress in energy use—led to much larger reductions in Asian emissions than would be expected even from large increases in incomes.

Empirical Kuznets curves, even if accepted as causal (a point subject to much debate), hold out little hope for solving social and environmental concerns in the relevant time frame. For middle-income countries, the curves show only mild improvements in the negative side effects of growth. Indeed, the CO_2 curve suggests rising per capita emissions until an economy reaches a very high income level and/or its growth rate falls below 4%.

B. Trends on Inclusion

In perhaps the most important dimension of inclusion, Asia's developing market economies have made remarkable progress. The incidence of extreme income poverty (the percentage of people with incomes below $1.25 purchasing power parity [PPP] a day) has fallen from 54% in 1990 to less than 21% in data circa 2010. Asia is on track for eradicating extreme poverty by 2030 (ADB 2012a). As Figure 3 shows, progress was especially strong in East Asia, led by the PRC, and the Pacific. No other region has advanced rapidly on so large a scale.

Figure 3: Millennium Development Goals: Poverty



Source: Authors, World Bank data.

But even on poverty, there is room for vast progress. Given the region's huge population, more than 800 million people remain poor even by the standards of extreme poverty—Asians still comprise two-thirds of the world's poor. And while poverty has fallen, the elasticity of poverty reduction with respect to income has been low in Asia (–0.8 in the PRC,

–0.2 in India) compared to Brazil (–3.2), where policies such as cash transfers address poverty directly. The link between growth and poverty reduction could be thus intensified.

In a second important dimension of inclusion, income inequality, the results have been unsatisfactory. Income distribution in Asia has been historically among the most egalitarian in the world, but over the last 2 decades inequality has worsened. The Gini coefficient for developing Asia increased from 39 in the mid-1990s to 46 in the late 2000s, or 1.4% a year (ADB 2012a). Countries accounting for 80% of Asia's population have seen sharp deteriorations in income distributions.

Table 1 shows income distribution data for 29 Asian economies with information for both the 1990s and 2000s. Of these, 12 had more inequality in recent data (Gini coefficients rising by 0.5% or more), four experienced little change, and 13 experienced less inequality (Gini coefficients falling by 0.5% or more). At first glance, these data suggest neutral trends. Yet the 12 countries with growing inequality included the largest economies—the PRC, India, and Indonesia—while those with improving distributions were often small economies with very high inequality to start with, such as the Maldives (with a Gini of 62.7% in the 1990s), the Kyrgyz Republic (53.7%), Bhutan (46.8%), and Fiji (46.8%). In other words, the vast majority of Asians live in societies with rapidly deteriorating income distributions.

This was not always so. Earlier phases of Asian growth were distribution-friendly, as labor-intensive industries helped increase wages and offered widely shared benefits. More recently, growth has been associated with rising returns to capital and rising skills premia, even in labor-abundant countries. These trends are somewhat surprising, but they are useful for stimulating investment in physical and human capital. At the same time, they strongly favor people in high income categories, including those who already have substantial assets, education, and skills. Labor incomes as a share of manufacturing output in the formal sector fell from 48% in the mid-1990s to 42% in the mid-2000s in the PRC, and from 37% to 22% in India in the same period (ADB 2012a). One explanation is the rapid expansion of the world's nonagricultural labor force due to the industrialization of large economies. Another may be the emergence of new forms of technological change that create winner-take-all contests for incomes in highly globalized economies.

Behind patterns of inequality of incomes often lie patterns of inequality of opportunity. Unlike global technological trends, these can be addressed by national policies. Unequal access to public services such as education and health is an important source of inequality and is likely to slow economic growth in the long run. For example, in some developing Asian countries, school-age children from households in the poorest income quintile are three to five times as likely to be out of primary and secondary school than those in the richest quintile. Similarly, infant mortality rates for poor households may be two to three times as high than the rich, and the chance of a poor infant dying at birth is 10 times as high than that for an infant born in a wealthy family (ADB 2012a).

Inequality in developing Asia today is high, but not unprecedented as it is similar to levels long experienced in Latin America, where high inequality appears to have contributed to slower growth. Unfortunately, the trends suggest that inequality in Asia is still rising and neither national nor international trends, short of major policy changes, promise early improvements.

Table 1: Growth and Inequality in Asian Economies

	Gini Coefficients			Income and Growth	
Developing Member Country	1990s	2000s	Annualized growth rates (%)	Per Capita GNI (2011)	GDP Growth (1990–2010)
Central Asia					
Armenia	36.0	30.9	–1.5	3,360	3.0
Azerbaijan	35.0	33.7	–0.3	5,290	5.3
Georgia	37.1	41.3	0.9	2,860	–0.8
Kazakhstan	35.3	29.0	–1.5	8,220	2.7
Kyrgyz Republic	53.7	36.2	–2.5	920	0.8
Tajikistan	29.0	30.8	0.6	870	0.5
Uzbekistan	45.3	36.7	–4.2	1,510	3.6
East Asia					
China, People's Rep. of	32.4	43.4	1.6	4,930	10.1
Korea, Rep. of	24.5	28.9	0.9	20,870	5.3
Mongolia	33.2	36.5	0.8	2,320	3.7
Taipei,China	31.2	34.2	0.5		6.2
South Asia					
Afghanistan		27.8		410	
Bangladesh	27.6	32.1	0.8	770	5.4
Bhutan	46.8	38.1	–5.2	2,070	6.9
India	32.5	37.0	0.7	1,410	6.5
Maldives	62.7	37.4	–8.6	6,530	7.4
Nepal	35.2	32.8	–0.5	540	4.4
Pakistan	33.2	30.0	–0.6	1,120	4.2
Sri Lanka	32.5	40.3	1.3	2,580	5.4
Southeast Asia					
Cambodia	38.3	37.9	–0.1	830	7.7
Indonesia	29.2	38.9	1.4	2,940	5.1
Lao People's Dem. Rep.	30.4	36.7	1.2	1,130	6.7
Malaysia	47.7	46.2	–0.2	8,420	6.0
Philippines	43.8	43.0	–0.1	2,210	3.8
Thailand	45.3	40.0	–0.6	4,420	4.6
Viet Nam	35.7	35.6	0.0	1,260	7.2
The Pacific					
Fiji	46.8	42.8	–1.5	3,680	2.0
Kiribati		40.0		2,110	2.0
Micronesia, Fed. Sts.	45.0			2,900	1.5
Nauru		48.0			16.2
Palau		42.0		7,250	0.7
Papua New Guinea	50.9			1,480	4.0
Samoa	45.0	43.0	–0.8	3,190	2.3
Solomon Islands		46.0		1,110	3.5
Timor-Leste	39.5	31.9	–3.6	2,730	4.6
Tonga		34.0		3,580	2.1
Tuvalu	45.0	37.0	–2.0	5,010	6.2
Vanuatu		46.0		2,870	3.6

Source: Background Note on Growth and Inequality, based on ADB 2012a.

C. Trends on Environmental Sustainability

Key environmental conditions in Asia are deteriorating. Environmental sustainability involves many assets and issues including access to water and sanitation, many kinds of water pollution, land degradation, biodiversity and related factors such as deforestation, and air pollution ranging from ozone-depleting chemicals to particulates and greenhouse gases. Some trends cause direct discomfort to people, but others are silent and slow, causing harm over longer time periods. Environmental trends are also noisy, so newsworthy changes may have little to do with important trends.[4]

Environmental trends vary across emissions. When pollutants produce clear damages within a small administrative district, communities usually address them as incomes rise. For many such pollutants, environmental conditions are beginning to improve in Asia, as they did in wealthier countries in the past. When pollutants cause harm far away and the costs of mitigation are high, even sharply greater damages will not necessarily lead to policy responses. These forms of pollution include particulate emissions and, especially, greenhouse gases and threats to biodiversity. Even administrative units as large as nations have a limited stake in controlling damages that affect distant countries and generations.

Asia's record on the environmental Millennium Development Goals (MDGs) is therefore a mix of good and bad results (Table 2). The region has performed well on ozone-depleting substances, extending protected areas, and to a lesser extent, improving access to safe drinking water. But it has failed to make adequate progress on deforestation, soil erosion, and the preservation of coral reefs. The trends are particularly negative for the major global concerns of greenhouse gas (GHG) emissions and biodiversity losses.

Table 2: Progress on Meeting MDG Environmental Targets, 2008
(as % of Asia and Pacific Developing Countries)

	Early Achiever	On Track	Slow	No Progress/Regressing
Forest cover	22	29	0	49
Protected area	95	5	0	0
CO_2 emissions	17	0	0	83
Ozone-depleting substances	93	0	0	7
Safe drinking water	35	18	35	12
Basic sanitation	28	12	42	18

CO_2 = carbon dioxide, MDG = Millennium Development Goal.

Source: ADB (2010).

[4] For example, much publicity has greeted the finding of relatively flat global temperatures over the last decade. Changes in climate science are inevitable, but current policies fall so far short of recommendations based on hundreds of years of past data, that revisions, if any, would affect at most far distant future policies (The Economist 2013).

Air pollution (not measured as such in the environmental MDG targets) is a pervasive threat in Asia. Emissions include both particulates with harm concentrated that is regional in scope, and greenhouse gases with global effects. Both are tied to the growth of industry and transport, and to relatively pollution-intensive forms of electricity production, cooking, and heating.

Figure 4 shows airborne concentrations of particulates in world cities using the measure for particulate matter suspended in air, i.e., Particulate Matter (PM-10). The dots represent different levels of exposure. Nearly all Asian cities are marked by orange or darker red dots, indicating PM-10 concentrations above 50 micrograms per cubic meter ($\mu g/m^3$), the maximum level set by the World Health Organization (WHO) guidelines (WHO 2011). Few cities elsewhere have concentrations that high. WHO estimates that health risks would be reduced if its guidelines were met—lowering PM-10 pollution from 70 $\mu g/m^3$ to 20 $\mu g/m^3$ would cut air quality related deaths by 15%. Many Asian cities have intensified monitoring and several, including Hong Kong, China, have committed to making major improvements in air quality.

Developing Asia now also accounts for 35% of global CO_2 emissions (twice its share of global GDP) and this is projected to rise to 44% by 2030 (International Energy Agency 2011). The PRC is the world's leading emitter of CO_2, followed by the US and then India (ADB 2012b). Continued CO_2 emissions may have minimal short-term local effects, but under business-as-usual assumptions could raise global temperatures by 5°C by the end of the 21st century (World Bank 2010a). Such a large change would likely depress crop yields, decrease water availability, and raise risks of intense weather events, abrupt shifts in climate, and the extinction of species (Stern 2006).

Figure 4: Air Pollution: Exposure to Particulate Matter in World Cities, 2003–2010

Source: World Health Organization (2011).

Even 2°C warming above preindustrial temperatures would generate new weather patterns with more frequent and intense extreme events and greater coastal storm surges. Between 100 million and 400 million people could be put at risk of hunger and 1 billion to 2 billion people would no longer have enough water to meet their needs. These losses would disproportionately affect developing Asia—for example, all five of the world's most vulnerable cities (Bangkok, Dhaka, Jakarta, Manila, and Yangon) are in this region. The results of a 2 °C increase in global temperatures could reduce annual incomes by 4%–5% in South Asia, as opposed to minimal losses in high-income countries (World Bank 2010a).

The costs of stabilizing CO_2 concentrations in the 450–550 parts per million (ppm) range, estimated as necessary to limit temperature increases to the 2°C–3°C range, are relatively low and would earn a solid economic return by avoiding future costs, a theme that is explored later in this paper. Even so, this strategy is hostage to collective action problems within countries and among countries. The structure of efficient solutions—essentially uniform taxes on GHG emissions—is well understood, and international negotiations have made progress on some issues, for example, on reducing hydrofluorocarbon emissions. But timely global action on carbon mitigation does not appear to be in sight. In the meantime, energy-related investments across the world continue to lock in a carbon-intensive growth path.

III. LIMITS TO TRADITIONAL SEQUENCING

Asia's traditional priority on growth has been logical and yet unusual. While every society has large material needs in its early stages of development, many fail to address these needs as groups and leaders compete to enrich themselves (Acemoglu and Robinson 2012). Whether lack of resources, egalitarian income distributions, or other factors led to the growth orientation of most Asian countries is still widely debated, but the results have been exceptional. Returns on economic investments have been high, as expected in early development, and have been strongly reinforced by evidence-based, growth-oriented policies.

The strong priority on growth meant that the non-economic dimensions of development, except for education, have been generally underemphasized. Asian economies typically kept social expenditures low and focused investments on economic infrastructure. To the extent that externalities were considered, they were expected to follow Kuznets curves, that is, to produce worsening side-effects at first, to be followed by improvements later.

The shift in priorities from growth to the triple bottom line requires a reorientation in policy perspectives. This process is underway, but many decision makers are understandably reluctant to abandon an approach that worked well over a long period of time. Even so, mounting evidence on externalities leaves few options. The Kuznets process offers little hope that negative trends will be reversed fast enough to avoid collisions with hard constraints. Current social and technical conditions imply tighter limits, while Asia's economic growth has achieved unprecedented momentum.

The potential collision between externalities and limits in Asia is not due to "wrong" policies. Asian countries have not invented development models that are more harmful than those followed by others—Asian data are consistent with international Kuznets curves. Rather, Asia mastered the mechanics of development more fully than other regions in the past, and has achieved faster growth. In fact, improved technological conditions for development today—as reflected, say, in falling international Kuznets curves—have probably reduced, not increased the adverse side effects of Asian growth.

In the case of social externalities, limits are set not just by the rising economic and social costs of externalities, but also by the expectations of growing middle class populations, equipped with modern communications technologies. In the case of environmental externalities, the limits are defined in part by global carrying capacities that have been stretched thin by past development. Asia's growth momentum has speeded up the clock—the time left for action, already reduced by prior economic activities elsewhere, has been further shortened by the region's success.

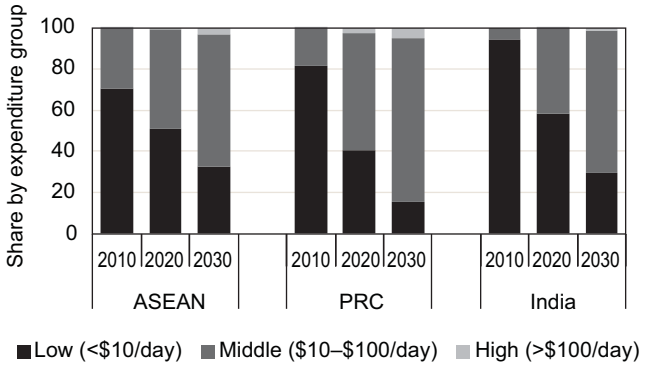
This potential collision of trends and limits makes traditional sequencing decisions—growth first, externalities later—increasingly risky.[5] That is why many governments are now shifting to broader objectives, although the hardest policy choices still remain to be made. How strategies will be adjusted—and who will bear the costs of avoiding collisions—is unclear. We will show below, however, that solutions are at least within technical and financial reach.

A. Rising Expectations

The first important set of limits is social: rising expectations for social outcomes and sharper public awareness of deteriorating conditions. Rising expectations are fueled by technology and the dramatic growth of the middle class (for measurement purposes defined as people with expenditures between $10 and $100 per day). The middle class are no longer tied to the mechanics of survival—they are often educated, mobile, and urban, and they have the tools to influence the directions of development. The middle class populations of the 10-nation Association of Southeast Asian Nations (ASEAN), the PRC, and India, for example, already number 500 million people and will likely surge to 2.5 billion by 2030 (Petri and Zhai 2013). In the next 2 decades, the shares of middle or upper income classes are projected to increase to 67% of the population of the ASEAN, 84% of the PRC, and 70% of India (Figure 5).

[5] This problem is similar to Malthusian concerns, often proven wrong, that economic growth will eventually crash into constraints defined by finite resource endowments. But the crucial difference in the case of externalities is that there is no automatic mechanism, such as rising resource prices, to prevent the exhaustion of resources. Given this market failure, government policy has to forestall the collapse of resources threatened by externalities.

Figure 5. Middle Class Populations Are Becoming Dominant in Asia



ASEAN = Association of Southeast Asian Nations, PRC = People's Republic of China.

Source: Petri and Zhai (2013).

The influence of the middle class is positive—they prize stability, spend, save, and invest in education, health, and residential assets (ADB 2010). They are also an important force in politics, especially with leverage provided by emerging information and communications technologies. These tools enhance access to data, including granular information about events that directly affect lives, and they facilitate the development of groups that share information and shape the political process. The revolutions in the Middle East, affecting middle income countries similar to Asia in terms of the penetration of new technologies, demonstrate the historic implications of these trends.

Figures 6 and 7 show trends for two such technologies, mobile telephony and internet access in three Asian countries. Over the last 2 decades both technologies reached nearly everyone in upper-middle-income Malaysia. With a lag of a decade or so, access to mobile phones spread widely across the PRC and low income India. The figure suggests that internet penetration is now also poised to enter its most rapid period of diffusion in the PRC and India. So in the next decade both technologies should be accessible to the vast majority of Asians. In the meantime, the capabilities they offer will also expand.

Figure 6: Mobile Telephone Penetration

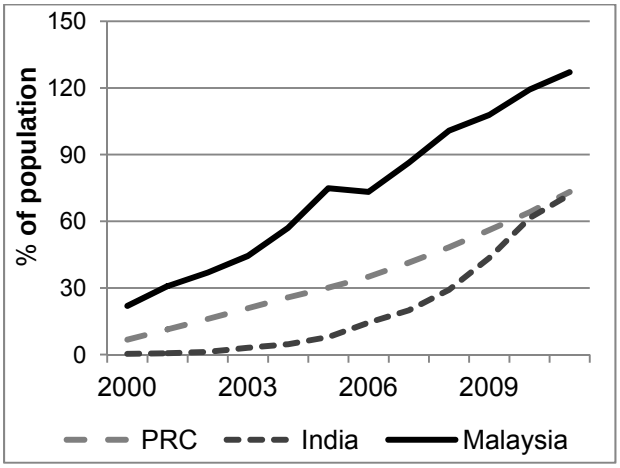
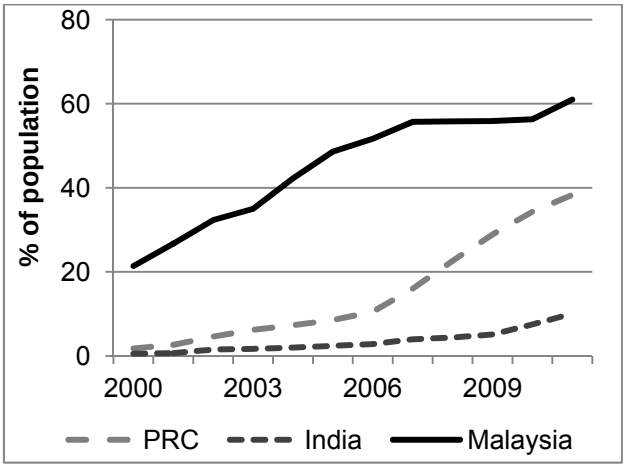


Figure 7: Internet Penetration



PRC = People's Republic of China.

Source: International Telecommunications Union. http://www.itu.int/en/ITU-D/Statistics/Pages/default.aspx, (accessed 14 April 2013).

These trends are changing how governments do business by borrowing technologies from the e-commerce sector, and how they interact with citizens (Banerjee 2007). Technology not only makes government operations cheaper and easier, but it also provides transparency and thus undermines the possibilities for corrupt practices. The Seoul municipal government's Online Procedures Enhancement for Civil Applications system is a particularly good example of how such systems can reduce corruption and what makes them effective. Indeed, its success led the government to adopt a similar system nationwide (Kim, Kim, and Lee 2009).

Technology also raises awareness about factors that affect daily lives, such as water quality, air pollution, and food safety. When unsatisfactory conditions are noted—as they invariably are in social networks—they can also force government action. The PRC's Weibo blog, for example, caused the resignation of senior officials blamed for poor performance and corruption, started campaigns to help street children, boycott polluting companies, and ban the use of shark fins in soup (Hewitt 2012).

The effects of the communications revolution cannot yet be predicted with confidence, but they have already demonstrated an ability to change policy. They will undoubtedly become more influential, especially on personal issues affected by inclusiveness—such as property rights, access to public services, threats to public health—and environmental hazards. They offer new options for governments to address issues such as corruption and costly data collection that have long stymied effective policy. And they raise expectations that governments and officials will act with the public interest in mind.

B. Environmental Capacity Constraints

The second set of limits is physical. The earth's environment is naturally self-healing—airborne particulates settle back to earth, water is purified by passing through the water cycle, and forests absorb CO_2. However, environmental sinks have limited capacity. Until recently, these limits themselves were of little interest and concerns about the expansion of economic activity

focused on exhausting agricultural resources, or more recently energy and industrial raw materials. Capacities of environmental sinks exceeded, and were expected to continue to exceed, the human demands placed on them.

But these relationships are now changing, with Asia playing a prominent role in current trends. As noted, this is due to the scale and timing of Asian development, and not its policy or technological structure. Asian growth appears to be less resource-intensive than was the case in the past due to technological changes over time. But Asian development is now affecting environmental systems that are saturated by earlier emissions by advanced countries. Asia is also very densely populated: population relative to biologically active land areas may be twice as high as elsewhere in the world (ADB 2011).

The accelerating depletion of environmental capacity is illustrated by atmospheric concentrations of CO_2. These pollutants were estimated to be around 270 ppm in 1750, and were roughly in equilibrium then due to offsetting natural additions and subtractions of GHG. But continuing man-made emissions have sharply increased levels well above the natural equilibrium. Some GHGs remain in the atmosphere for a 100 years, and by 2013 CO_2 concentrations had reached a level of 400 ppm (Showstack 2013). In another 20–30 years, they can be expected to reach 450 ppm, the frequently cited threshold for preventing temperature changes in excess of 2^{o}C and severe global damages. In effect, 130 ppm of the Earth's additional CO_2 carrying capacity of 180 ppm, or 72% has been already used up, most of this represented by emissions before the recent acceleration of Asian growth.

The World Wildlife Fund for Nature (WWF) measures the earth's regenerative capacity in terms of the land area required to renew water, maintain species, absorb GHGs, and sustain agriculture and fisheries. The WWF's comparison of humanity's "ecological footprint" with the Earth's regenerative capacity shows that until the 1970s, the Earth's capacity exceeded human demands. In the short time since, economic development has pushed demands to about 1.5 times carrying capacity, and will push them to twice that level in the next 30 years. These results are not due to the scale of human activity, but to how economic activity is organized (for example, around carbon-intensive energy sources).

Capacity limits are also evident in other dimensions. Water supplies are under pressure in South Asia, the northwestern part of the PRC, and Mongolia (ADB 2011). Water stress will be exacerbated by climate change since many large Asian river basins are vulnerable to the melting of glaciers and snowfields that supply water throughout the year. As human activity spreads and intensifies, it also exerts pressure on other species. The WWF estimates a 28% decline in "biodiversity health" in the last decade, with the losses concentrated in tropical areas (World Wildlife Fund for Nature 2012).

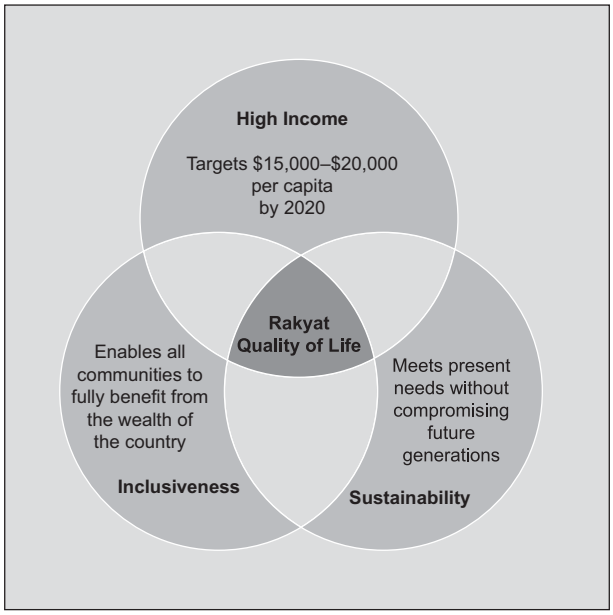
C. How Priorities Are Responding?

Social and environmental goals are increasingly recognized in government planning. The ultimate results are still unclear, but the conceptual framework for a broad agenda is taking shape. These changes can be tracked by comparing the region's current development plans with those drafted roughly 2 decades ago. Examples are provided below for Malaysia, the PRC, India, Indonesia, and the Philippines.[6]

[6] These countries were selected because they are large or represent a group of important economies, and because they had reasonably comparable plans available for a recent year and an earlier period.

Malaysia's Sixth Five-Year Plan, 1991–1995 was designed to promote economic progress and to reduce absolute poverty. It noted the importance of "relative poverty," but mainly in the context of challenges posed by Malaysia's ethnic diversity. Direct interventions to handle that issue are now being scaled back in favor of general efforts aimed at improving the income distribution. The New Economic Model (National Economic Advisory Council 2010) provides a clear, co-equal ranking of the three priorities (Figure 8).

Figure 8. Malaysia's New Economic Model



Source: National Economic Advisory Council (2010).

Malaysia's earlier plan mentioned environmental issues only tangentially and did not treat them as a priority. It noted that "in the pursuit of economic development adequate attention will be given to the protection of the environment and ecology" and called for the "prudent management of natural resources and the ecology as well as the preservation of natural beauty." But the plan specified little action, except for a decision to draft a National Conservation Strategy.

The current plan also shifted the emphasis from specific interventions to comprehensive results. For example, it notes that "reducing inequality is one of the defining features" of the New Economic Model and that equality before the law is safeguarded in the constitution.

The PRC's opening-up strategy during the early 1990s dictated robust economic reforms and strengthening international competitiveness. Inclusive growth and income inequality did not attract much attention in its Eighth Five-Year Plan, 1991–1995. The Eleventh Five-Year Plan, 2005–2010 recognizes that with economic growth, environmental and social balances have been disturbed. The Twelfth Five-Year Plan, 2011–2015) goes much further by explicitly shifting objectives from growth led by investment to building a harmonious society based on inclusive growth.

The plan's key themes—rebalancing the economy, ameliorating social inequality, and protecting the environment—are reinforced by extensive, specific initiatives and targets. These include higher minimum wages, universal primary education, extending social security and health care schemes, reducing energy intensity, setting mandatory emissions targets, and introducing carbon trading. Other measures proposed for consideration could relax the household registration system and accelerate reductions in regional income disparities.

India embarked on a successful process of liberalization and deregulation in the early 1990s. The Eighth Five Year Plan, 1992–1997 addressed income inequality and inclusive growth only rather generally. The plan contained general language on universal primary education and on strengthening nongovernment organizations for rural development, but no tangible indicators or targets. The Eleventh Five Year Plan, 2007–2012 was much more operational, identifying 27 targets. New initiatives included, for example, guaranteed employment for rural unemployed households through a National Rural Employment Guarantee program.

The Twelfth Five Year Plan, 2012–2017 is built around the vision of "faster and equitable growth, where ecological security for sustainability and inclusiveness is restored, (and) equity in access to all environmental goods and ecosystem services is assured through institutionalization of people's participation." The plan includes 25 measurable targets, several of which address inclusiveness, including reducing headcount poverty by 10 percentage points, generating 50 million nonfarm jobs, and increasing average years of schooling to 7 years.

Indonesia's Master Plan, 2011–2015 proposes explicit measures to bring millions of poor into the development mainstream. It establishes targeted subsidies and cash transfers, and a Family Hope Program of conditional cash transfers to finance health and education expenditures. Other efforts aim to extend credits to small and medium enterprises at the village level.

Although the Philippines had unusually high income inequality during 1990s (its Gini coefficient was 44), its Medium-Term Philippine Development Plan, 1996–1998 focused mainly only on headcount poverty. In contrast, the current Philippines Development Plan, 2011–2016 stipulates targets, outcomes, risks, and assumptions for reducing income inequality and accelerating inclusive growth. The targets include, for example, achieving universal elementary education by 2016. But the plan does not set out interventions to achieve these goals—indeed, it discusses the risk that parents and government agencies may not have the funds to meet the plan's goals.

In short, all the country plans analyzed have now adopted triple bottom lines, in the sense of lifting the discussion of environmental and social goals to a level similar to that assigned to economic ones. But implementation is still not prescribed in equal detail. Thus, it is not yet clear whether governments will be willing to commit the resources for progress on all three goals.

IV. THE ECONOMICS OF MULTIPLE PRIORITIES

Discussions of economic and social priorities are usually oversimplified. It is often argued, at one extreme, that the trade-offs between goals are large and costly and, at the other, that goals can be aligned costlessly. Neither extreme is true. Economic gains, as evaluated under market prices, are not fully aligned with social goals. In an otherwise undistorted economy, this means that achieving social goals not reflected in economic calculations involves economic cost. But pricing mechanisms can be designed to achieve a socially optimal mix of objectives.

At the same time, economies are seldom distortion-free, and some common, large distortions in Asia and other regions work against inclusion and sustainability as well as economic growth. Eliminating such distortions creates an important subset of policy options that yield win-win solutions, in the sense of increasing output and improving social and environmental outcomes at the same time. Such options are especially likely to exist when governments begin to tackle the adverse side effects of growth.

A. How Externalities Affect Welfare Outcomes

Externalities—the negative effects of market transactions on people who do not participate in them—are not reflected in market prices. Some externalities involve economic costs to others, when industrial air pollution depresses agricultural productivity, for instance. Other externalities involve effects that are not measured in prices. An important subset of unmeasured effects is the depletion of environmental assets, such as air, water, and biodiversity. In some countries (the Russian Federation, for example), this effect is so large that accounting for the depletion of natural assets reduces net real investment to zero (Thomas et al. 2000).

A range of approaches has been proposed to eliminate these accounting biases (Stiglitz, Sen and Fitoussi, 2010), but conventional measures of output continue to predominate. It has been shown that growth accounting frameworks that incorporate natural assets not only make more sense, but also yield better predictions of growth (Thomas et al. 2000).

In the absence of a more comprehensive accounting framework and policies to signal its implications to markets, externalities do not appear in prices and market decisions ignore them. Thus, private actions to eliminate negative externalities will appear costly to those making the decision, even if the actions generate national benefits. Similarly, government actions to control externalities will appear costly as only expenses will be counted in public accounts.

An additional complication involves distant future generations. The Stern Review (Stern 2006) uses a low, normative interest rate of 1.4% to calculate the present value of future damages, based on the ethical principle that the welfare of all generations should count equally in policy decisions.[7] In contrast, economists typically use a positive rather than a normative rate, say around 6%, as observed in market decisions (Nordhaus 2007). This choice has far-reaching consequences. The Stern Review calculates large damages from climate change equal to an annual 5% of world GDP. But Nordhaus notes that half of this cost involves damages that would occur far in the future, after the year 2800. Such distant effects disappear from consideration (in other words, have near-zero present value) when evaluated with even slightly higher interest rates.

[7] The small positive discount rate is due to the fact that future generations will be wealthier as a result of the accumulation of capital and technology, and hence additions to their income produce less welfare.

These issues are summarized in Table 4. The upper left cell of the table shows market decisions, that is, transactions based on market prices and interest rates. These do not account for externalities or distant future effects. The upper right cell shows the effects of price signals that correct externalities; for example, carbon taxes. These decisions do account for externalities, but from the viewpoint of normal (and some would argue myopic) investors.

Table 4: How Prices Shape Decisions

Price Discounting	Market Prices	Externality-Corrected Prices
Market interest rates	Market decisions	Decisions that internalize the external effects of transactions
Normative (low) interest rates	Decisions that internalize the interests of future generations	Decisions that internalize external effects and the interests of future generations

Source: Authors.

The lower two cells of Table 4 introduce corrections to interest rates and externalities. In this row, the welfare of future generations is treated similarly to that of the current one. This row would likely require interest subsidies to lower discount rates from positive to normative levels.[8] Some have argued that committing to such a welfare perspective—and interest rates—would require that large subsidies be offered to ordinary investments, as in the lower left cell.

Moving toward the lower right corner of Table 4—introducing price signals that reflect the externalities and the interests of future generations—makes decisions less selfish and more sensitive to the interests of others affected by externalities and/or living in the distant future. The lower right corner corresponds to the vigorous mitigation strategies recommended in the Stern Review. The upper right cell corresponds to the policies advocated by Nordhaus.

B. The Scope for Win-win Policies

Market decisions are often affected by policy distortions (such as energy subsidies) and some distortions systematically bias decisions toward generating adverse side effects (such as CO_2 emissions). Distortions that reinforce externalities provide incentives to do wrong from the viewpoints of both economic and noneconomic objectives.

Distortions that amplify adverse externalities offer unusually attractive policy options: win-win solutions from both economic and social (or environmental) viewpoints. Ending energy subsidies would go a long way to controlling GHG emissions. Similarly, distributing education investments widely would stimulate growth. Berg and Ostry (2011) estimate, for example, that

[8] A little discussed feature of low discount rates introduced in some studies for ethical reasons is that they would also call for sharply increased conventional investments (as well as environmental investments) in order to make future generations better off.

closing half the inequality gap between Latin America and emerging Asia would have more than doubled the expected duration of growth spells in Latin America. To be sure, other policies—that might be called net-win policies—can also create net social benefits, even if they impose economic costs. Both increase economic welfare, but the public case for win-win policies is usually easier to make.

The silver lining of the challenges that Asia now faces is that unusually effective policies—low hanging fruit—are likely to be available for launching the region's new priorities. These early, win-win options can make it possible to pursue economic, social, and environmental goals. For example, the cost curve for the mitigation of global CO_2 emissions discussed below shows that one-third of the mitigation to stabilize carbon concentrations could be accomplished with policies that positively effect on conventional economic output.

C. Inclusive Growth

Inclusive growth is generally seen as a strategy that maximizes equality of opportunity. The case for inclusive growth is partly ethical, but it is also based on the insight that the equality of opportunity increases economic efficiency. It is important to emphasize that equal opportunity—sometimes called equality for short in this discussion—does not suggest the elimination of income differences that result from effort and productivity. Equal opportunity allows societies to increase output, for example, by providing access to educational resources to all citizens, regardless of wealth, gender, or other characteristics unrelated to their ability to earn returns on human capital. Equality of opportunity eliminates distortions—excessive investment in some people, inadequate investments in others—that normally characterize economies with concentrated distributions of assets (Birdsall and Londono 1998).

Poverty reduction has long been the most urgent goal of an inclusive growth strategy and is closely related to more equal distribution of income. Inequality short-circuits the poverty impact of economic growth. Had equality remained stable in Asian countries where it increased, the same level of growth in 1990–2010 would have lifted about 240 million more people out of poverty than it actually did. This figure corresponds to 6.5% of developing Asia's population in 2010 and 8.0% of those countries with increasing inequality (ADB 2012a).

But equality of opportunity has wider implications than ending poverty—it is also concerned with the welfare of the near-poor, and more generally with differences among segments of society that affect social well-being and cohesion. This broader role of equality has received increasing attention in recent policy debates. The World Bank, for example, has shifted its targets from ending poverty alone to also boosting the income of the lowest 40% of the population (World Bank 2013).

The effects of greater equality on growth have been recently catalogued by Nobel laureate Joseph Stiglitz. He argues that inclusion leads to faster growth partly because it makes economies more stable (Stiglitz 2012). In contrast, when income shifts to wealthier individuals, they create pressures for deregulation, and aggregate demand weakens—a cycle that eventually leads to easy credit and a financial crisis. Stiglitz also argues that inclusion increases productivity by raising investments in public goods, including education. And he cites psychological evidence that more equal income distributions encourage productivity instead of reducing it, as commonly believed. There is also evidence that greater equality diminishes policy biases that favor the wealthy, and reduces the polarization of democratic systems (Dadush, Dervis, and Milson 2012).

The theoretical arguments for a general, positive relationship between equality and economic growth are not easy to confirm with empirical evidence (Banerjee and Duflo 2003). While some authors do find a positive relationship (Perotti 1996), others find a negative relationship (Li and Zou 2002), or no significant effects (Barro 2000, Basu 2013b). This empirical confusion may reflect the long and imprecise lags that are likely to be associated with the beneficial effects of equality, for example through the education channel. Also, changes in equality, rather than levels, appear to matter. Finally, the evidence is often confounded by reverse causation—the possibility that growth leads to inequality and these effects overwhelm the positive influence of equality on growth.

Despite these challenges, there is evidence to confirm more detailed aspects of the equality–growth relationship. Educational spending apparently encourages growth (Lopez, Thomas, and Wang 1998) and so does greater educational equality (Thomas, Wang, and Fan 2001). Income equality also generates longer growth spells (Berg and Ostry 2011). While growth could accelerate for many reasons, it cannot be sustained if there is great inequality, and hence much unemployment, biases in public services and taxes, and distorted access to credit. Growth episodes in Asia, where distributions were relatively equal in the past, lasted much longer than those in Latin America and Africa. And income equality contributes to social cohesion and reduces the risk that political instability will cause growth to collapse (Rodrik 1999). The International Institute for Labor Studies also documents significant statistical relationships between unemployment, inequality, and social unrest (International Labour Office 2010).

Based on such theoretical and empirical results, extensive policy recommendations have been developed to operationalize the concept of inclusive growth (Zhuang and Ali 2010). The first pillar of this strategy emphasizes employment-generating growth by supporting small and medium enterprises, improving productivity in lagging sectors, liberalizing labor markets, and eliminating factor market distortions. The second pillar targets equality of opportunity through investments in human capital and regional connectivity, improved access to land and infrastructure, and the elimination of barriers based on caste, gender, ethnicity, or social groups. The third pillar creates safety nets to diminish the transitory effects of poverty. Experience tells us that these pillars are not to be seen in isolation but rather as mutually reinforcing ones.

D. Green Growth

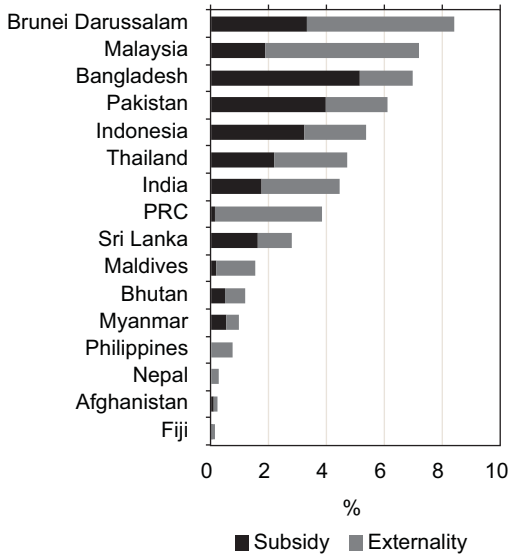
Green growth, like inclusive growth, envisions making improved environmental outcomes and economic growth complementary. An important subset of recommendations involves removing energy and some agricultural subsidies. Other strategies focus on net-win approaches, noting that the benefits of low-carbon strategies will also include investments, new technologies, and trade opportunities in related industries.

As already noted, eliminating energy subsidies offers an especially important opportunity for win-win solutions. Worldwide “pre-tax” energy subsidies (defined as the difference between domestic and world energy prices) are estimated at $480 billion, or 0.7% of world GDP. “Post-tax” subsidies also include externality charges (lost taxes and damages to other sectors of the economy) and rise to $1.9 trillion, or 2.7% of world GDP (International Monetary Fund 2013). Conceptually, these two estimates correspond to price corrections in the upper left and the upper right cells, respectively, of Table 4.

Asian economies have higher energy subsidies than the rest of the world: pre-tax subsidies are 0.9% of GDP and post-tax subsidies are 4.4%. Subsidies are not only large in energy-rich economies like Brunei Darussalam, Indonesia, and Malaysia, but also in poor ones such as Bangladesh, India, and Pakistan (Figure 10). For most countries pre-tax subsidies and the externality effects are roughly equal, but when the PRC (where pre-tax subsidies are low) is averaged into the regional results, externality charges are about three times pre-tax subsidies.

Eliminating energy subsidies would increase growth by stimulating energy investments, making more resources available to governments, and improve overall productivity by shifting resources toward sectors with comparative advantage. It would also make people healthier and ease congestion. Eliminating post-tax energy subsidies is estimated to reduce CO_2 emissions by 4.5 billion tons, or by 13%. These reductions represent almost 20% of the total required to achieve stabilization of global temperatures at 2°C–3°C levels, while also making a large impact on particulate air pollution.

Figure 10: Energy Subsidies, % of GDP



PRC = People's Republic of China.

Notes: Subsidy is pre-tax subsidy, externality is the difference between pre- and post-tax subsidies. Cambodia, Kiribati, the Lao People's Democratic Republic, Papua New Guinea, Samoa, Solomon Islands, Timor-Leste, Tonga, Tuvalu, and Vanuatu are not shown because they have zero subsidy estimates.

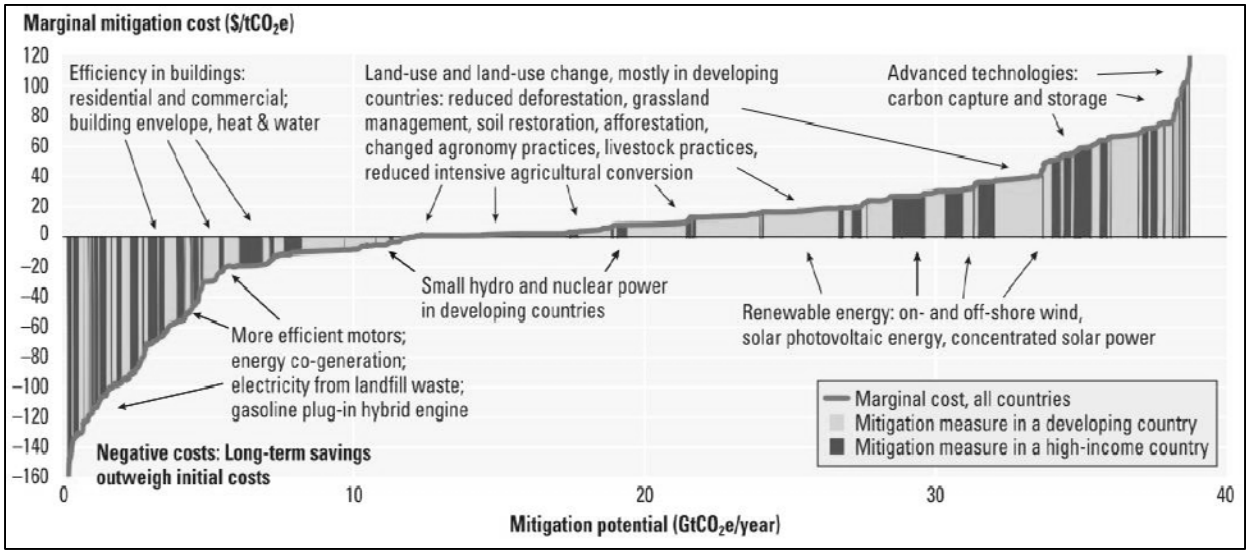
Source: International Monetary Fund (2013).

A comprehensive cost curve for global CO_2 mitigation has been estimated by the World Bank (Figure 11) to show the full range of alternatives. Win-win solutions are those with negative marginal mitigation costs, toward the left of the curve. Figure 11 suggests that win-win options, including the elimination of subsidies and other initiatives, would cover about one-third of the mitigation required to reduce emissions by 38 gigatons carbon dioxide ($GtCO_2$) per year,[9] sufficient for a path that stabilizes emissions in the 450-ppm range.

[9] The World Bank estimates that CO_2 mitigation in 2050 would have to be in the range of 28 $GtCO_2$/year to 48 $GtCO_2$/year to stabilize atmospheric CO_2 concentrations at 450 ppm. We use the midpoint. Stabilizing at 550 ppm would require somewhat less mitigation (World Bank 2010a, p. 204).

The cost curve shows that mitigation is not only affordable, but should at first generate solid returns on investment. Eventually net-win projects may be also required, but even so estimates of costs cluster at 1%–2% of global GDP for policies that will limit global warming to 2°C above pre-industrial temperatures (IPCC 2007).

Figure 11: Estimated Costs for CO_2 Mitigation



CO_2 = carbon dioxide, $GtCO_2$ = gigatons CO_2., tCO_2e = tons of carbon dioxide equivalent.

Source: World Bank (2010a).

Inaction is also costly. Even a 2°C rise in global temperatures would impose significant adaptation cost on the world, including $36 billion–$40 billion per year estimated for the Asia and the Pacific region (World Bank 2010b), and costs will rise sharply with less favorable mitigation scenarios. Whatever strategies are adopted, adaptation to changing environmental conditions must begin. Significant investments are required to improve resilience to disasters, including many that are climate induced. These range from improved land use, water management, transport and building construction to insurance and financial systems that enable people to recover their livelihoods more quickly (ADB 2013).

Efforts to reduce pollution or cope with its consequences typically result in national and international political battles. Countries, regions, firms, and individuals that are intense energy users, and especially those who rely on carbon-intensive fuels such as coal, bear the largest adjustment burdens under carbon mitigation schemes. They will resist changes and often have disproportional political influence. This is why governance—strategies to assemble support and implement policies effectively—will be critical to the pursuit of new priorities.

As the transition to more inclusive and sustainable policies gathers steam, the balance of political interests should improve. New industries will be born in the spaces created by policy. Net economic benefits will become clearer. And governments will gain credibility for making progress on problems that many now consider intractable.

IV. WHY GOVERNANCE IS KEY

Policy actions consistent with Asia's new priorities are necessary yet difficult to execute. This is so despite powerful arguments for targeting inclusion and sustainability, favorable possibilities for win-win policies, and a substantial, affordable action agenda.

The first impediment to action is the lack of consensus, and so far in most countries, behind the new priorities. The case for action is complicated, has not been made persuasively enough in much of the region, and sometimes involves real costs to individuals. The second impediment is that Asia's techniques of governance have not yet caught up with the challenges of the triple-bottom-line—they are still too closely tied to the very different requirements of economic growth alone.

These challenges are unusually great in the case of social and environmental policies. Even policies that generate win-win results face resistance from vested interests and often cannot be completed as planned. According to the International Monetatry Fund (IMF 2013), less than half of all energy subsidy reforms were fully successful. Asia's governance[10] is strong in many dimensions, but new, smarter tools—including greater civic participation—will be critical for achieving noneconomic priorities.

A. Assembling Political Support

Few policy initiatives benefit everyone, whether or not they involve expenditures, changes in regulations or taxes, or removing costly distortions on economic activity. And overcoming political opposition is especially difficult when the beneficiaries are politically weak—because they are poor or involve many people with small individual benefits, as is often the case with social and environmental policies. The details for assembling political support vary across political systems, but new policies typically require vigorous persuasion, political will, and often compensation.

Persuasion matters because few people are likely to be familiar with the technical details of social and environmental problems and solutions. The IMF found, for example, that lack of public information on the implications of energy subsidies was a major barrier to reform in 17 of 28 past reform efforts (IMF 2013). Vested interests may even inject misinformation into policy debates. Discussions of energy policy, for example, are often focused on claims that subsidies benefit the poor, when in practice the wealthiest quintile of the population typically captures six times as much benefits as the poorest quintile does (IMF 2013).

Credible public voices, like that of former US vice president Al Gore, can help to make public debates more informative and persuasive. Making solid research accessible to such voices and the public is in turn a key function for government. Prestigious government efforts, such as the Stern Review and Australia's similar Garnaut Review (Garnaut 2011), played such a role in national and global policy debates.

B. Governance Affects Outcomes

Studies broadly confirm that the quality of governance affects outcomes positively. Recent results that distinguish among components of governance permit even finer conclusions.

[10] Governance is consist of the formal and informal rules and institutions that enable countries to convert political priorities into results.

Table 5 compares the growth rates of deficit (poorly performing) and surplus (well performing) economies for several measures of government performance. The results show that government effectiveness, regulatory quality, and control of corruption make significant positive contributions to economic growth in developing Asia and other regions of the world as a whole (Zhuang and Jha 2013). A number of other factors associated with good governance, however, appear to be less relevant to growth performance.

Table 5: Real Income Growth Rates in Governance Surplus and Deficit Economies, 1988–2011

	Governance status	Developing Asia	Europe: Middle income	Latin America and the Caribbean	Middle East and North Africa	OECD: High income	Sub-Saharan Africa	World
Voice and accountability	Deficit	4.94	4.33	1.84	1.11	1.11	1.94	2.69
	Surplus	2.71	4.50	1.88	3.40	1.72	2.66	2.39
Political stability and absence of violence	Deficit	4.07	4.42	1.72	0.87	1.26	2.78	2.63
	Surplus	3.82	4.31	2.02	1.88	1.81	2.00	2.44
Government effectiveness	Deficit	3.29	4.38	1.76	0.68	2.27	2.57	2.44
	Surplus	4.67	4.52	2.11	2.49	1.50	2.20	2.62
Regulatory quality	Deficit	3.12	4.30	1.36	1.15	1.43	2.97	2.47
	Surplus	4.69	4.70	2.18	1.36	1.76	1.97	2.58
Rule of law	Deficit	3.96	4.35	1.85	1.11	1.80	2.30	2.62
	Surplus	3.93	4.66	1.89	1.36	1.67	2.35	2.46
Control of corruption	Deficit	3.10	4.38	1.90	0.98	2.43	2.29	2.42
	Surplus	4.70	4.52	1.76	1.95	1.50	2.34	2.64

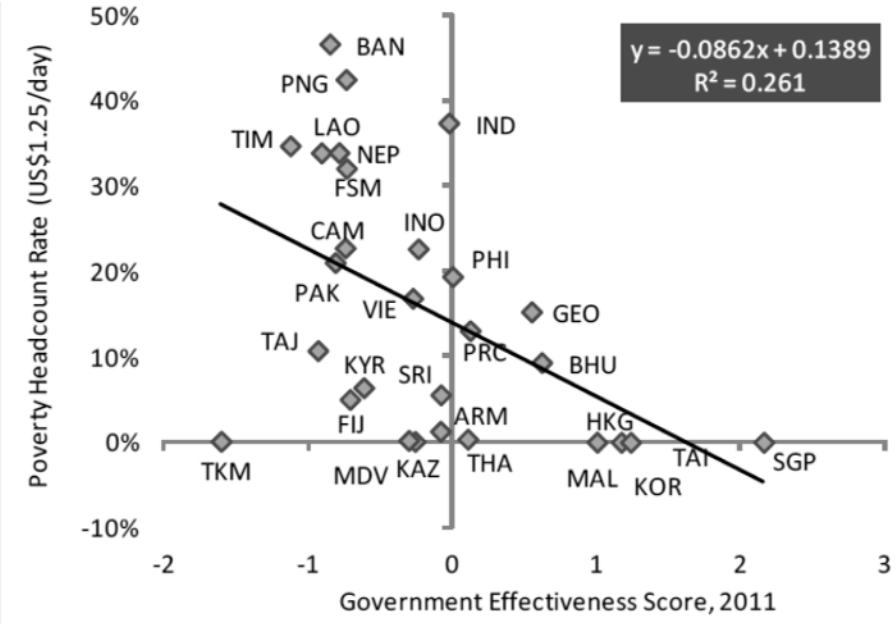
OECD = Organisation for Economic Co-operation and Development.

Source: Zhuang and Jha (2013).

Government effectiveness depends on many factors: leadership, the quality of bureaucracies and, most importantly, the norms that govern the behavior of officials. The technical capabilities of governments can be addressed by making sufficient resources available for capacity building and for government salaries and facilities. But changing the behavior of officials is arguably more important and more difficult. Corruption, as the results clearly confirm, diverts energies and resources to enriching individuals usually at the expense of a country's overall economic performance. A less corrupt Asia, a recent study concludes, would "have more growth, improved foreign investments, higher per capita income, lower infant mortality, increased literacy, stronger property rights" and less environmental damage (Bhargava and Bolongaita 2004).

Governance also matters in delivering social results. Figures 12 and 13 illustrate the relationship between a commonly used measure of government effectiveness and two indicators of social performance—the poverty headcount and index of environmental performance. Both graphs show the expected relationships, but more rigorous analysis still needs to be done.

Figure 12: Government Effectiveness Versus Poverty Headcount Rate

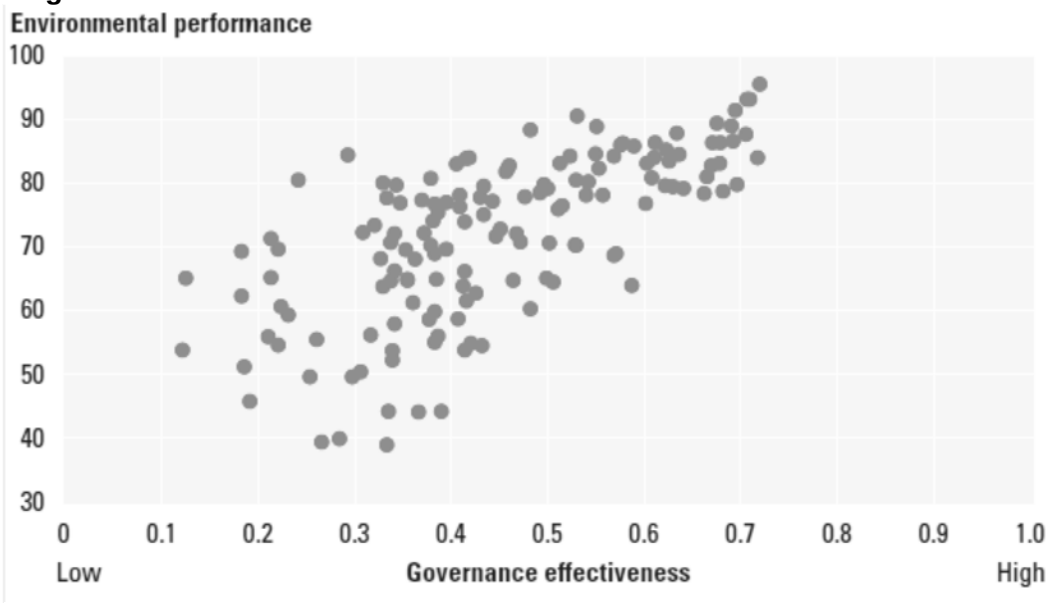


ARM = Armenia; BAN = Bangladesh; BHU = Bhutan; CAM = Cambodia; PRC = People's Republic of China; FIJ = Fiji; GEO = Georgia; IND = India; INO = Indonesia; HGK = Hong Kong, China; KAZ = Kazakhstan; KOR = Republic of Korea; KYR = Kyrgyz Republic; LAO = Lao People's Democratic Republic; MAL = Malaysia; MDV = Maldives; FSM = Federated States of Micronesia; NEP = Nepal; PNG = Papua New Guinea; PAK = Pakistan; PHI = Philippines; SGP = Singapore; SRI = Sri Lanka; THA = Thailand; TAJ = Tajikistan; TIM = Timor-Leste; TKM = Turkmenistan; VIE = Viet Nam;.

Note: Governance effectiveness scores range from –2.5 (weak) to 2.5 (strong).

Source: Basu (2013a) based on data from World Governance Indicators and Povcalnet databases.

Figure 13: Government Effectiveness Versus Environmental Performance



Note: Environmental performance is measured by environmental performance index.

Source: World Bank (2010a).

Tackling noneconomic issues is inherently difficult, given the structure of gains and losses. Strong growth results could, in principle, arise even with relatively ineffective governance, since market agents are rewarded for undertaking profitable projects. But good social and environmental results will depend on effective governance. Such policies may yield benefits that are widely shared and difficult to see—a harm avoided—and yet will impose highly visible and concentrated costs on businesses that have to change their operations.

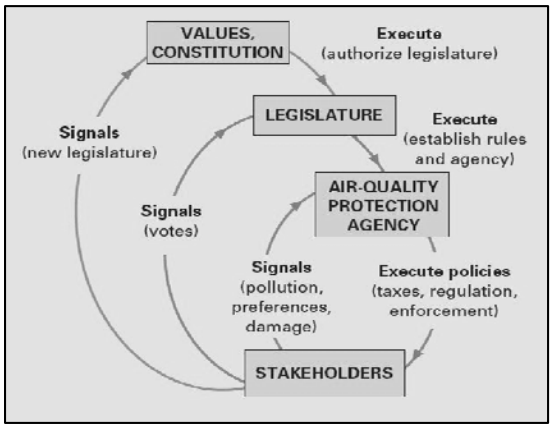
C. Accountable Rulemaking

To the extent that the power to manage social or environmental decisions—property rights, in economic terminology—remains in the hands of officials and companies, they can be expected to use those assets to maximize their own gains. The results will be consistent with maximizing economic output, but will neglect (and most likely adversely affect) social and environmental objectives. Thus, companies and officials may under-report unfavorable data or circumvent regulations. Rather than achieving their objectives, well-intended policies that ignore effective property rights simply create opportunities for corruption and rent-seeking.

One way to make policies more effective is to engage stakeholders in the policy assessment process, that is, to transfer some property rights to them. Individuals and nongovernment organizations may have fine grained information on how policies are working. Giving them access to greater information about the functioning of agencies may reduce opportunities for corruption, and improve data collection and decision making. And as the World Bank observes in a recent study of jobs, "measures that support inclusion, extend access to voice and rights, and improve transparency and accountability … can increase the extent to which people perceive that they have a stake in society." In other words, such measures also build social cohesion (World Bank 2012b).

The World Bank describes the template for institutions based on the concept of accountable rulemaking (Figure 14). The template discusses key policy functions, while recognizing that the details of these functions will vary with a country's political system. In the special case of electoral democracies, for example, the legislature is the primary rulemaking mechanism. It receives signals from the public (in the form of votes) and establishes policy agencies such as an environmental protection agency. The template suggests that, within their mandated limits, these agencies too may be accountable to citizens.

Figure 14: Accountable Rulemaking



Source: World Bank (2003).

Giving citizens a role in policy implementation helps to shift property rights from officials toward beneficiaries. This encourages greater protection, for example, of underlying environmental assets. Stakeholders could be permitted to review official data and comment on regulations, and even to sue polluters and erring government agencies. Since the World Bank study, new forms of feedback have become pervasive through social media and online communication. Using such technologies presents opportunities for experimentation. To be sure, these tools could be seen as risky, since they have the potential to strengthen the influence of non-government groups in unexpected ways.

The effect of shifting property rights toward the beneficiaries of assets is that they take better care in preserving them. Incentives for corruption—the misuse of assets for personal gain—will diminish. And as opportunities for abuse disappear, the culture of official conduct is likely to change as well, helping spread improved governance beyond the confines of the policies directly affected (Bhargava and Bolongaita 2004). Successful efforts to defeat corruption in social and environmental policies will benefit governance.

Leaders are already experimenting with many of these new opportunities. Seoul mayor Park Won-Soon, for example, tweets regularly with his constituents and has promised a "Wikipedia-style administration based on a level network" (Korea Herald 2011). Whether through democratic institutions or implicit pressure, the public is making its opinions count, and its views are reinforcing the shift to more balanced national priorities.

Or take this example of how an environmental blogger in the PRC was mobilized authorities over an alleged case of polluting. The blogger, who is said to have 3 million readers on Weibo, accused local aluminum smelters in Shandong province of illegally pumping wastewater into underground wells. The issue gained national prominence and the local environmental bureau responded quickly by checking more than 700 factories. Although it did not find illegal activities, it set up a hotline offering a reward of Rmb100,000 ($16,000) to anyone who could identify violators. An official anonymously explained that the "reason we offered the prize is that we need the power of all the people, not only the government and the media, to solve this problem" (Hook 2013).

V. LESSONS FOR DEVELOPMENT EFFECTIVENESS

Evidence-based strategies are at the heart of Asia's economic success and will be even more important in the next stage of Asian development. Evidence will be required to establish priorities, to gain public acceptance, and to choose the best policies. Refining the feedback cycle between policies and results will be critical to success, and this will require innovations in monitoring and evaluation. The roles of national and international agencies in the policy process will also need to be reconsidered.

A. Evaluative Support for Evidence-based Policy

Evidence-based strategies require policy decisions to be based on real results. Accurate monitoring and data are key inputs in this feedback process. As noted, public engagement in monitoring the effects of policies could substantially improve the chances for their success.

These insights have spawned a new professional field—monitoring and evaluation—and systematic efforts to extract principles and lessons from experience (Picciotto 2012). Criteria for evaluating policy have been codified by the Development Assistance Committee of the OECD. These are: (i) relevance—the extent to which objectives are consistent with beneficiaries' needs; (ii) effectiveness—the extent to which an intervention meets objectives; (iii) efficiency—a measure of how economically resources are applied; (iv) sustainability—the likelihood that benefits will continue after the intervention; and (v) impact—the long-term effects of interventions.

The science of evaluation is in its early stages. Some government interventions may be rated highly on narrow, project-oriented criteria, but may still fail to have significant impact. At the other extreme, if assessments are focused on broad effects rather than project-specific results, their conclusions may be inaccurate, dominated by uncontrolled factors. New assessment tools, such as randomized experiments, are designed to avoid these errors (Duflo 2011).

Unfortunately, as monitoring and evaluation becomes more influential in policy making, incentives grow to make its results fit the interests of agencies or individuals. Paradoxically, this calls for insulating data collection and analysis from government influence, despite greater government demands for evidence. Solutions may involve conducting monitoring and evaluation through quasi-independent institutes or respected private sector agencies. Media scrutiny and public dissemination offer additional tools—albeit not always reliable ones—to prevent manipulation.

Good evidence is not enough; decision makers also have to have the skills and analytical support to interpret and analyze data. This is especially important if policy decisions are separated from data collection and analysis in the interest of objectivity. Small analytical units within decision-making offices can help to bridge these gaps. The Republic of Korea and some other countries have already established such dual systems to collect and analyze data in research institutes, but have also created capabilities within government to sift through external evidence. The PRC is now also in the process of separating research and analysis from the formulation of policy.

B. The Role of International Institutions

International institutions and the donor community will be especially important in an era of triple-bottom-line policies. Relative to the traditional priorities of economic growth, the new priorities discussed in this paper require broader policy perspectives, more data and information, and greater unconventional financing to implement. In addition to its traditional financing role, the external financing community can help provide these assets, including financial support for new policies, research and information, and help in improving decision-making itself.

First, since environmental issues often involve global externalities, solutions will often require financial flows from advanced to developing economies, beyond the traditional project and program financing. These flows may be interpreted as compensation for the free ride that developed economies enjoyed before global constraints tightened. International agencies will be the conduits of such transfers, under formal climate change mechanisms such as the Clean Development Mechanism, as well as development programs. In providing financial support, they will also play a role in brokering, implementing and monitoring solutions.

Second, international agencies can help to shape and disseminate knowledge. The UNDP (through its *Human Development Report*), the United Nations (through its Millennium Development Goals' initiative), and multilateral development banks have already developed analytical frameworks and data for setting objectives beyond growth. Similarly, the Intergovernmental Panel on Climate Change, the International Energy Agency, and multilateral development banks have contributed research on environmental issues. These agencies are themselves subject to the risk of being captured by special interests, but ideally competition among them will provide incentives for objective analysis.

Third, international agencies can contribute to the complex national debates that are emerging in both advanced and emerging economies. Triple-bottom-line priorities, although urgent from a global and societal viewpoint, are often opposed by powerful local vested interests. Objective, external sources of information, analysis, and support for policy can make a difference in tilting policy decisions toward the best solutions.

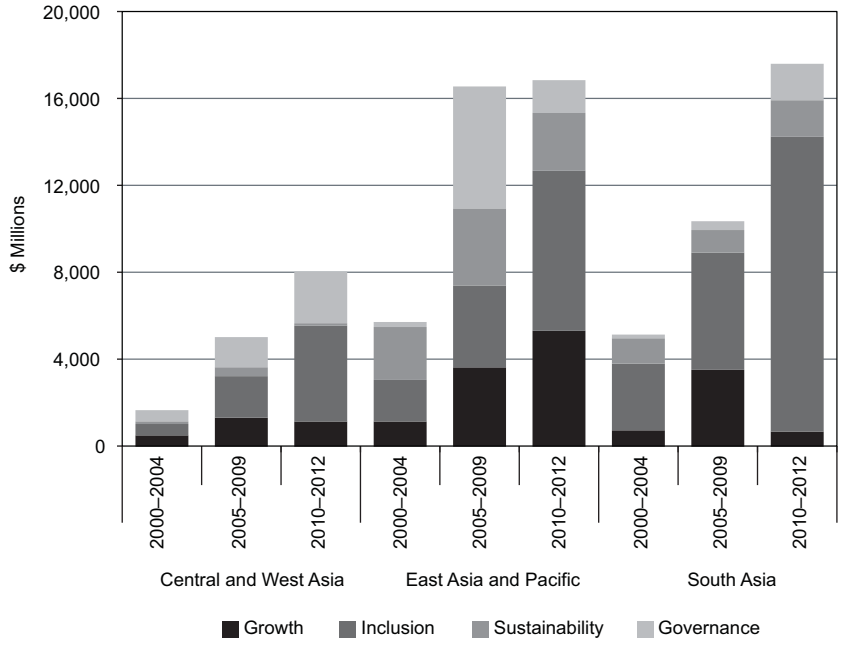
International institutions are already active in all of these areas and the focus of their work is changing. World Bank lending—which is easy to track due to its global dataset—illustrates how funding for different types of goals is evolving over time. The World Bank's recent lending to Asian countries, for example, can be broadly partitioned into four themes: growth (23%), inclusion (47%), sustainability (18%), and governance (12%).

Figure 15 illustrates patterns of World Bank lending in Asian subregions. The greatest increases, not surprisingly, occurred in populous and still-poor South Asia. After rapid growth in the early 2000s, lending to East Asia and the Pacific appears to be leveling off, probably due to the rapid economic progress the subregion has made. A significant part of the increase in lending, especially in South Asia, was directed toward inclusion-themed projects. Growth and governance-themed lending were also substantial, but grew less rapidly in all three subregions.

Lending for sustainability appears to have been the least robust, perhaps because support for these initiatives has been provided by other agencies such as the Clean Development Mechanism.

These loans appear to be working. Asian projects over the last 2 decades were rated highly compared to other regions and show no clear differences across themes. For example, despite their presumed complexity, environmental sustainability projects are no less successful than others. The crucial question remains whether, in light of the problems highlighted in this paper, the shifts in lending are large enough to address urgent needs (Thomas and Luo 2012).

Figure 15: World Bank Lending to Asia, by Theme and Timing



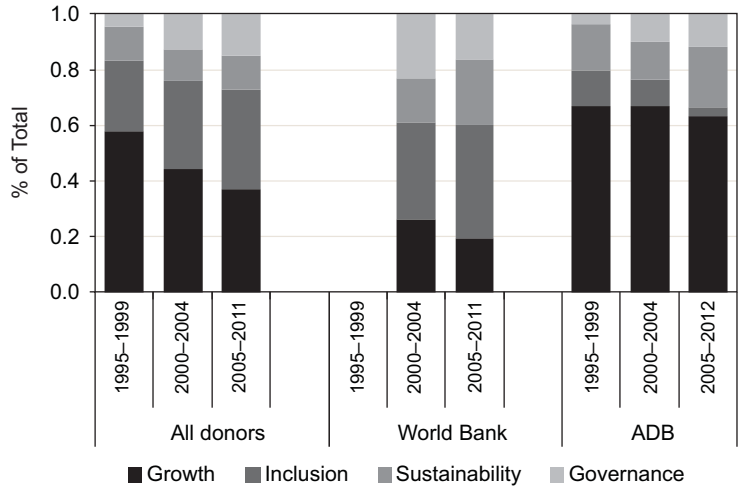
Source: World Bank lending database.

Other major sources of development support are following trends that are similar to those observed for World Bank lending. Figure 16 compares Asia-wide support by all donors (as reported in the OECD's Development Assistance Committee data) with the lending programs of the ADB and the World Bank. These comparisons should be interpreted cautiously, since the categorization of projects by theme may be somewhat different across sources. But the data reveal interesting trends. Between the late 1990s and late 2000's, the share of growth-targeted assistance by all donors declined from 58% to 37%, while support for inclusion increased from 26% to 36%. For sustainability, it declined from 12% to 13%, and for governance from 5% to 15%.The same trends are evident in ADB and World Bank lending, although the shares of support are different.

Figure 16 also shows how sources vary in the structure of support that they offer. These should be considered only illustrative because of concerns about the comparability of data. In the most recent data point, World Bank lending seems to have supported, in order of importance, inclusion, sustainability, growth, and then governance. ADB lending seems to have supported growth, sustainability, governance, and then inclusion. The composition of support from all donors fell in between those of ADB and the World Bank.

These differences suggest that development agencies are specialized in forms of support, most likely reflecting the characteristics of the regions in which they operate and the preferences of their financiers and recipients. The World Bank's emphasis on inclusion, for example, may be a logical result of its broad donor base and mission. Similarly, the ADB's focus on growth, including especially infrastructure financing, is consistent with attractive growth opportunities in Asia, and the more traditional sequencing decisions of its development partners. The share of ADB's sustainability lending, in turn, may be responding to the negative environmental side-effects of rapid growth.

Figure 16: Development Support to Asia, by Theme and Source



Sources: Authors' calculations based on Asian Development Bank, Organisation for Economic Co-operation and Development, and World Bank lending databases.

There is no necessary benefit to development agencies targeting objectives in the same proportions. Indeed, differences among them, as among countries and firms, can improve the productivity of the support offered as well as match the preferences of clients. Nevertheless, the shift in priorities from growth alone to wider objectives will require all agencies to become proficient in solutions that deliver multiple benefits. The interaction among the contributions of the different players will be crucial to delivering outcomes. The mission statements of all agencies are now committed to pursuing the triple bottom line, but little research is available so far on how effectively they have reoriented their work.

The extent of specialization varies across themes. Social inclusion is widely supported by national and international development agencies, but no specialized facilities exist for funding projects in this area. Some global partnerships do focus on producing information and policy-related research on thematic issues such as maternal and child health, and are attempting to establish a global lending program patterned on the Global Environment Facility.[11]

The situation is different for environmental sustainability, where substantial support is provided by specialized sources. A special mechanism to fund emissions reductions in the developing world—the Clean Development Mechanism—was created under the Kyoto Protocol in 2005.[12] Projects that result in emissions reductions countries can apply to the facility to be certified as meeting international emission reduction criteria. Once it is determined that they qualify, Certified Emission Reductions credits are issued (defined in tons of CO_2 emissions eliminated). So far, certificates for 1.3 billion tons of CO_2 elimination have been issued. In principle, these certificates can be then sold under various carbon-trading schemes in developed countries. Those markets—principally in the European Union and Australia—have not proved lucrative so far. Indeed, carbon credits have lost virtually all of their value since the financial crisis, reflecting a sharp decline in CO_2 emissions due to recession. Despite best intentions, the Clean Development Mechanism has not so far proved to be a reliable, significant funding source for sustainability.

[11] See www.who.int/pmnch/about/en/
[12] See http://cdm.unfccc.int/index.html

Additional grant and loan funding is provided by the Global Environment Facility, established in 1991 to support projects in biodiversity, climate change, international waters, land degradation, forest management, and ozone layer depletion. Located within the World Bank, the facility operates with 10 collaborating agencies, including ADB. Approximately $12 billion in grants and $57 billion in cofinancing have been provided so far to more than 165 countries. In addition, smaller Climate Investment Funds operated by the six multilateral development banks support innovative projects in low-carbon or climate-resilient development.

C. Unavoidable Tensions

The shifting focus of Asian policy suggests new roles for development institutions. These institutions could play especially constructive roles in helping to implement the triple bottom line, since they are relatively insulated from opposition by vested interests. Their support should include funding social and environmental policies, as well as providing evidence to support the adoption of policies and their design. How they address these objectives, however, raises complex issues.

Development thinking has shifted over time from approaches that emphasize universal, best-practice guidelines—resulting in the design of national policies by foreign institutions and conditional assistance—to strategies that stress local ownership and policy design. Initially, international institutions saw their role as promoting good policy against likely failures in local governance. More recently, they have recognized that national decisions tend to have greater relevance to local conditions, and national ownership is needed to make support effective. The shift in strategy was formally recognized in the Paris Declaration adopted in 2005.

These principles are problematic in the case of cross-border externalities, since the regional and global side effects of national policies will be under-represented in national decisions. Thus, international agencies and the donor community may support policies that differ from those developed locally. Reliance on evidence-based approaches offers a way forward. The lessons from Asian experience confirm the value of the national decision makers driving policy, but international stakeholders can play a valuable role by developing and presenting evidence that makes the case for change persuasive to national governments and the public.

Severino and Ray describe tensions between national and international positions as the “diverging accountabilities syndrome” (Severino and Ray 2010). They note that the goals of development cooperation could be determined by national governments, the interests of final beneficiaries, or financiers. The Paris Declaration implicitly assumed the alignment of these interests, and made national decisions the arbiter of cooperation, in part to improve implementation. However, interests will diverge from time to time, and it is not easy to predict which party will have the sounder position.

These divergences between national and international goals will also from time to time encounter disagreements. For example, the so-called additionality criteria included in programs that assist low-carbon projects are often opposed by recipient countries. Financiers use such criteria to support projects that are incremental to the baseline efforts of national partners. Developing countries, however, argue that additionality criteria result in inefficient choices, and are unfair, since much of the environmental harm that they correct was caused by the emissions of advanced countries. These disagreements are inevitable and donors can minimize them by

matching policy recommendations with generous support, on one hand, and ambitious policies at home, on the other.

VII. CONCLUSIONS

Long before evidence-based strategies became fashionable in development circles, Asian policy makers pioneered methods for basing policies on experiments that worked. Staying close to evidence in turn helped them achieve exceptional economic results. The case for continuing the successful policies of the past is strong, but an evidence-based strategy now calls for recognizing new trends and challenges.

Accumulating evidence on the adverse side effects of growth in much of Asia, especially on widening inequality and deteriorating environmental conditions, suggests that the goals of inclusion and sustainability merit attention similar to that afforded to economic growth in the past. These externalities pose serious threats to the region's economic progress and social cohesion. Asia cannot afford to place its hard-won gains at risk.

The hopeful perspectives offered by the Kuznets curve—that the deterioration in noneconomic results will be followed by improvements at higher income levels—are confirmed by data, but do not appear to operate fast enough to address the challenges that Asia now faces. This is not because Asia is following a worse distributional or environmental trajectory than other countries have in the past. Rather, Asia is developing with greater momentum and at a time when the constraints on side-effects have become far more binding.

Evidence now argues for policies to control the externalities of growth. This does not mean abandoning growth as an objective. The threat of an economic slowdown in middle-income Asia is real, and accelerating growth in the poorest countries is urgent. Rather, as many countries have recently concluded, multiple goals have to be addressed simultaneously. Inclusive, sustainable growth—long an aspiration—has to become a firm priority. In fact, early actions that prioritize inclusion and sustainability are likely to involve win-win policies, that is, initiatives that generate positive distributional and environmental results as well as increased economic efficiency. These options appear to be significant because of a wide range of market failures and distortions that often exist in developing economies.

The challenge of shifting strategies is nevertheless substantial, and will require innovation in many areas of policy. Attractive policy options exist, and many more will emerge, including win-win policies that yield simultaneous social, environmental, and economic benefits. Yet many policies will face stiff resistance from vested interests. It is important to understand the constraints that stand in the way of better outcomes and the solutions that might relax them.

Smart, effective governance will be critical to making the new priorities work. This note has identified three approaches to policy making that could make a difference. First, the toolkit of governance has to be updated to the requirements of changing priorities. This will involve not just improved central governance, but also fresh experiments with accountability. Governments can monitor economic results centrally, but they need public feedback to implement social and environmental goals. Fortunately, new technologies are available to facilitate these interactions.

Second, the search for solutions must be supported by rigorous evidence and analysis. These are needed to persuade Asian societies and the international community that action is needed, and that the potential benefits are large. Good information will be also essential for

making the right choices among varied and technically complicated alternatives. But all this is not enough unless it is also presented effectively to the public.

Third, international financial institutions and the external financing community will have to help support national policies toward the triple bottom line. They can do so by funding cooperation, disseminating knowledge, helping to counter vested interests, and championing international perspectives on trans-border issues. Simple as these goals might seem, they will raise questions, from time-to-time, about the relationships of international agencies and their national partners.

This is an important turning point in Asia's development strategy. Asian priorities are changing, and when they have done so in the past, they led to extensive innovation and exceptional results. Asia has economic momentum, and its people confidently expect advances in their quality of life. The value that evidence-based approaches can contribute in this context cannot be overestimated.

Annex A: Projections of Population and GDP (Market Prices)

($ billions)

	2010				2030				2020–2030
	Population	GDP	% World	GDP/capita	Population	GDP	% World	GDP/capita	Growth
Asia and the Pacific	3,731.3	10,663	18.0	2,858	4,345.4	38,365	32.0	8,829	6.6
Central Asia	75.8	250	0.4	3,297	90.0	867	0.7	9,635	6.4
Armenia	3.1	9	0.0	3,055	3.1	33	0.0	10,477	6.4
Azerbaijan	7.7	39	0.1	5,105	9.0	138	0.1	15,363	6.5
Georgia	4.4	11	0.0	2,620	3.8	31	0.0	8,246	5.1
Kazakhstan	16.0	124	0.2	7,748	18.9	362	0.3	19,166	5.5
Kyrgyz Republic	5.3	5	0.0	929	6.7	26	0.0	3,947	8.7
Tajikistan	6.9	5	0.0	773	9.0	28	0.0	3,129	8.7
Turkmenistan	5.0	21	0.0	4,121	6.2	48	0.0	7,844	4.3
Uzbekistan	27.4	35	0.1	1,271	33.4	200	0.2	6,001	9.1
East Asia	1,422.9	6,982	11.8	4,907	1,479.1	24,570	20.5	16,611	6.5
PRC	1,341.9	5,493	9.3	4,093	13,93.8	21,709	18.1	15,576	7.1
Hong Kong, China	7.1	218	0.4	30,871	8.5	374	0.3	44,030	2.7
Korea, Rep. of	48.2	871	1.5	18,072	50.3	1,659	1.4	32,951	3.3
Mongolia	2.8	5	0.0	1,689	3.5	28	0.0	7,888	9.3
Taipei,China	23.0	396	0.7	17,185	23.0	800	0.7	34,826	3.6
South Asia	1,630.2	1,851	3.1	1,135	2,057.4	8,264	6.9	4,017	7.8
Afghanistan	31.4	15	0.0	467	53.3	196	0.2	3,684	13.8
Bangladesh	148.7	97	0.2	650	181.9	432	0.4	2,373	7.8
Bhutan	0.7	1	0.0	1,903	0.9	4	0.0	4,995	6.1
India	1,224.6	1,504	2.5	1,229	1,523.5	6,570	5.5	4,312	7.6
Maldives	0.3	1	0.0	4,403	0.4	4	0.0	10,530	5.5
Nepal	30.0	14	0.0	455	39.9	71	0.1	1,772	8.6
Pakistan	173.6	175	0.3	1,005	234.4	865	0.7	3,690	8.3
Sri Lanka	20.9	44	0.1	2,126	23.1	122	0.1	5,286	5.2
Southeast Asia	592.3	1,566	2.6	2,643	704.0	4,632	3.9	6,580	5.6
Brunei Darussalam	0.4	11	0.0	27,277	0.5	23	0.0	43,587	3.8
Cambodia	14.1	12	0.0	826	17.4	56	0.0	3,244	8.2
Indonesia	239.9	571	1.0	2,380	279.7	1,700	1.4	6,080	5.6
Lao PDR	6.2	6	0.0	989	7.8	28	0.0	3,575	7.8
Malaysia	28.4	204	0.3	7,166	37.3	593	0.5	15,912	5.5
Myanmar	48.0	21	0.0	431	54.3	117	0.1	2,149	9.0
Philippines	93.3	170	0.3	1,828	126.3	660	0.5	5,224	7.0
Thailand	69.1	277	0.5	4,008	73.3	711	0.6	9,702	4.8
Singapore	5.1	193	0.3	37,849	6.0	324	0.3	54,206	2.6
Viet Nam	87.8	102	0.2	1,160	101.5	420	0.3	4,136	7.3
The Pacific	10.1	15	0.0	1,434	14.9	33	0.0	2,229	4.2
Fiji	0.9	3	0.0	3,375	1.0	5	0.0	4,987	2.5
Kiribati	0.1	0	0.0	1,374	0.1	0	0.0	1,826	2.5
Micronesia, Federated States of	0.1	0	0.0	2,483	0.1	0	0.0	3,325	2.2
Papua New Guinea	6.9	8	0.0	1,198	10.2	20	0.0	1,955	4.5
Samoa	0.2	1	0.0	2,971	0.2	2	0.0	9,398	6.4
Solomon Islands	0.5	1	0.0	1,376	0.8	2	0.0	2,298	4.9
Timor-Leste	1.1	1	0.0	622	2.0	2	0.0	937	5.0
Tonga	0.1	0	0.0	3,057	0.1	1	0.0	4,593	2.8
Vanuatu	0.2	1	0.0	2,838	0.4	2	0.0	4,499	4.6
Japan	126.5	5,118	8.6	40,444	120.2	6,341	5.3	52,749	1.1
United States	310.4	14,431	24.3	46,494	361.7	22,772	19.0	62,961	2.3
Europe	511.3	17,635	29.7	34,491	527.8	25,997	21.7	49,252	2.0
World	6,641.1	59,327	100.0	8,933	7,932.8	120,065	100.0	15,135	3.6

GDP = gross domestic product, Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China.

Source: Petri and Zhai (2013) based on ADB estimates.

Annex B: Projections of population and GDP (purchasing power parity)
($ billions)

	2010				2030				2020–2030
	Population	GDP	% World	GDP/capita	Population	GDP	% World	GDP/capita	Growth
Asia and the Pacific	3,731.3	19,192	28.9	5,144	4,345.4	71,085	45.5	16,359	6.8
Central Asia	75.8	424	0.6	5,589	90.0	1,546	1.0	17,182	6.7
Armenia	3.1	16	0.0	5,182	3.1	55	0.0	17,768	6.4
Azerbaijan	7.7	70	0.1	9,119	9.0	247	0.2	27,446	6.5
Georgia	4.4	20	0.0	4,637	3.8	55	0.0	14,597	5.1
Kazakhstan	16.0	179	0.3	11,158	18.9	521	0.3	27,603	5.5
Kyrgyz Republic	5.3	12	0.0	2,238	6.7	63	0.0	9,513	8.7
Tajikistan	6.9	13	0.0	1,932	9.0	71	0.0	7,825	8.7
Turkmenistan	5.0	35	0.1	6,942	6.2	81	0.1	13,213	4.3
Uzbekistan	27.4	79	0.1	2,869	33.4	452	0.3	13,549	9.1
East Asia	1,422.9	11,383	17.2	8,000	1,479.1	40,370	25.8	27,293	6.5
PRC	1,341.9	9,088	13.7	6,773	1,393.8	35,933	23.0	25,780	7.1
Hong Kong, China	7.1	284	0.4	40,306	8.5	488	0.3	57,488	2.7
Korea, Rep. of	48.2	1,300	2.0	26,977	50.3	2,476	1.6	49,187	3.3
Mongolia	2.8	9	0.0	3,434	3.5	56	0.0	16,034	9.3
Taipei,China	23.0	701	1.1	30,427	23.0	1,417	0.9	61,661	3.6
South Asia	1,630.2	4,609	6.9	2,827	2,057.4	20,642	13.2	10,033	7.8
Afghanistan	31.4	41	0.1	1,299	53.3	546	0.3	10,249	13.8
Bangladesh	148.7	226	0.3	1,517	181.9	1,007	0.6	5,540	7.8
Bhutan	0.7	4	0.0	4,826	0.9	11	0.0	12,664	6.1
India	1,224.6	3,778	5.7	3,085	1,523.5	16,497	10.6	10,828	7.6
Maldives	0.3	2	0.0	5,287	0.4	5	0.0	12,646	5.5
Nepal	30.0	33	0.1	1,117	39.9	174	0.1	4,349	8.6
Pakistan	173.6	433	0.7	2,495	234.4	2,147	1.4	9,156	8.3
Sri Lanka	20.9	93	0.1	4,454	23.1	256	0.2	11,077	5.2
Southeast Asia	592.3	2,754	4.2	4,650	704.0	8,472	5.4	12,035	5.8
Brunei Darussalam	0.4	18	0.0	46,362	0.5	39	0.0	74,082	3.8
Cambodia	14.1	28	0.0	1,968	17.4	134	0.1	7,729	8.2
Indonesia	239.9	926	1.4	3,862	279.7	2,760	1.8	9,868	5.6
Lao PDR	6.2	14	0.0	2,292	7.8	64	0.0	8,286	7.8
Malaysia	28.4	368	0.6	12,971	37.3	1,073	0.7	28,801	5.5
Myanmar	48.0	71	0.1	1,485	54.3	403	0.3	7,409	9.0
Philippines	93.3	313	0.5	3,354	126.3	1,211	0.8	9,587	7.0
Thailand	69.1	517	0.8	7,476	73.3	1,327	0.8	18,096	4.8
Singapore	5.1	242	0.4	47,629	6.0	408	0.3	68,212	2.6
Viet Nam	87.8	256	0.4	2,913	101.5	1,054	0.7	10,388	7.3
The Pacific	10.1	23	0.0	2,286	14.9	54	0.0	3,607	4.3
Fiji	0.9	4	0.0	4,170	1.0	6	0.0	6,161	2.5
Kiribati	0.1	0	0.0	2,273	0.1	0	0.0	3,020	2.5
Micronesia, Federated States of	0.1	0	0.0	2,860	0.1	0	0.0	3,830	2.2
Papua New Guinea	6.9	15	0.0	2,117	10.2	35	0.0	3,455	4.5
Samoa	0.2	1	0.0	4,063	0.2	3	0.0	12,850	6.4
Solomon Islands	0.5	1	0.0	2,659	0.8	4	0.0	4,440	4.9
Timor-Leste	1.1	1	0.0	766	2.0	2	0.0	1,154	5.0
Tonga	0.1	0	0.0	4,144	0.1	1	0.0	6,226	2.8
Vanuatu	0.2	1	0.0	4,233	0.4	2	0.0	6,710	4.6
Japan	126.5	3,824	5.8	30,220	120.2	4,738	3.0	39,414	1.1
United States	310.4	13,104	19.8	42,220	361.7	20,678	13.2	57,172	2.3
Europe	511.3	14,452	21.8	28,266	527.8	21,682	13.9	41,077	2.0
World	6,641.1	66,329	100.0	9,988	7,932.8	156,308	100.0	19,704	4.4

GDP = gross domestic product, Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China.

Source: Petri and Zhai (2013) based on ADB estimates.

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