

# Background

Rapid economic growth has swept through Asia and the Pacific in recent years—a trend that is drastically changing the nature and scale of humanity’s impact on natural ecosystems and the carrying capacity of the planet. While there are still terrible problems with entrenched poverty, hundreds of millions of people in the region now have a chance to experience a life beyond basic survival.

The sustained annual growth rates of 10% or more in the People’s Republic of China (PRC), for example, have helped to reduce the number of people existing on less than one dollar a day from 473 million in 1990 to 284 million in 2001.<sup>1</sup> The Chinese Academy of Social Sciences estimates that 19% of the PRC’s 1.3 billion, or about 250 million people, are now considered middle class—living in households with assets of between \$18,000 and \$36,000. It further forecasts that if this middle class keeps growing by 1% each year, then 40% of the PRC’s population—almost 500 million people—will reach this status by 2020.<sup>2</sup>

The other Asian population superpower, India, counts a further 300 million out of its 1.08 billion citizens who have joined middle class ranks. Other statistics indicate that there are now more middle- to high-income earners—whom the United Nations Environment Programme (UNEP) defines as those earning in excess of \$7,000 per annum—in Asia and the Pacific than in America and Europe combined.<sup>3</sup>

While public policies and investments have been crucial to these achievements, dynamic corporations in Asia and the Pacific have played a large part in delivering such impressive economic gains. These also have been buoyed by the region’s first relatively peaceful period in generations with mostly stable governments, better educated and highly

productive workforces, and a wide range of new opportunities opened by the phenomenon of globalization. Upwardly mobile populations, including millions lifted out of poverty over the past few decades, now look forward to their “turn” to share in the planet’s wealth. To them, it may seem churlish to point to what may appear to be relatively minor environmental threats associated with the region’s economic and demographic changes.

A closer look, however, reveals that these threats must be addressed if the positive aspects of growth are not to be undermined by declining environmental quality. Most problems are derived from the accelerating consumption demands of the new middle classes that are adding to the existing planet-wide resource use and waste disposal demands of developed countries. Asia and the Pacific already face major environmental problems that vary by location but include (i) air pollution (particularly high levels of particulate matter in cities); (ii) reduced availability and quality of freshwater supplies; (iii) desertification, deforestation, and other forms of land degradation; (iv) dust and haze; (v) acid rain; (vi) greenhouse gas (GHG) emissions; (vii) loss of biodiversity; and (viii) the degradation of marine and coastal resources.<sup>4</sup>

Compounding problems are caused by growing populations and the pressure to meet the demands of increasing numbers of people understandably wishing to enjoy the trappings of middle-class life. If the PRC, India, and Indonesia all reach the current average global car ownership rate, for example, then 200 million new vehicles could be on the planet’s roads over the next few decades.<sup>5</sup> This is twice the number of cars currently owned in the United States (US). Continued growth in the use of both renewable and nonrenewable

resources will lead to an inevitable expansion in the size of developing countries' "ecological footprints."<sup>6</sup> The amount of productive land needed per person in 1999 to support patterns of consumption in the US (9.7 hectares), Canada (8.8), and Australia (7.6), was far higher than that in the PRC (1.5 hectares) and India (0.8), although the total footprints of the latter two countries are obviously greater due to their huge populations.<sup>7</sup> By comparison, the sustainable average footprint for the globe is estimated to be 1.8 hectares. Table 1 shows the ecological footprints of selected countries based on a study conducted by World Wide Fund for Nature (WWF).

Increases in per capita consumption in Asia and the Pacific soon will enlarge both per capita and national footprints substantially. The Worldwatch Institute estimates that if everyone on the planet reached the current consumption level of the affluent nations with the highest ecological footprints, we would need the resource equivalent of five Earths to support it. Underlying these predictions are extraordinary emerging consumption statistics from the region as it rapidly industrializes. For example, in 2003, half of the world's cement output, a third of its steel, a quarter of its copper, and a fifth of its aluminum were used in the PRC alone. Of personal consumption items, roughly 35% of the world's cigarettes, 20% of mobile phones, and 23% of televisions were sold in the PRC.<sup>8</sup> With that country's 1.3 billion people experiencing double-digit disposable income growth, catering to the demands of four more "Americas" in the coming decade is an enormous business opportunity but also a daunting environmental prospect.

Clearly, it would be foolish not to think about and plan for the strains that this economic activity will place on natural resources and the environment if current trends continue. Economic expansion that severely erodes the base of natural capital may eventually undermine the viability of the region's economy through greatly elevated resource prices and high environmental burdens on society. There are already strong

indications that we may have "overshot" the Earth's ecological limits in relation to some resources and waste sinks. The challenge is how to make growth environmentally sustainable so that it can continue to serve the needs and wants of the human population while conserving the natural assets and ecosystem services that make economic and social advancement possible.<sup>9</sup>

Underlying these problems are some strongly held ideas about the relationship between the environment and economic development that shape both public and private policies, some of which are challenged in this report. One widely held theory is that pollution naturally gets worse as economies develop until a certain level of affluence is reached, and then the wealth generated can be used to promote better environmental performance. Several countries in Asia and the Pacific have taken comfort in this theory and have followed a "grow now-clean up later" approach to their economies and environments.<sup>10</sup>

If this pattern were to hold in Asia and the Pacific, however, the environmental quality prognosis in the region would be dire. Fortunately, there is growing evidence suggesting that this is not likely to be the case. The World Bank's *New Ideas in Pollution Regulation* project shows that today's factories are, in many cases, less polluting than those of the past, and industrial pollution levels are falling even in some areas of developing countries where growth is most rapid.

**Table 1: Ecological Footprints of Selected Countries**

| Country           | Hectares/person      |             |                    | Change per capital (1991-2001) |               |
|-------------------|----------------------|-------------|--------------------|--------------------------------|---------------|
|                   | Ecological Footprint | Biocapacity | Ecological Deficit | Ecological Footprint*          | Biocapacity** |
| Global            | 2.2                  | 1.8         | 0.4                | -2                             | -12           |
| US                | 9.5                  | 4.9         | 4.7                | 7                              | -11           |
| Asia Pacific      | 1.3                  | 0.7         | .60                | 6                              | -11           |
| Australia         | 7.7                  | 19.2        | -11.5              | 16                             | -6            |
| New Zealand       | 5.5                  | 14.5        | -9                 | 16                             | -13           |
| Japan             | 4.3                  | 0.8         | 3.6                | 6                              | -6            |
| Republic of Korea | 3.4                  | 0.6         | 2.8                | 30                             | -12           |
| Malaysia          | 3.0                  | 1.9         | 1.1                | 10                             | -48           |
| Mongolia          | 1.9                  | 11.8        | -9.9               | -33                            | -11           |
| Thailand          | 1.6                  | 1.0         | 0.6                | 20                             | -1            |
| PRC               | 1.5                  | 0.8         | .8                 | 14                             | -7            |
| PNG               | 1.3                  | 2.6         | -1.3               | -8                             | -16           |
| Indonesia         | 1.2                  | 1.0         | 0.2                | 4                              | -14           |
| Philippines       | 1.2                  | 0.6         | 0.6                | -6                             | -22           |
| Sri Lanka         | 1.1                  | 0.4         | 0.7                | 20                             | -12           |
| Cambodia          | 1.1                  | 1.0         | 0.1                | 9                              | -3            |
| Lao PDR           | 1.0                  | 1.4         | -0.4               | -4                             | -12           |
| Myanmar           | 0.9                  | 1.3         | -0.4               | 10                             | 1             |
| Viet Nam          | 0.8                  | 0.8         | 0.0                | 14                             | 6             |
| India             | 0.8                  | 0.4         | 0.4                | 1                              | -15           |
| Pakistan          | 0.7                  | 0.4         | 0.3                | 2                              | -18           |
| Nepal             | 0.6                  | 0.5         | 0.2                | -4                             | -12           |
| Bangladesh        | 0.6                  | 0.3         | 0.3                | 0                              | -11           |

Source: World Wildlife Fund. *Living Planet Report*. 2004. Washington, DC.

\* Ecological footprints change with population size, average consumption per person, and resource efficiency.

\*\* Biocapacity changes with the amount of biologically productive area and its average productivity.

## DEVELOPMENT AND THE ENVIRONMENT IN ASIA AND THE PACIFIC

Extensive data from environmental regulatory agencies in PRC, India, Indonesia, Republic of Korea, Philippines, Sri Lanka, and Thailand among others, show a positive relationship between a rise in per capita income and national enforcement of environmental regulations—even at relatively low levels. The fastest decline in pollution intensity appears to occur as countries move toward achieving middle-income status, not after:<sup>11</sup> it falls by 90% as per capita income rises from \$500 to \$20,000.

Modern relationships between industrial development and environmental quality are complex. Environmental performance improvements seen in developing countries of similar characteristics are by no means uniform. Even in the same country and sector, some corporations exhibit marked environmental performance improvements while others lag behind. This trend is also evident in developed countries.<sup>12</sup> Why environmental improvement is occurring in some countries well before they become affluent is further examined later in the report. The important lesson is that the early stages of economic development do not have to be characterized by environmental degradation. There appear to be many examples of growth occurring in poor countries even as environmental standards are maintained.

Another common perception challenged in this report is that environmental protection is solely the responsibility of government.<sup>13</sup> Agencies responsible for environmental management in Asia and the Pacific tend not to have the political power of their counterparts in other sectors, and they are often chronically understaffed and underfunded. Enforcing environmental regulations has proven to be difficult, especially where corruption is often a

less expensive alternative than compliance with the law. An underlying business philosophy has been to get away with as much as possible, to comply only if the penalties are high enough, and to maximize profits without thought to social and environmental consequences. Many multinational corporations (MNCs) based in developed countries and other reputation-sensitive companies have begun to learn hard lessons from applying this approach and are now moving beyond the rule that only a single bottom line—profits—counts.

While not denying that regulations need to be more vigorously enforced by public authorities, this report shows that there is another way of thinking about environmental protection that puts a much greater emphasis on a new role for the private sector—one in which it accepts a greater degree of responsibility and accountability for environmental performance. This new role holds tremendous promise, but it also runs counter to the prevailing business climate in Asia and the Pacific.

Economists and business managers have tended to view profitability and environmental protection as being in conflict. The predominant economic paradigm is that the purpose of a firm is to maximize profits for its shareholders, and for some, this is the only moral imperative for corporations.<sup>14</sup> In many respects, profit maximization can be thought of as a legal or fiduciary responsibility. Corporations have a legal obligation in many countries as a “person” in the eyes of the law to make profits for shareholders. Management theorists extend this “profit-centric” view to argue that the corporation is merely the sum of the property rights of individual shareholders with economic returns the only objective yardstick of achievement.<sup>15</sup>

Within this framework, corporations only undertake environmental management initiatives because the law requires them to. It is accepted that governments have a role to play in protecting environmental quality because a range of market imperfections

place such concerns outside of the private profit calculations, with the costs borne by society. Profit-centrism concludes that when these market failings are discovered, efficient governments will correct them by implementing laws that require businesses to internalize environmental costs (the “polluter pays” principle).

According to this way of thinking, any environmental improvement initiatives taken beyond a minimum level of legal compliance are purely voluntary and are the result of ethically determined behavior of firms driven by concerns other than an economic imperative. Following this model, there will always be tension between the demands of profit centrism and ethical stances that might cause businesses to perform at a “beyond-compliance” level. Particularly in developing countries, an ethical stance toward the environment may be seen as an unaffordable luxury because it will sacrifice competitive advantage.

This traditional tension, however, holds true only if several conditions are met. For example, if consumer demand is not static but moves toward a more environmentally sound set of preferences, then the early business mover may actually capture increased market share. It also assumes that new technologies will not couple increased economic efficiency with lower pollution and that customers, governments, and other civil society stakeholders do not care enough about the environmental management approaches of specific businesses to take actions that will drive up other operation costs or reduce demand for a company’s products. The static nature of the “profit maximization versus beyond-compliance environmental improvement” argument has been challenged in recent years.<sup>16</sup> There is now ample evidence, some of it from Asia, that many clever corporations have been able to improve their environmental performance while simultaneously increasing economic performance.<sup>17</sup>

## THE BUSINESS CASE AND OTHER MOTIVATIONS FOR CORPORATE GREENING

There is widespread evidence of modern corporations radically adjusting their environmental behaviors. While the “greening of the corporation” is still quite new, there is enough evidence available to draw some general conclusions about what is motivating many contemporary businesses to adopt a greater degree of environmental responsibility.

Before this can be explored, however, it is worth examining what it means if a corporation is “green” or environmentally responsible. This is not a simple question. Take, for example, the following situations.

- Is a recycling plant that emits air pollution a “green company”?
- Is an aluminum smelter that dramatically reduces its air pollution or waste sent to landfill but that contributes large emissions of GHGs a producer of “green jobs”?
- Are all jobs associated with the ecotourism industry “green”?

The simplest definition of a “green” corporate initiative may be one that reduces the negative impact made by a company on the environment. This broad definition would allow corporate greening to be thought of as occurring across a spectrum, from innovations that reduce the environmental impact of traditionally dirty industries (such as steel manufacturers) to those that have been instigated specifically to develop and market green products or to provide solutions to environmental problems.

Where in a corporation such “greening” occurs depends on the nature of the firm’s business. Primary producers can make environmental improvements in the way they grow and harvest a product and prepare it for further processing or final market.

Manufacturers can become greener by making changes in their production processes and/or by deciding to make and sell “environmental” products. Service providers have less choice, having to focus predominantly on the environmental impact of their workforces, buildings, and infrastructure (though where services substitute for goods, this also tends to result in reduced environmental impact).

So, does it pay to be green? Many studies have focused on the link between public disclosure of environmental performance and share prices.<sup>18</sup> Overall, the answer has been positive, but business’ response to these findings has been somewhat skeptical, perhaps because managers understand clearly that green business decisions only sometimes result in increased profits.<sup>19</sup>

Naturally, business managers have a direct economic incentive to make environmental investments where they deliver positive returns or reduce significant risks, and there are many circumstances in which addressing environmental problems can result in profitable outcomes.<sup>20</sup> Several approaches can be taken to better integrate environmental considerations into business strategies; this report will explore these in greater detail in later chapters.

Corporations also can differentiate themselves by creating products or processes that offer greater environmental benefits or smaller environmental costs than those of their competitors. Chapter 5 presents a selection of the kinds of business opportunities that are opening up in a number of environmental industry sectors.<sup>21</sup> Recent research into environmentally benign manufacturing has shown growing interest from firms from Asia and the Pacific in using the environmental advantages of their products and processes to enhance their competitive positions in the market.<sup>22</sup>

The simplest strategy focuses on internal cost cutting. Corporations can often find cost savings through more efficient use of inventory and through waste minimization, recycling, and reuse. This eco-efficiency strategy is discussed in Chapter 5.

A third method by which corporations can simultaneously derive environmental and business benefits is by changing the rules of the game—pushing for private standards or for new government regulations that favor particular corporate operations. Private standards are developed when corporations in a similar industrial sector band together to establish tougher environmental performance conditions (by way of a voluntary code). This is sometimes driven by an environmental disaster; a typical example is the chemical industry’s response to the Bhopal methyl isocyanate catastrophe in India in 1984 (which resulted in that industry’s voluntary responsible care program). Companies that participate in such programs gain competitive advantage over nonparticipants by creating a cleaner image and reducing risks and compliance costs. With this strategy, environmental costs often increase but at a rate that is slower than for nonparticipating competitors. Establishing voluntary industry standards is a booming component of the “new regulatory approaches” discussed in more detail in Chapter 4.

Costs also can be reduced through risk reduction; this is the focus of the fourth approach to integrating the environment into business thinking. Accidents, consumer boycotts, and environmental lawsuits can be extremely costly. Avoiding them by investing in better risk management measures is another source of competitive advantage. The issue of environmental risk reduction, especially as it relates to consumer preferences, is discussed in Chapter 2, but it also has relevance to the technology choices discussed in Chapters 6.

Many pressures influence whether a corporation will become greener. Businesses can be attracted by the “pull” of the market. They may also, however, be influenced by the “push” of a range of external drivers and by the internal characteristics of firms themselves. It has only been in recent years that these kinds of push pressures have begun to have an impact on businesses in Asia and the Pacific. To date, the main concern of environmental regulators in the region has been to either encourage or

force corporations to move toward a basic level of compliance with traditional environmental regulations, often adapted from developed countries. Chapters 2 and 3 outline the range of international and national pressures beginning to impinge on corporations in Asia and the Pacific and their freedom to operate. The combination of these pressures will force them to move quickly toward compliance—and hopefully beyond—using the sustainability tools outlined in Chapter 4.

Generally, traditional command-and-control regulatory approaches where governments set technology standards or strict enterprise-based emission limits, have met with mixed results. The evidence from developed countries appears to show that traditional command-and-control regulations can initially be effective in bringing firms up to a minimum level of compliance, which is why we believe they remain an essential part of the role of governments in Asia and the Pacific. However, as institutions mature and regulations become more versatile and better enforced, their effectiveness appears to diminish.<sup>23</sup>

Differences in compliance rates can be accounted for by the complex interaction between external factors (such as tightening regulations, pressures from civil society stakeholders, and the political culture of the countries within which corporations operate) and internal factors (such as organizational culture, organizational learning styles, and the influence of individual employees). Until recently, it was thought that external drivers, especially regulators and civil society stakeholders, had the strongest influence on the environmental performance of corporations.<sup>24</sup> While these are still considered to be important, new research is starting to show that internal drivers (especially organizational culture) can play an equally important role.<sup>25</sup> The complexities of these interactions are evident in cross-national research which indicates that in some countries in Asia and the Pacific, firms are mainly responsive to “best practices” endorsed by regulatory agencies whereas in others, firms

are more sensitive to the influences of their trade associations.<sup>26</sup>

It is becoming clear that corporations—especially the larger ones with international markets—are beginning to think of their “licenses to operate” as going beyond the traditional regulatory license. The report deals with this important concept in more detail in Chapter 3.

## THE PURPOSE OF ASIAN ENVIRONMENT OUTLOOK 2005

This is the second *Asian Environment Outlook* (AEO) report prepared by the Asian Development Bank (ADB). AEO 2001 was the first in a series of periodic reviews of environmental and developmental trends and policies in ADB’s developing member countries to identify opportunities for them to better achieve their stated environmental objectives. The primary audiences for AEO 2001 were seen as decision makers in those governments and planners as well as specialists from international assistance agencies. They were expected to use the report in formulating environmentally sound development policies and programs with a focus on mainstreaming environmental concerns across and within economic sectors into all levels of development policies and plans.

The conventional approach to the problem of environmental degradation in Asia and the Pacific has been to focus almost entirely on the role of governments. The underlying assumption has been that if the correct mix of policies and institutional resources is obtained, then better environmental outcomes will be the result. While it is undoubtedly true that governments must continue to play a central role in maintaining environmental quality, it

is also clear that this traditional focus diverts attention from the most active financier and player in the development equation—the corporate sector. While governments determine the rules under which businesses act, it is the firms themselves that use natural resources, make products, and generate pollution. In this second AEO report, attention turns to the role of the corporate sector in environmental management in Asia and the Pacific. A globally sustainable future is not possible without the active involvement of corporations in the region. This is good business news for proactive firms that are not only willing to go beyond compliance but that also actively seek new business models and opportunities from the environmental investment backlog that faces the region as well as growing demand for environmentally friendly goods and services.

AEO 2005 has been written with a number of audiences in mind. The primary target group comprises the management, owners, employees, and stockholders of corporations operating in Asia and the Pacific. The report illustrates why there is a crucial role for them to play in regional environmental improvement. The drivers for improved environmental performance and the benefits to be derived are highlighted. For both public and private sector audiences, examples are provided of new ways of thinking about regulation and incentives that put more emphasis on corporations as engaged and responsible actors. Taking greater responsibility for the environmental consequences of their behavior may lead corporations to think more widely about their relationships with a range of stakeholders and to investigate what new environmental markets might look like. Although all kinds of businesses are targeted—multinational subsidiaries, large and small local firms, state-owned corporations, cooperatives, publicly traded firms, and privately owned operations—it is acknowledged that the corporate audience will consist predominantly of larger companies. For the

vast number of small and medium enterprises (SMEs) in Asia and the Pacific that are part of a supply chain providing inputs to large (and especially export-oriented) corporations, peer-to-peer communication will be needed to convey the message.

Reaching SMEs outside such global supply chains remains a challenge but may be approached through industry associations that have outreach programs that serve the interests of constituent corporations. Unfortunately, most SMEs are not usually aligned with an industry association nor do most associations have adequate resources to actively seek out the SMEs in their sectors. The report provides examples of how industry associations around the world have become active players in new regulatory initiatives and how their involvement might result in better environmental outcomes for the industrial sectors that they represent. This report should provide industry associations a ready compendium of information in a form that can be conveyed to their members and perhaps encourage them to develop more extensive outreach programs to SMEs. Governments can also learn how they might best reach this SME audience.

Despite primary focus on a corporate audience, effective corporate environmental responsibility cannot take place in a policy vacuum. For officials of governments in the developing countries of Asia and the Pacific, the report outlines policy benefits in corporations taking greater responsibility for their own environmental performances. Evidence is presented that the “new” approaches to regulation have achieved better environmental and broader development outcomes. The role of governments in institutionalizing more effective corporate environmental performance and creating a strong enabling environment is explored.

Multilateral agencies assist national governments in Asia and the Pacific in dealing with environmental problems. The report also examines how multilateral agencies can best assist national governments

to enable the uptake of corporate environmental responsibility concepts. Finally, one of the most important audiences for the report is civil society stakeholders. Civil society is interested in (i) whether corporate environmental responsibility initiatives can be proven to result in better environmental outcomes; (ii) how it might be possible to avoid “greenwash” through proper scrutiny of business use of the new regulatory tools; and (iii) how nongovernment organizations (NGOs) and other civil society stakeholders can participate in productive partnerships with corporations but still maintain their autonomy and ability to apply external pressure.

There has been no shortage of attention to environmental issues both globally and regionally since the release of AEO 2001. National and regional priorities, goals, and objectives are clearer. New laws, regulations and standards have been promulgated, although enforcement needs to be improved. There are some scattered examples of increased state expenditure on the environment and of more effective performance. Several new national councils for sustainable development have been created, and new institutions are planned. Nevertheless, as routinely reported in various national and subregional state-of-the-environment reports, generally speaking, environmental conditions throughout the region have continued to deteriorate. No country could yet claim to be on a path to sustainable development.

This report contends that one of the most vital missing ingredients in Asia and the Pacific is a fully engaged corporate sector committed to environmentally sound and sustainable production and consumption. The key role of the corporate sector is universally acknowledged, but concerted corporate sector engagement in these global processes has yet to be fully developed in the region.

## A GUIDE TO READERS OF ASIAN ENVIRONMENT OUTLOOK 2005

Across the planet, the private sector is expected to do more to pursue the goals and objectives of sustainable development. **Chapter 2** outlines the emerging pressures coming from external forces that companies in Asia and the Pacific can no longer ignore. Commercial banks, stock exchanges, and insurance companies require borrowers to demonstrate environmental commitment. Chambers of commerce are embracing charters of sustainable development, and public-private partnerships are being formed to achieve environmental objectives. Global environmental performance standards are becoming a badge of good corporate governance and are being passed on to SMEs through supply-chain relationships. Consumers demand evidence that goods were produced in a sustainable manner and are prepared to boycott companies suspected of ignoring environmental and labor laws. Environmentally and socially responsible investment funds exclude poor environmental performers and reward “green” companies. Anti-globalization activists armed with modern communication technologies are demanding greater accountability. Corporate annual reports are expected to cover social and environmental performance. Stockholder advocates are pushing wide-ranging resolutions at annual meetings. So far, much of this pressure has emphasized voluntary commitment, but the trend is inexorably toward more mandatory requirements. Companies in Asia and the Pacific will be gradually, but surely, caught up in these worldwide trends.

For the companies that recognize this worldwide trend and are prepared to move toward compliance with environmental regulations and standards, they face a formidable and often confusing range of

existing and developing plans, regulations, and standards at the national level. These are emanating from commitments of their governments to global standards and treaties; from national governments formulating strategic plans and regulations; from subnational and sector policies; and from industry-led “new regulation” benchmarks, codes, and partnerships. **Chapter 3** outlines the key types of regulation and standards that compliant companies in Asia and the Pacific will need to consider, both extant and emerging, in line with developing regulations in the Organisation for Economic Co-Operation and Development (OECD) and elsewhere. It also examines the relatively new set of regulations and quasi-standards emerging from public-private partnerships and voluntary agreements and how to negotiate with partners who were previously viewed as “enemies.”

Once the inexorable global trends are realized and the corporation has identified how to distinguish between “hard” and “soft” standards in the national landscape, the question remains how to implement changes within the corporation that will lead toward, and hopefully beyond, compliance. **Chapter 4** examines the emerging toolkit of internal change processes comprising environmental management systems (such as the International Organization for Standardization’s [ISO] 14001), environmental auditing, environmental reporting, and internal management changes to ensure that these tools are mainstreamed into the business and are not public relations add-ons. Although many of these tools were developed in OECD countries, they can (and often must be) adapted to different cultural and environmental conditions in Asia and the Pacific. Changes in organizational culture are often the key to ensuring that internal change processes promoting improved environmental performance take root; the latest thinking about this challenge is included.

Fear of a business threat from these changes is not an ideal motivator for corporations. A more powerful motivator is that addressing environmental problems can lead to profitable

outcomes. **Chapter 5** outlines how these opportunities might present themselves for businesses that are prepared to go “beyond compliance” and seek new opportunities either through eco-efficiency in their existing business lines or through engagement in new business opportunities such as servicing the massive backlog of environmental infrastructure or operating in the environmental goods and services sector. Millions of new jobs are being created in the environmental goods and services industry although companies in the region have generally been slow to capitalize on them.

Despite recognizing these global trends, some laggard firms in Asia and the Pacific may still believe that there is no need to move toward or beyond compliance because new technologies are coming along that will make the environmental concerns of the past few decades obsolete. **Chapter 6** addresses the ability of the “techno-fix” to bring in a golden era of sustainability. Eight strategic fields spanning current scientific and technological innovation are examined and their likely contribution to future economic growth is postulated. New technologies such as nanotechnology and biotechnology may offer the promise of making some of our current environmental concerns largely obsolete as well as opening up new green business opportunities. However, they could also make many old-style businesses in the region equally obsolete. Information technologies and the phenomenal growth of e-business, tailoring production to precise consumer demands, and just-in-time production systems may make the old hierarchical corporations extinct. The business community in the region dominated as it is by family-owned firms, state-owned enterprises, and SMEs needs to be aware of these trends, participate in finding solutions to environmental problems, and be ready to adopt new opportunities. Blissful ignorance is no longer an option.

All technologies extend the power of humans to do more, go faster, and live more interesting lives than our puny bodies would have allowed our caveman ancestors.

Unfortunately, all technologies can be used for both good and evil. Nuclear energy might light the cities of France, but technology unleashing the power of the atom could also wipe out humankind in a nuclear holocaust. Chapter 6 also addresses this dual-edged nature of the emerging technologies and what safeguards might need to be put in place to ensure that they actually contribute to environmental solutions rather than add to the burden on the planet. It also highlights the potential new environmental dangers that such technologies may bring and the lack of preparedness to deal with such dangers in Asia and the Pacific.

Finally, in **Chapter 7**, the report outlines how governments and other institutional actors in Asia and the Pacific need to create an enabling environment that will allow firms in the region to leapfrog over outmoded policy approaches and technologies. The chapter conveys the messages heard from the corporate sector—through workshops and reviews of draft versions of AEO 2005—on the assistance and incentives they expect from policy makers if they are to play their parts in achieving sustainable development. This final chapter reminds the region’s institutions and decision makers that global sustainability depends on what happens in Asia and the Pacific over the next 20 to 50 years. If this region cannot achieve sustainability, then the rest of the world cannot compensate for its failure.