Chapter 1

We are What We Consume: Sustainable consumption in a resource constrained world

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1. Introduction

An overarching hypothesis – Consumption and production are intertwined in many complex ways. In theory, sustainable consumption, by definition should lead to sustainable production, as someone concerned with sustainable consumption would not willingly consume an item that was produced unsustainably. Sustainable consumption is defined as "the use of services and related products which respond to basic needs and bring a better quality of life while minimizing the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life-cycle so as not to jeopardize the needs of future generations" (UNEP 2009a). Note the inclusion of services, quality of life, life cycles, and future generations—key themes to which we shall return throughout this White Paper. It should be remembered that the economy is made up of both goods and services and consumption of many services is not a drain on the world's resources (e.g., a music recital, education, or public libraries). Moreover, consumption goods are not all equal in their environmental implications, and informed choices by consumers can make a difference in terms of production decisions.

Chapter Highlights

This chapter presents the overarching concepts of the White Paper, and explores major issues for SCP in the Asia-Pacific region. Key questions for major stakeholders are raised, followed by the focus of each of the subsequent chapters.

- This White Paper puts forward an overarching hypothesis that sustainable consumption can drive sustainable production and lead to structural changes in the Asian economy, which in turn will form a virtuous circle and encourage ever-increasing sustainable consumption.
- Human populations cannot continue to expand indefinitely expecting to live at *per capita* levels of consumption and production practiced by developed populations.
- As countries develop there are consumption and production choices that can be made, and the same lifestyle choices made by countries in the past do not have to be taken.
- Focusing on the tendency of middle class consumers to over consume does not reduce the importance of poverty alleviation. It is not a question of not addressing those in poverty, it is about how they consume as they succeed.
- The policy challenge for all governments in the Asia-Pacific region is to create the enabling conditions for sustainable consumption and production.

Also, in theory, sustainable production, sometimes referred to as cleaner production, should lead ultimately to structural changes in the economy, now characterised in a climate-constrained world as a low carbon society (MOEJ 2007) or the Global Green New Deal (UNEP 2008). Sustainable production is defined as "the creation of goods and services using processes and systems that are non-polluting, conserve energy

and natural resources, are economically efficient, are safe and healthy for workers, communities, and consumers, and are socially and creatively rewarding for all working people" (Lowell Center for Sustainable Production 2009).

In turn, this virtuous circle should then provide additional impetus for sustainable consumption as "green" goods and services become more widely available and price competitive (Figure 1.1). Combining sustainable consumption and production (SCP) conveys a holistic approach to minimising environmental impacts and maximising social benefits related to production and consumption systems (Harada 2006).

Figure 1.1 Opportunities for general consumers to purchase eco-friendly goods

Source: Harada (2006)

This White Paper puts forward an overarching hypothesis that sustainable consumption can drive sustainable production and lead to structural changes in the Asian economy, which in turn will form a virtuous circle and encourage ever-increasing sustainable consumption. The second part of the White Paper examines the roles of the key stakeholders—consumers, communities, local governments and businesses, as well as the policy role of national governments in creating appropriate incentives for change in this direction. The third part of the White Paper examines SCP in four key sectors—agriculture, forestry, water resources, and energy. The fourth part of the White Paper examines SCP in the context of cross-cutting themes of climate change and regional integration. The final chapter then attempts to pull together these diverse strands and a coherent set of policy options that will assist Asia to accelerate the urgent need to move towards SCP.

The White Paper aims to help answer the following "big" questions: (i) can Asian economies continue to grow at 6-10% per annum without increasing its already unsustainable consumption of energy and raw materials; (ii) can Asia decarbonise, dematerialise, and decouple energy consumption, and consume sustainably in the face of widespread Western-style lifestyle aspirations; and (iii) can Asian governments be expected to strive for an economic model of prosperity without unsustainable growth, any time soon, given the overwhelming emphasis on tackling the region's enormous incidence of poverty?

This introductory chapter starts with the main driving forces behind the economy and society in Asia-Pacific and illustrates the importance of economic growth and the consumption patterns that underpin such growth in the region for the future of the planet. Behind the continuing decline in global environmental quality are key megatrends such as (i) urbanisation and the growth of megacities in Asia; (ii) globalised production systems and "footloose" factories; (iii) the emergence of the middle class in Asia (despite massive, intransigent poverty in the region), along with aspirations for a "western" lifestyle of conspicuous consumption; (iv) the push by global brands to open new consumer markets in the rapidly growing Asian countries; and (v) the dawning realisation of global climate change and its implications for society, the environment, and the global economy. These megatrends threaten the planet with catastrophic outcomes unless their impacts are reversed. The chapter then examines current responses in Asia and responses in other countries that may be adapted to Asian conditions, and concludes that additional policy shifts, tailored to each country's circumstances, are needed to accelerate the transition to SCP. The chapter concludes with a brief foray into the topics covered by the remainder of the White Paper, to provide a guide to the time-constrained reader.

2. Driving forces underpinning unsustainable consumption in Asia

Planet Earth is already being consumed at an unsustainable rate – It is a truism, but one that needs to be constantly reiterated, that human populations cannot continue to expand indefinitely expecting to live at *per capita* levels of consumption and production practiced by developed countries. Humans already take up 83% of the Earth's land surface to live on, farm, mine or fish (Wildlife Conservation Society). Of the land suitable for farming rice, wheat and corn, 98% is already used, and much of that is being degraded from overexploitation. Humans have appropriated 40% of the planet's net primary productivity, 35% of the productivity of the oceanic shelf, and 60% of freshwater runoff (Sanderson et al. 2002). A quarter of the world's rivers run dry before reaching the ocean. Virtually all fish stocks are overexploited and the oceans have multiple, vast dead zones and acidification rates at least 100 times faster than any time over the past 20 million years. Human activities convert more nitrogen into reactive forms than all forms of natural processes. The Millennium Ecosystem Assessment found that 60% of the planet's ecosystem services (such as climate regulation, provision of freshwater, waste treatment, and fisheries) were degraded or being used unsustainably (WorldWatch Institute 2009).

Of the nine main planetary biophysical boundaries, we have already transgressed three—biodiversity loss, climate change, and nitrogen cycles, possibly irreversibly (Rockström et al. 2009). Combine these stark statistics with the realisation that humans are now so dominant a species on the planet that fossil fuel energy consumption, livestock production, rice cultivation, and loss of forest cover are causing potentially irreversible changes to the atmosphere and it should be obvious that we have to change our consumption and production patterns. Box 1.1 further details the status of the continuing decline of our global environment.

Box 1.1 Global environmental quality continues to decline

"Although government and business leaders are beginning to respond more seriously to the global environmental situation, it continues to get worse. Each day, the oceans absorb 30 million tons of CO_2, increasing their acidity. The number of dead zones—areas with too little oxygen to support life—has doubled every decade since the 1960s. The oceans are warming about 50% faster than the IPCC reported in 2007. The amount of ice flowing out of Greenland during the summer of 2008 was nearly three times more than that lost during the previous year. Arctic summer ice could be gone by 2030, as could many of the major Himalayan, European, and Andean glaciers. Over 36 million hectares of primary forest are lost every year. Human consumption is 30% larger than nature's capacity to regenerate, and demand on the planet has more than doubled over the past 45 years. This growth continues as, for example, more cars are expected to be produced in China in 2009 than in the U.S. or Japan."

Glenn, J.C., T.J. Gordon, and E. Florescu (2009) 2009 State of the Future (http://www.millennium-project.org/millennium/SOF2009-English.pdf)

Global economic growth has shifted to Asia – The United Kingdom's Commission on Sustainable Development says that prosperity is possible without growth (Jackson 2009) and France's President's Commission on the Measurement of Economic Performance and Social Progress has drawn renewed attention to the failure of GDP to reflect sustainable development (Stiglitz et al. 2009). Progress in zero- or low-growth thinking is suggested while policies which increase social well-being, protect the environment, and place minimal burdens on natural, social, and financial capital are being actively sought.

Such esoteric thoughts, however, are basically lost on Asia's giants. Despite some progress being made in key areas such as renewable energy, China has recently replaced Germany[1] as the world's third largest economy and its breakneck development pace is placing enormous global pressures on natural resources, environmental sinks, and fossil fuels (with accompanying greenhouse gas (GHG) emissions responsible for climate change). India is fast catching up, with these two countries alone accounting for more than one third of the global population. Justification for maintaining such rapid growth is the priority given to poverty alleviation, although approaching poverty through a trickle-down approach based on continual economic growth is questioned by many observers (Todaro 1997; ADB 2009). Current orthodoxy in the economic literature is that growth is necessary but not sufficient for poverty alleviation, and "shared growth" needs to be more broad-based and inclusive to reach all segments of society (ADB 2009).

Will we see Asia emerge with a new, sustainable, low carbon growth path that can leapfrog over outmoded development pathways and lead the rest of the world?

The Asia-Pacific region is already home to more than 680 million middle-high income consumers, earning above $7,000 per capita (UNEP 2005). Although only 26% of the region's population achieve such incomes, if economic growth continues at the current rapid pace of over 5% per annum, the number of middle class consumers will grow exponentially. The 21st century has been described as the Asian century[2] but the real question is what kind of consumption and production pattern will this century represent? Will it be the industrial revolution style model of the 18th and 19th centuries that led to the "grow now and clean up later" model of the 20th century which, in turn, led us into our present climate and resource conditions? Or will we see Asia emerge with a new, sustainable, low carbon growth path that can leapfrog over outmoded development pathways and lead the rest of the world?

Urbanisation is a critical driver – From 2000 to 2050, about 2.85 billion people will be added to the global population of approximately six billion, and of this more than 1.5 billion will be born in Asia (UNDESA 2004). This additional population surge coincides with a rapid urbanisation trend that will result in more than half of the Asian population living in urban areas. Unfortunately, modern, urbanised society is generally unaware of how their consumption patterns and preferences dictate how goods and services are produced. Far from their rural roots and ancestral connection with nature, urbanised consumers consume vast amounts of products completely divorced from any basic needs and often produced from chemicals that never existed in nature. As Asia is already well advanced along the path of urbanisation, succeeding generations will progressively lose the historic connection with the land and nature and will turn to highly processed and convenience foods, high "labour-saving" energy consumption, and vastly increased water consumption. New housing to accommodate the rural-urban transition will require new household appliances and spread out cities will require motorised transport to connect the population to schools, shops and employment.

These changes in consumption patterns, modelled on Europe and the U.S., will have far reaching consequences in developing countries of Asia-Pacific. Achieving a global shift towards sustainable development depends on the ability of the Asia-Pacific region to not only achieve an improved standard of living, partly through urbanisation, but to do so without going through the kinds of environmental degradation that developed countries incurred as they moved from agrarian societies to modern, industrialised societies.

Consumption has become equated to "quality of life" – Before humans settled into villages and towns, possessions were limited to what could be carried on a nomadic individual's back. With sedentary lifestyles and increasing affluence, the number and/or price of possessions gradually became a measure of personal worth or status, especially as the old feudal hierarchies broke down and the pursuit of equality was equated with liberty. Over time, industry, supported by advertising, has pursued a constant message that essentially says "the more you consume, the more attractive you will become and the happier you will be," with luxury equated to liberty. There is never any limit implied in the advertising campaigns—just buy more! In the past fifty years, the average consumption per person has nearly tripled. Globally, in 2008, consumers bought 68 million vehicles, 85 million refrigerators, 297 million computers, and 1.2 billion cell phones (WorldWatch Institute 2009).

Beyond the level of basic needs, consumers shop for a large variety of reasons including to seek comfort, to obtain or maintain status, to attract a mate, to be distracted from worries, or just to fill in time. They are less aware that increased consumption beyond a certain threshold level does not lead to increased quality of life, happiness or well-being. In fact, consumption is often so intertwined with seeking status that the latest acquisition by a neighbour or workmate can make one distinctly unhappy. Paradoxically, however, many people consume non-essential goods because they are unhappy, bored or depressed. Attempts to "keep up with the Joneses" typically results in a cycle of working more in order to consume more, with ever increasing work hours leading to a consumption treadmill where individuals constantly seek to consume and acquire "goods," with happiness and quality of life remaining much the same or deteriorating due to declining health, less time spent on social activities, and more time on work related activities such as commuting and overtime.

Of course, there is no universal criterion of "quality of life" that can apply to all cultures and societies. Common features may include basic human needs (the Millennium Development Goals—food, shelter, clothing, clean water, etc.) plus companionship, community life,

cultural and religious practices and participation, health, rest and relaxation, recreation, personal development, reduced levels of stress, and high levels of job satisfaction. Individuals may argue for additional items such as beauty, but these vary from society to society. A universal truth, however, is that consumption of material goods and services are not sufficient for human well-being. In fact, over-consumption (e.g., of food, alcohol, or drugs) can have major negative health and social impacts such as obesity and diabetes, in addition to negative environmental impacts due to growing resource use and climate change impacts related to over-consumption (Edwards and Roberts 2009).

Since the mid-1900s income has considerably risen in the West while well-being, however it is measured, has not seen a relative change similar to that of income as a result of these increases (Easterlin 1974; Layard 2005). The results are what came to be known as the Easterlin Paradox which states that within a given population, higher income people are generally happier than lower income people, but richer countries are not necessarily happier than poorer countries, and over time, as income levels increase, happiness does not experience a concomitant increase (Easterlin 1974). Layard (2005) found that since the 1950s while income has greatly increased in the U.S., England, Japan, and most European countries, happiness has remained relatively unchanged, while unhappiness has not significantly decreased either. To be sure, additional income improves the lot of the poorest individuals and households, but after a certain level of sufficiency has been reached, further increases in income simply do not tend to have the same effect on quality of life and well-being as previous increases did. It is not simply a case of diminishing returns, although that is a factor, but unrealistic expectations about the value of consumption and quick adaptation to material acquisition.

People tend to overvalue the increase in well-being they think they will get following an increase in income and consumption, leaving them less satisfied than expected, which in turn perpetuates the cycle as they pursue ever higher material goals. Social comparison of relative income and consumption can lead to an unending and unsatisfying pursuit of material goods. The effect is a zero-sum game. When the income of everyone rises, thereby raising the consumption and short-term well-being of all, human nature is to adapt to these new levels of consumption and aspire to more, thus stimulating a pathway towards unsustainable consumption. Personal aspirations are additionally driven by comparison to others, resulting in a society where everyone is seen as a competitor and another's possessions are seen as an obstacle to one's own well-being. These conditions are not likely to result in happiness and satisfaction for all, regardless of the amount of output and consumption.

The challenge is in convincing people that such pursuits may lead to greater well-being and satisfaction than the pursuit of income and conspicuous consumption, and in making these pursuits more ***appealing, accessible, and affordable.***

The finding that income and well-being are not strongly related after a certain level is not without detractors, however, as other researchers such as Stevenson and Wolfers (2008) and Hagerty and Veenhoven (2003) find that increasing national income does increase national well-being though by a much smaller degree proportionate to the change in income. The policy recommendation, therefore, is not to abandon the pursuit of wealth and increased consumption altogether, but to carefully consider the direction of development policies and to give greater consideration to how increased wealth will be spent—on more highways connecting suburbs to cities and on new cars; or on public spending on education and parks and personal spending on arts and services (Hagerty and Veenhoven 2003; Diener and Oishi 2000). These latter less visible forms of consumption involve time spent doing rather than accumulating. The

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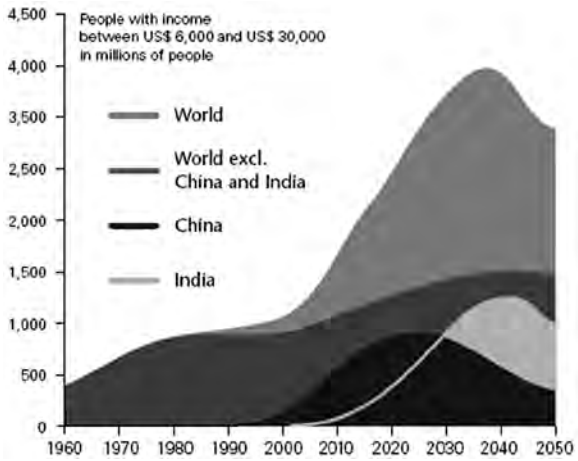
Due to absolute limits of our environment and climate constraints, consumption patterns will have to be altered and in some cases reduced. Having experienced the sense of gain from a new possession as a result of higher income, an individual cannot easily revert back to previous levels of consumption—the sense of loss of something once owned can be much greater than the actual gain. Education and life experiences in arts and civil society, however, cannot be so easily diminished or taken away, and can be built upon by each individual personally with little environmental effect compared to, for example, moving into a larger house to accommodate increasing amounts of possessions or purchasing new cars for family members.

Changes in consumption patterns are notoriously difficult to engineer – Rising aspirations are not only subject to external influences and personal comparisons with others around us. The Diderot effect drives the "upward creep of desire" towards the acquisition of more and more consumer goods (Schor 1998). For a given set of consumer goods, household furniture for example, as new items are bought the remaining items appear less attractive in comparison to the new purchases, often compelling additional purchases based on this relative comparison between personal possessions. In addition, a major driver of expanding aspirations for material goods is advertising and the global reach of the individual, through mass media and the Internet. Rather than being compared to their peers in the local community or even at the national level, through multinational advertising and widespread access to the Internet, consumers are now being compared on a global level (Maniates 2002). These global level aspirations are critical for influencing the consumptions patterns of the emerging middle class in Asia. As a result, local cultures change and conspicuous consumption increases as we see that life imitates advertisements far more than advertisements imitate life.

These are not new concerns, of course, but have worried many serious social observers in Western countries ever since Thorstein Veblen's *Theory of the Leisure Class* in 1902 that recognised consumption for both utilitarian and status purposes. Vance Packard's influential books, *The Hidden Persuaders* (on advertising) in 1957, *The Status Seekers* in 1959, and *The Waste Makers* (on planned obsolescence) in 1960, and *Our Endangered Children* (on future generations) in 1983, mirror many of the concerns still being addressed today. The global community at the 1992 Earth Summit in Rio de Janeiro and its follow up World Summit on Sustainable Development in 2002 in Johannesburg recognised that "fundamental changes in the way societies produce and consume are indispensable for achieving global sustainable development." Fundamental change in any aspect of society, however, is always easier said than done, but it is even more problematic when developing countries of Asia believe it is now their turn to enjoy the fruits of economic growth over the past few decades in much the same form and substance as Western consumers have done for the past centuries.

Asian middle class consumers will determine global outcomes – It might be thought that unsustainable consumption concerns only apply to wealthy developed countries, where basic needs are no longer a primary concern. However, the emerging middle class in Asia was estimated at 226 million in 2004 (excluding Japan) and has already more than doubled (See Figure 1.2). This middle class bulge in developing Asia is expected to grow by a phenomenal 300%. It is no exaggeration to claim that the fate of planet Earth depends on how this middle class cohort in Asia, ultimately as large as 2 billion people, decides to consume—like Americans or sustainably?

Figure 1.2 The bulge in middle income consumers



Source: Goldman Sachs 2008

There is a danger, however, in wholeheartedly embracing the notion that changing consumption patterns or limiting income increases of this emerging middle class through policy interventions would lead to greater well-being or quality of life. Policy proposals along these lines in Asia are likely to be marginalised and romanticised as being idealistic but "fundamentally irrelevant" to practical policies, least of all sustainability (Maniates 2002).

That being said, policies which seek mainly to raise incomes, individual and national, to levels equal to that of developed countries are, on the one hand, incomplete in their excessive focus on GDP and income, and on the other hand, may be overreaching in their expectations of the level of well-being that could be attained simply by aiming for continuing economic growth. Finding a balance between economic growth and well-being must be a fundamental concern. There is no basic conflict between considering economic growth as important and at the same time an insufficient basis for human development (Anand and Sen 2000). The "maximisation of opulence" has no intrinsic value to improving quality of life, rather it is the instrumental role that income can play in supporting public policy and action in the social and environmental realms and on alleviating poverty, that is key (Anand and Sen 2000).

Better informed consumers are necessary but not sufficient – How well informed are Asian consumers about the environmental implications of their consumption and the power that they have over production decisions by making wiser consumption choices (including consuming less)? Are they more likely to fall prey to advertising and careful manipulation of lifestyle aspirations by companies looking to expand into a potentially huge new market? In 2008, advertising revenue in China increased by more than 9% to $27.8 billion, and it is clearly working. As income and consumption increase, individual aspirations also change, creating the "sad tale of the aspiration treadmill" (Kahneman 2008). Mere provision of information on the environmental and social impacts of specific

What ultimately matters to… (achieving)…the goals of sustainable consumption is having the enabling policies and infrastructure for informed consumers to make the right choices and actions, as well as having a wide range of sustainable goods and services to choose from.

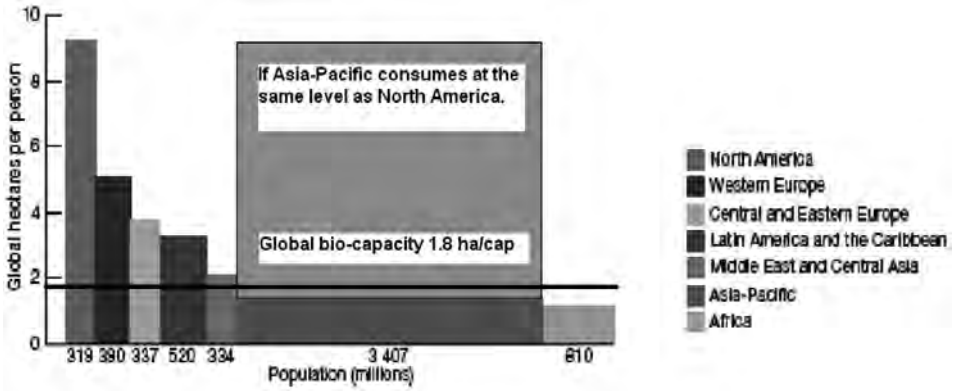
products may just result in shifting brand loyalty (Lee et al. 2009). Clever retailers like Tesco and Walmart are trying to maximise provision of better environmental information, while encouraging increased time in-store and increased consumption (Goleman 2009). What ultimately matters to these global supermarket chains is not which products are bought but increased market share and ever-increasing consumption. What ultimately matters to successful materialisation of the goals of sustainable consumption is having the enabling policy and infrastructure for informed consumers to make the right choices and actions, as well as having a wide range of sustainable goods and services to choose from.

Global companies are finding new consumers in Asia – By the end of 2008, Kentucky Fried Chicken had opened more than 2,500 outlets in China, adding about 250 new stores every year. McDonald's had over 1,000 restaurants in China, opening about 150 new stores each year. In 2008, Chinese consumers purchased about 9.5 million vehicles and Rolls Royce sold over 100 of its luxury cars, equal to 10% of global sales. Fifteen years ago, wine consumption in China was almost zero, but now imports are growing at more than 30% per year. Per capita wine consumption in China is only 6% of the global average, but the big suppliers (like Constellation Brands, which has annual wine sales of $3 billion per year) recognise this market as the next big boom. In 2007, French champagne sales in China reached 660,000 bottles, an increase of nine times over 2002 levels. And India is soon to follow China down this path. The new Nano car developed by Tata Industries in India plans on initially selling 250,000 vehicles per year, while the average traffic speed in New Delhi due to road congestion has dropped to 7 km/hr, barely above walking pace. The Society of Indian Automobile Manufacturers reported that passenger vehicle sales in June 2009 rose by more than 8% over the previous year, compared to a downturn in commercial vehicle sales.

Climate change adds a new urgency – The links between unsustainable consumption and the planet's environmental woes are not new realisations, as they already underpinned the Club of Rome's *Limits to Growth*, Agenda 21 and the World Summit on Sustainable Development, but the urgency of climate change has fostered a renewed emphasis on finding a workable pathway towards SCP, now partially rebranded as a low-carbon economy or low-carbon society. The business as usual approach to consumption and production, according to the Intergovernmental Panel on Climate Change (IPCC) in its Fourth Assessment Report scenarios, will lead to average temperature increases of 4-5^{o}C by the end of the century, with almost unimaginable consequences of sea level rise, extreme weather events, loss of coral reefs, and ocean acidification. Business as usual will lead to climate change that will not stabilise in the foreseeable future, possibly changing the capacity of the planet to support human life. To head off such outcomes, radical changes in economic structures are being proposed, broadly under the conceptual framework of a low carbon society.

Adopting Western consumption lifestyles cannot be sustained – If the emerging middle class in Asia decides to consume like the average American, then we will need four to five additional planets (Figure 1.3). Even consuming at the highly energy efficient level of the average Japanese, would be unsustainable. Even if only China grew and all other Asian developing countries remained poor, current consumption patterns would be unsustainable.

Figure 1.3 Ecological footprints



Source: http://www.myfootprint.org

As an example of adopting Western consumption lifestyles, consider car ownership. As one of the fastest growing sources of GHG emissions, cars are also an expression of success and rising income. In particular in China, India, and the Republic of Korea, these three countries have experienced annual car ownership growth rates of 12-20% largely attributable to per capita income growth among the middle-class (Meyers and Kent 2004), compared to GDP growth rates ranging from 2-9% for the period 1990-2003 (World Bank 2008). Compared to other developing regions in the world, car ownership as a factor of gross national income (GNI) is increasing the most in Asia. In some countries, a doubling of GNI leads to a more than doubling of car ownership. On top of the environmental costs due to emissions, manufacturing of the cars themselves, and the infrastructure for automobile use, there are also the social factors that are largely passed on to others such as accidents, congestion, and pollution in cities which lack urban planning to accommodate large scale ownership of vehicles (Willoughby 2000).While the scope of adopting Western consumption is a part of the problem, in Asia in particular the sheer scale due to population size is cause for thought (see Box 1.2).

Box 1.2 What if China consumes like the U.S.?

China's economy has grown at a rapid 9.5% per year since it began a broad-ranging overhaul in 1978. If the economy was now to grow at 8% per year, essentially doubling every nine years, the income per person in 2031 for China's projected population of 1.45 billion would rise from its current $5,300 to $38,000, or equal to the current U.S. per capita income, making China the world's largest economy. This would result in the following resource demands.

- **Food**: *If the Chinese consume resources in 2031 as voraciously as Americans do now, grain consumption per person there would climb from 291 kilograms today to the 935 kilograms needed to sustain a U.S.-style diet rich in meat, milk, and eggs*. In 2031, China would consume 1,352 million tons of grain, equal to two-thirds of all the grain harvested in the world last year. To reach the U.S. 2004 meat intake of 276 pounds per person, China's total meat consumption would rise from the current 64 million tons to 181 million tons in 2031, or roughly four-fifths of current world meat production.
- **Energy**: If China were to burn coal at the current U.S. level of two tonnes per person, the country would use 2.8 billion tonnes per year—more than the current

world production of 2.5 billion tonnes. And if the Chinese use oil at the same rate as Americans do today, by 2031 China would need 99 million barrels of oil a day. The world currently produces 79 million barrels per day and with peak oil on the horizon or already passed, may never produce much more than that.

- **Transport**: If car ownership in China were to reach the U.S. level of three cars for every four people, China would have 1.1 billion cars in 2031, compared to 795 million cars worldwide now. The paving of land for roads, highways, and parking lots would approach the area now used to grow rice in China. Competition between car owners and farmers for productive cropland would be intense.
- **Imports**: Surging Chinese demand has been a boost to countries as far away as Argentina, which bounced back from its 2001 crisis with an annual economic growth rate of 8%. Much of this is credited to Chinese demand for soy, which drove up Argentine production by 20% per year at a time when the South American country was struggling to do any international business. Argentina now provides one third of China's soy. A 1998 ban on logging old growth forests in China has driven massive deforestation in other Asian developing countries, as demand was never abated.

Source: http://www.earth-policy.org

3. Current responses to promote sustainable consumption

Global responses – An International Expert Meeting on the 10-Year Framework of Programmes for Sustainable Consumption (Marrakech, Morocco, 16-19 June 2003) noted that the real challenge now is to move from "the more generic to the specific and focus on implementation." The Marrakech Process is a global process to support the elaboration of a 10-Year Framework of Programmes (10YFP) on SCP, as called for by the WSSD Johannesburg Plan of Action as the basis for globally coordinated activities. It is expected that the UN Commission on Sustainable Development will approve this slowly emerging 10YFP in 2010-2011 for implementation starting in 2012. Regional consultations were held in Indonesia and South Korea in 2003 and in the Philippines in 2008, with a view to developing a regional strategy for SCP.

A Global Green New Deal – In view of massive stimulus packages being proposed to deal with the 2008-2009 economic crisis, the United Nations Environment Programme (UNEP) called for a significant proportion of the estimated $3.1 trillion to be invested in (i) energy efficiency in buildings; (ii) renewable energy; (iii) sustainable transport; (iv) protection of the global ecological infrastructure; and (v) sustainable agriculture. In reality, massive amounts went into saving stressed banks, automobile companies and consumer spending (such as subsidised car and appliance replacements) to get the economy back onto its long term growth trend (UNEP 2009). China and the Republic of Korea were among the top countries directing their stimulus packages into green business and sustainable infrastructure, but no country seized this opportunity for fundamental reform (HSBC 2009, Jackson 2009). Chinese experts estimate that for every $100 billion investment in "green growth," household consumption would increase by $60 billion. Recent responses to the global financial crisis also suggest that Asia's leaders are not helping the search for sustainable, low carbon economies by proposing that current export-led growth strategies, which have contributed to the global financial crisis, should be replaced by increased domestic consumption. These spillover effects illustrate that green growth in Asia is still growth, regardless of its colour, albeit with reduced impacts on the global environment compared to business as usual.

Current responses in Asia – Since 1997, the Asia Pacific Roundtable on Sustainable Consumption and Production (APRSCP) has been the main venue for discussions in the Asia-Pacific region on this topic, with seven roundtables held in various countries.[3] A Regional Helpdesk on Sustainable Consumption and Production in Asia and the Pacific was jointly established by UNEP and UNESCAP in May 2006 to offer advice on SCP policies.[4]

In the early days of the APRSCP, the main focus was on cleaner production (its original name was Asia Pacific Roundtable for Cleaner Production), stemming from earlier concerns over environmental pollution, especially from small and medium enterprises in Asian developing countries. A series of cleaner production pilot projects was undertaken, mainly supported by the United States Agency for International Development (USAID). It was soon realised, however, that there can be no sustainable production without accompanying sustainable consumption, leading to a broadening of the concept at the roundtable, and bringing in new actors.

From 2005-2007, the European Union supported a project on Capacity Building for Implementation of UN Guidelines on Consumer Protection in Asia, which resulted in a guidance manual on Advancing Sustainable Consumption in Asia (UNEP 2007).

More recently, UNESCAP has rebranded the SCP concept as Green Growth.[5] At the 8th APRSCP roundtable, held in Cebu in 2008, it was recommended that the Green Growth approach with its five tracks on green tax and budget reform, sustainable infrastructure, sustainable consumption, green business and ecological efficiency indicators could be strengthened to become the regional framework of programmes for SCP in the Asia-Pacific region. To date, SCP in the Asia-Pacific region remains a fluid concept without a firm consensus on its form or direction, with much more attention paid to technological solutions than to social and political innovation to address unsustainable consumption patterns and expectations.

Within the region, some countries are taking up the task of pursuing SCP with locally generated strategies which share concepts and goals of the broader SCP agenda. Possibly the latest (and hopefully final) twist on the terminology issue has been the recent interest in pathways towards a low-carbon economy or low-carbon society (LCS). The Japan-UK Low Carbon Society project (Skea and Nishioka 2008) offers the following definition of a LCS, as one which should:

(i) take actions that are compatible with the principles of sustainable development, ensuring that the development needs of all groups within society are met;
(ii) make an equitable contribution towards the global effort to stabilise the atmospheric concentration of CO_2 and other GHGs at a level that will avoid dangerous climate change, through deep cuts in global emissions;
(iii) demonstrate a high level of energy efficiency and use low-carbon energy sources and production technologies; and
(iv) adopt patterns of consumption and behaviour that are consistent with low levels of GHG emissions.

The Ministry of Environment, Japan identified three principles that define a LCS: (i) carbon minimisation in all sectors; (ii) a simpler lifestyle that realises a richer quality of life; and (iii) coexistence with nature (MOEJ 2007). Hence, it can be seen that a LCS is virtually synonymous with the basic concepts of SCP, albeit with the climate change and energy twist.

From these different approaches to SCP in Asia-Pacific there are some common elements that should be included in a consensus definition, comprising an optimal mix of:

i. reducing energy demand and the demand for environmentally unsound products;
ii. moving away from carbon-intensive fossil fuels and their associated GHG emissions in all consumption and production activities;
iii. continuing to meet the development needs of all groups in society, but especially those that are poor and/or vulnerable, without equating those needs to a Western style consumption pattern;
iv. ensuring energy and food security, by concentrating on locally available resources; and
v. adopting appropriate technology and policies that continuously lead toward a LCS.

The emphasis on energy partly distinguishes a LCS from more general SCP paths, which would have to meet three conditions: (i) rates of use of renewable resources below rates of regeneration; (ii) rates of use of non-renewable resources below the rate at which sustainable renewable substitutes are developed; and (iii) rates of polluting emissions below the assimilative capacity of nature (Meadows et al. 2004). There are, however, sufficient points of commonality between a LCS and the prior concepts of SCP, that making a point of finding the differences would not be a fruitful or meaningful pursuit.

4. Future directions

Setting the enabling conditions – The concept of "natural capitalism" proposes four broad principles for achieving SCP: (i) increasing resource productivity (by at least a factor of 10); (ii) eliminating the concept of waste entirely, by redesigning an economy based on closing the loops of material flows; (iii) shifting from processing materials and making "stuff" to creating services and qualitative improvements in the standard of living; and (iv) rehabilitating the planet by investing in natural capital instead of financial capital divorced from the physical world (Hawken et al. 1999).

What is being done elsewhere in the world needs to be examined from four main perspectives:
(1) goal and target setting; (2) alternative pathways to reach these goals; (3) the use of models to test the feasibility of these pathways; and (4) the social and political responses to the various options that have been proposed.

Goal setting – As an example of goal setting, former Japanese Prime Minister, Yasuo Fukuda, in June 2008, stated his government's vision comprising (i) transition from a fossil fuel dependent industrialised society; (ii) stepping forward with confidence, as an LCS will bring new business opportunities and is based on Japan's traditional ability to live in harmony with nature; (iii) setting up a long-term goal to reduce CO_2 emissions by 60-80% by 2050; (iv) peaking out emission levels in the next 10-20 years; (v) developing innovative technology and diffusing existing technologies; (vi) setting up enabling institutions such as emissions trading and tax reform; (vii) implementing local government measures like producing and consuming locally; and (viii) behavioural change at all levels. While Prime Minister Fukuda's political party was voted out of office mid-2009, the new Prime Minister, Yukio Hatoyama, has expressed his vision along the same lines as his predecessor, making even greater commitments to follow the scientific consensus on emissions reduction (Ministry of Foreign Affairs 2009). In addition, PM Hatoyama's political philosophy is based on rethinking the fundamental structure of the world economy and adjusting the globalised version of capitalism, with more attention paid to local economies and greater regional integration.

Alternative pathways – To what extent is there a shared vision of the collective future of humanity, and what needs to be done to reach such a consensus? Scenario narratives are evocative of imagined futures and allow decision makers to understand the consequences of their policy choices. For the Global Environment Outlook (GEO-4), for example, four scenarios were defined: Markets First, Policy First, Security First, and Sustainability First. Selected indicators are used to illustrate the probable difference in outcomes of each scenario. For example, the range of atmospheric concentrations of CO_2 in 2050 is over 560 ppm in Markets First compared to 475 ppm in Sustainability First, while many observers are now arguing for a return to 350 ppm (from the current level of 387 ppm). Clearly, nations will find alternative pathways that suit their current circumstances, but is prosperity without growth and without ecological destruction really possible (Jackson 2009)?

Modelling – As one example of modelling approaches, the Japan-UK Low Carbon Society project undertook an international modelling exercise to compare a range of different models (macro-economic, technology-based and hybrid models) and scenarios towards 2050 in the UK, Japan, U.S., Canada, Thailand, and India. Core model runs were the base case, a carbon price case (where traded CO_2 would be worth $100 per tonne by 2050), and a carbon-plus case, which assumed a 50% reduction in global CO_2 emissions by 2050. A common finding of the nine national teams involved was that LCS scenarios are technologically feasible but the social, economic, and political challenges are daunting, especially for developing countries.

Social and political responses – The varying negotiating positions of the more than 190 countries discussing the post-2012 climate change agreement to replace or extend the Kyoto Protocol, provide evidence of the differing social and political considerations that enter the mix of possible solutions to a common problem. Developed countries seeking to minimise the amount of compensation they need to pay, large developing countries not wanting to be bound by firm emissions targets, small island developing states and least developing countries wanting much more aggressive targets, illustrate the varying political and social considerations that each party brings to the negotiating table.

Policy shifts required to make the necessary transition to sustainable consumption and production – Given these common but differentiated positions, the optimal policy mix to make the necessary changes will vary from country to country but will involve some combination of the following policy approaches:

i. Market-based: Taxation, cap and trade, subsidies, incentives, and feed-in tariffs;
ii. Regulatory: Standards, mandates, legislation, and building codes;
iii. Information-based: Certification, eco-labelling, product information, independent testing, education, and social marketing; and
iv. Voluntary: Lifestyle changes, offsets, consumer boycotts, advocacy campaigns, and socially responsible investment. Some of the promising options are explored below.

The 6 re- philosophy – Essential elements of an effective policy approach for the future direction of SCP include (i) **re-thinking** the product and its functions (replacing goods with services); (ii) making products that are easy to **repair** and ensuring that skilled tradesmen are trained in repairs; (iii) **replacing** harmful substances in products with safer alternatives; (iv) designing products for disassembly so that parts can be easily **reused** or recycled; (v) **reducing** energy, material consumption and impacts throughout the product's life cycle; and (vi) **recycling**.

Redesigning products includes (i) development of new concepts, such as dematerialisation or miniaturisation; (ii) selection of environmentally friendly, recycled or recyclable materials; (iii) less consumption of materials and less transport; (iv) efficient distribution systems, including less packaging; (v) reduction of environmental impact associated with consumer use of the product; (vi) optimisation of product life, rather than planned obsolescence; and (vii) optimisation of end-of-life for recycling, reuse, and clean waste incineration.

Green procurement policies – Surveys in developed countries show that at least half of the consumers already claim that they buy environmental goods and would buy more if they knew more about their choices. But in the global recession, they reverted to price considerations or avoiding conspicuous consumption, showing that old habits die hard. Under these conditions, governments need to provide the lead by preferentially purchasing "green" products. Japan's Law Concerning the Promotion of Eco-Friendly Goods and Services by the State and Other Entities came into effect in 2001. This law explicitly recognises that green procurement by the State will create incentives for producers to manufacture green products thus creating more opportunities for consumers to purchase such goods. Hundreds of items (a total of 17 categories, including paper, stationery, office furniture, office automation, home electric appliances, air conditioners, water heaters, lighting, and vehicles) have been certified as being suitable for government procurement. Such green procurement (e.g., of hybrid cars, solar generation, high frequency inverter lighting, etc.) has also resulted in major reductions in GHG emissions.

***Aiming for a policy mix: Voluntary approaches** by companies to green their supply chain may not be sufficient and governments may need to intervene, especially in influencing the behaviour of the thousands of many small and medium industries in Asia.*

Greening supply chains – A typical supply chain involves raw material extraction, transport to a processing plant, manufacturing, packaging, transport to a retail outlet, retailers, consumer purchase, transport to the household, household use, and disposal. Each of these steps involves energy use and emissions of GHGs, plus various other pollutants. Greening of the supply chain involves reducing the environmental impacts of every step, which stands in stark contrast to the normal concept of company responsibility within the factory walls. Voluntary approaches by companies to green their supply chain may not be sufficient, however, and governments may need to intervene, especially in influencing the behaviour of the many thousands of small and medium industries in Asia. Compliance assistance centres are being established in India, Philippines, Thailand and other countries to assist small and medium enterprises to comply with the relevant environmental laws.[6]

Root and branch changes to deal with climate change – Consider some of the political and social changes required to achieve a global adoption of SCP in a climate constrained world: (i) parallel tax reform and/or cap and trade GHG limits; (ii) technology transfer/spillover to developing countries; (iii) relaxing patents and intellectual property rights to low-carbon technologies; (iv) institutions facilitating technology transfer and technical assistance; (v) redirecting consumerism in emerging economies and reducing consumption in developed economies; (vi) changes in individual values, aspirations and lifestyle choices away from material consumption towards services; (vii) funding research and development on dematerialisation in production processes (such as nanotechnology); (viii) providing low-carbon choices in urban and transportation planning, building design, and material substitution and recycling; and (ix) linking poverty reduction and a low carbon development path. These are non-trivial changes, requiring many decades of effort, with significant transition costs of the enabling policies. Sustainable consumption is somewhere

in the mix of changes needed but clearly cannot be relied on as the sole source of the necessary root and branch change in social and economic structures.

Information-based policies – Examining the sustainable consumption policy options that have been debated so far and the challenges in achieving widespread adoption of policies that will make a significant difference in Asia, the most promising option appears to be policies that mandate provision of better information to consumers, so that they can make wiser consumption choices. Some observers believe that modern information technology and radical transparency will change the relationship between consumer and producer and better informed consumers will demand environmentally sound products and boycott companies that do not deliver (Goleman 2009). Social networking sites, SMS and Twitter, YouTube, etc., will allow information to spread virally, especially among the young. As a modern supermarket has over 15,000 product lines, generating useful information and conveying this information in simple terms is a major undertaking. Groups like GoodGuide rate over 70,000 products on health, environment and social grounds on a scale of 1 to 10, but how effective such ratings will be remains unknown.[7] Eco-certification schemes for forest products and fisheries are having some impression on producers in these sectors, but there is still enough continuing illegal activity in both sectors to cast doubt on the effectiveness of eco-certification.

Making sustainable consumption "cool" – One of the primary factors in the rapid uptake of hybrid vehicles was the association with several celebrities who made very early purchases of hybrid vehicles as soon as they came onto the market. Nevertheless, the majority of "green" consumers are more or less committed environmentalists, who probably only amount to 10-15% of all consumers. To reach the uncommitted majority, sustainable consumption needs to be made much more fashionable. In relation to promoting low carbon alternatives, emphasis should be on saving money now, preventing a rebound effect (where money saved is spent on high carbon pursuits like holidays overseas), avoiding guilt and emotionally loaded words (like "environmental"), making the choices fun and desirable, and satirising high-carbon, high consumption behaviour (Pratt and Retallack 2009). When the average teenager laughs at someone driving a gas guzzling car, the message can be regarded as having reached its target. There are sparks of such moves among the young as expressed in consumer boycotts, brand avoidance, "buy nothing" days, the anti-globalisation movement, and various sub-cultures, but these still tend to be minority actions (Lee et al. 2009).

5. Questions to be addressed

Sustainable consumption concepts are beginning to influence some producers (and supply chains), who seek first mover advantage or have strong corporate social responsibility (CSR) motivations. Sustainable consumption in Asia, however, is constrained by a daunting lack of information on the impacts of consumption and availability of sustainable choices, the unmet aspirations for a "Western" lifestyle, and a "grow now, clean up later" attitude despite great efforts by some regional policy makers and practitioners. There is little evidence that SCP concepts are high priority public policy options leading to transformations in social and economic structures in Asia. The dominant paradigm of maintaining breakneck economic growth rates in Asia is incompatible with decoupling energy consumption, moving away from fossil fuels, and mitigating climate change, despite some positive moves in this direction.

Sustainable consumption must be driven by provision of information on products and lifestyles that can compete with and counteract the global advertising budget of billions

of dollars per year and improve the systems of provision that are currently in place, such as energy and water. More aware consumers are already changing production behaviour in proactive companies and more can be expected in the future. A major challenge, however, is influencing the behaviour of small and medium industries, which may only be possible through extended supply chains and sustainable procurement policies of large chain stores and major purchasers (including governments). The policy challenge for all governments in the Asia-Pacific region is to create the enabling conditions for more sustainable consumption and production (for example, through green procurement, taxes on high carbon products, support for green innovation, and removal of perverse subsidies) and then monitor and learn from any production changes in response. ***Changes in consumption preferences by individual consumers alone will not drive structural change in the socio-economy—unsustainable production must be penalised, consumer choices must be widened, and governments must lead the way.***

Some questions for policy makers – To what extent do current subsidies and other perverse incentives impede SCP? Do changes in domestic policy have transboundary consequences that may lead to unsustainable consumption and production in neighbouring countries? Does current government procurement foster SCP? How can governments provide additional incentives to change consumption behaviour? Does government policy ensure adequate choice for concerned consumers (e.g., services rather than goods)?

Some questions for business leaders – To what extent is consumer demand from Asia's emerging middle class for better environmental information driving changes in production systems in Asia? As Asia is the "factory for the world," how important are changing consumer attitudes in developed country markets in changing Asian producer practices? Are Asian producers anticipating the negative impacts of adverse consumer reactions and potential reputation risks and changing production practices before they are forced to? To what extent are Asian producers going beyond CSR and "greenwashing" and actually designing and producing innovative green products? Is mandatory environmental disclosure essential, or would voluntary approaches suffice? What is the optimal policy stance of governments from a business perspective? How important are shareholders, investors, and company staff in changing company environmental practices?

Some questions for educators – Is there an adequate curriculum for formal education on sustainable consumption in Asia? What kind of environmental information should be produced to meet the information needs of concerned consumers in different age groups? What can we learn from previous successful education campaigns in changing consumer behaviour? What is the government's role in promoting education for sustainable consumption? How important is comprehensive environmental information as an input to education for sustainable consumption? Who is regarded as a competent and trusted provider of such information?

Some questions for consumers – Dominant cultural patterns that view increasing consumption as normal and natural are unsustainable. If (or when) this becomes the dominant cultural paradigm in Asia, the world's ecosystems will collapse, probably irretrievably, and it is uncertain how many people the planet will be able to accommodate. Of course, we must all continue to consume to stay alive, and no one would deny the right of the world's poor to achieve a basic level of comfort and well-being through increased consumption. Can consumers in the developing and developed worlds find a level and form of consumption that not only meets human needs but is also sustainable?

6. Overview of subsequent chapters

Chapter 2, which deals with the ever-increasing intrusion of packaging in our lives, finds that consumers need to have real choices if they are expected to change their consumption behaviour. Packaging has tremendous advantages in modern, urbanised societies that may impede or preclude the ability to purchase unpackaged (or sustainably packaged) products. Decisions on packaging are dominated by brand owners and producers, but other stakeholders like retail outlets, local governments (responsible for handling all the waste), and consumers can be engaged through dialogue in reaching multi-stakeholder agreements on minimising unsustainable and unnecessary packaging.

Chapter 3 on education for sustainable consumption also builds on the importance of information provision to direct self-transformation of consumer behaviour. Chapter 4 on corporate environmental information disclosure addresses an effective informational policy approach that either mandates or encourages disclosure of corporate environmental information. Both chapters point to the need for effective communication to change production and consumption behaviour.

Chapter 5 continues the examination of the role of stakeholder by focusing on local governments through a range of case studies, and finds that there are successful examples of local governments contributing to sustainable consumption and production, and peer-to-peer learning is an effective way for these good practice examples to be replicated. Chapter 6 continues the theme of local level actions bearing fruit, by characterising pioneering communities and their contribution to achieving sustainable consumption.

Turning to the resources sectors, chapter 7 examines the powerful application of economic policy measures in changing water consumption behaviour. Policy measures such as water charges, pollution charges, removing subsidies, and water trading are explained through the medium of successful case studies. In the forest sector, chapter 8 illustrates the widespread market flaws and governance failures that have made SCP of forest products so difficult to achieve. From evidence surrounding forest certification, public procurement policies, export licensing, legislation in consumer countries, and reduced emissions from deforestation and forest degradation (REDD), potentially more effective incentive and regulatory instruments are proposed. In relation to renewable energy, chapter 9 suggests that expanding consumer choice will help to boost the deployment of renewable energy in the Asia-Pacific region and also emphasises the crucial role of engaged consumers despite the tendency in this sector for top-down approaches. The final chapter in this section, chapter 10, observes that inadequate food safety in Asia is primarily due to policy failure and the strict standards and certification applied to organic agriculture could be one effective pathway to improved food safety.

In the first of two cross-cutting chapters, chapter 11 on sustainable consumption and climate change suggests that more sustainable lifestyle and consumption patterns could help to reduce energy use and GHG emissions. Chapter 12 makes the excellent point that one country's SCP measures should be judged against the impact that these measures have on sustainable development in neighbouring countries and trading partners. Banning unsustainable logging in one country, for example, without addressing the underlying demand for forest products, may simply shift illegal, unsustainable logging to other countries to meet the continuing demand.

The final chapter, chapter 13, brings together all of the possible policy options and instruments available to Asian countries from the previous chapters and observes that

much more research is needed before a comprehensive suite of effective policy remedies for sustainable consumption can be recommended.

Notes

1. China is on pace to replace Germany as the leader of producing renewable energy, in particular solar energy. The Chinese stimulus package in 2008-2009 included significant subsidies for photovoltaic installation. That said, the vast majority of solar energy capacity in China is exported.
2. Kishore Mahbubani. 2008. The New Asian Hemisphere: The Irresistible Shift of Global Power to the East (Public Affairs).
3. Under APRSCP, UNEP (2004) conducted a review titled *Sustainable Consumption and Production in Asia and the Pacific: A Review of Status and Trends*.
4. http://www.scphelp.org
5. http://www.greengrowth.org
6. Asian Environmental Compliance and Enforcement Network: http://www.aecen.org
7. http://www.goodguide.com/about/ratings

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