Resource Efficiency and Eco-innovation: the Asian Perspective

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Outline of the presentation

• Current status and future trends related to socio-economic development in Asia
• Major challenges and opportunities for realizing resource efficiency in Asia
• Current practices of Sustainable Consumption and Production and Resource Efficiency and challenges for upscaling and mainstreaming Resource Efficiency and Eco-innovation in Asia
Population Density of Asia = 1.5 times World Average

Enormous Developmental Disparities

Symbol for Rapid Economic Growth

World: 4.0%
Developing ESCAP: 7.5%
Developing Asia contributed significantly to world GDP growth over the past decade.

Source: IMF World Economic Outlook, 2010.
Asia will account for 70 percent of the world’s added capital stock between 2030 and 2050

Source: Centennial Group projections, 2011.
Asia is projected to account for more than half of global output in 2050

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2020</th>
<th>2030</th>
<th>2040</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global output (market exchange rates, US$ trillions)</td>
<td>62</td>
<td>90</td>
<td>132</td>
<td>195</td>
<td>292</td>
</tr>
<tr>
<td>Asian share of global output</td>
<td>27.4%</td>
<td>33.5%</td>
<td>38.9%</td>
<td>44.5%</td>
<td>50.6%</td>
</tr>
<tr>
<td>Global growth (prior decade ending in column year)</td>
<td>4.0%</td>
<td>3.9%</td>
<td>3.8%</td>
<td>3.6%</td>
<td></td>
</tr>
<tr>
<td>Asia growth</td>
<td>5.8%</td>
<td>5.2%</td>
<td>4.8%</td>
<td>4.4%</td>
<td></td>
</tr>
<tr>
<td>Asian share of global growth</td>
<td>55.7%</td>
<td>59.3%</td>
<td>62.8%</td>
<td>66.0%</td>
<td></td>
</tr>
<tr>
<td>Global GDP per capita (PPP)</td>
<td>10,700</td>
<td>14,300</td>
<td>19,400</td>
<td>26,600</td>
<td>36,600</td>
</tr>
<tr>
<td>Asian GDP per capita (PPP)</td>
<td>6,600</td>
<td>10,600</td>
<td>16,500</td>
<td>25,400</td>
<td>38,600</td>
</tr>
</tbody>
</table>

Source: Centennial Group projections, 2011.
Asia is rapidly urbanizing: Over half of Asia’s population is likely to live in cities by 2026

Source: UNDESA 2011
The Asian middle class will grow sharply over the next 40 years

<table>
<thead>
<tr>
<th>Country</th>
<th>Middle Class Population</th>
<th>Upper Class Population</th>
<th>GDP per capita (PPP)</th>
<th>Middle Class Population</th>
<th>Upper Class Population</th>
<th>GDP per capita (PPP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRC</td>
<td>1,120</td>
<td>40</td>
<td>21,100</td>
<td>1,240</td>
<td>190</td>
<td>47,800</td>
</tr>
<tr>
<td>India</td>
<td>1,190</td>
<td>15</td>
<td>13,200</td>
<td>1,400</td>
<td>210</td>
<td>41,700</td>
</tr>
<tr>
<td>Indonesia</td>
<td>220</td>
<td>5</td>
<td>13,500</td>
<td>250</td>
<td>40</td>
<td>37,400</td>
</tr>
<tr>
<td>Japan</td>
<td>100</td>
<td>20</td>
<td>48,900</td>
<td>60</td>
<td>40</td>
<td>66,700</td>
</tr>
<tr>
<td>Republic of Korea</td>
<td>30</td>
<td>20</td>
<td>60,200</td>
<td>10</td>
<td>35</td>
<td>107,600</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>80</td>
<td>2</td>
<td>11,900</td>
<td>100</td>
<td>15</td>
<td>33,800</td>
</tr>
<tr>
<td>World</td>
<td>4,990</td>
<td>580</td>
<td>19,400</td>
<td>5,900</td>
<td>1,500</td>
<td>36,600</td>
</tr>
<tr>
<td>US</td>
<td>185</td>
<td>190</td>
<td>65,500</td>
<td>120</td>
<td>290</td>
<td>98,600</td>
</tr>
<tr>
<td>Germany</td>
<td>50</td>
<td>30</td>
<td>51,300</td>
<td>25</td>
<td>50</td>
<td>77,800</td>
</tr>
</tbody>
</table>

Source: Centennial Group projections, 2011.
Many Asian countries face extreme climate risks

Asian Country (Risk ranking)
Bangladesh (1)
India (2)
Nepal (4)
Philippines (6)
Afghanistan (8)
Myanmar (10)
Cambodia (12)
Vietnam (13)
Thailand (14)
Pakistan (16)

Source: Maplecroft 2012
Most of the most at-risk cities are in Asia
Sharp price increases in commodities since 2000 have erased all the real price declines of the 20th century

McKinsey Commodity Price Index (years 1999-2001 = 100)

*SOURCE*: Grilli and Yang; Pfaffenzeller; World Bank; International Monetary Fund; Organisation for Economic Co-operation and Development statistics; UN Food and Agriculture Organization; UN Comtrade; Ellen MacArthur Foundation circular economy team
Commodity price volatility has risen above long-term trends in recent decades

SOURCE: Grilli and Yang; Pfaffenzeller; World Bank; International Monetary Fund; Organisation for Economic Co-operation and Development statistics; UN Food and Agriculture Organization; UN Comtrade; Ellen MacArthur Foundation circular economy team
Rapidly changing business perspective for sustainable behavior from the risk-based business case to innovation and market share drivers within five years.

Source: Futerra and BSR 2013
Economic growth is accompanied by widening inequality and rising emissions in Asia

- Developing Asian countries face totally different conditions in terms of production systems and consumption patterns from those confronting the industrialized countries.
- More economic growth is essential but this will also increase pollutant emissions in the short term.
- Globally dispersed and interlinked production and consumption chains complicate emissions accounting.
- What happens in Asia will increasingly determine the world trends.
Growth of Domestic material consumption (DMC)

Source: West and Schandl, 2012. DMC refers to the apparent consumption of materials, i.e. intermediate and final consumption (DMC = Imports + Domestic Extraction – Exports).

Asia’s Transition from agricultural to industrial metabolism

Note: Domestic Material Consumption (DMC) by four main material categories, 1970-2008, in million tonnes

Source: West and Schandl 2012
Material Intensity
DMC per GDP (exchange rates at 2000 prices)

Possible Futures

The REEO scenario modeling suggests that:

- Material consumption is likely to triple until 2050.
- Even with efficiency improvements of 50% in key sectors, material consumption would still increase drastically.
- Large changes in how we produce and consume are needed.

Source: UNEP 2011
Asia is fighting an uphill battle on environmental pollution and resource deterioration. Can developing Asia succeed in tunneling through the environmental mountain? **Upscaling and mainstreaming SCP and RE** lies in the heart of the answer.
Technology plays a vital part

Source: UNIDO 2011
Human capital: the invaluable factor for the Asia economic miracle

In China they have a word for it. *baoba* means "protect eight," the 8% annual economic growth rate that officials believe is critical to ensuring social stability. A year ago, many thought hitting such a figure in 2009 was a pipe dream. But China has done it, and this year it remains the world's fastest-growing major economy — and an economic stimulus for everyone else. Who deserves the credit? Above all, the tens of millions of workers who have left their homes, and often their families, to find work in the factories of China's booming coastal cities — in plants like the Shenzhen Guangke Technology Co.'s, just outside Hong Kong, which sits amid a
The vital role of the intangible assets to Asia’s future economic success
Some Asian technology leapfrogging examples

• India and other developing countries have saved enormous investment in the landline telephone infrastructure and developed mobile telecom systems directly.
• China has developed the world no. 1 fast-speed train network within 10 years.
• Alibaba Group as a Chinese Internet-based e-commerce businesses is on the track to overtake the Walmart as the world largest retailer.
The vital role of intangible assets and system innovation in Asia’s transition to sustainable development

• Evolution of the material and energy-intensive production systems to a more intangible factor-based production system (including technology, knowledge, creativity, culture, etc.) and more circular economic systems

• Shift from consuming energy and materials to consuming intangible assets and new consumption mode (such as information consumption, circular economy)

• Eco-innovation and cultural factor will be the key enablers for the above-mentioned changes.
Ascending resource efficiency policy in economic agenda

China: Circular Economy

Japan: Sound Material Cycle Society

Key Focus
Maximize Economic Gains & Minimize Environmental Impacts

ASEAN Forum on SCP

Republic of Korea: Green Growth
Current adoption of various SCP policies in Asia

The diagram illustrates the current adoption of various SCP policies in Asia, categorized by their leadership type: Government-led, Regulation-based, Market-based, and Business-led. The policies highlighted in the diagram include SPP, EIP, CP, EE, WEEE, RoHS, Eco-labelling, Sus Reporting, and GSCM.
Capacity building needs on scaling up Resource Efficiency in Asia

• Some still-developing economies remain preoccupied with mere survival. The linkage and synergy between immediate development priorities (such as increased export income, investments in basic infrastructure, and poverty alleviation) and long-term sustainability are not well recognized.

• There lack big pictures or holistic views on SCP and RE. The sectoral piecemeal approaches and departmental “turf-guarding” undermine the effectiveness of the limited resources and policy efforts.

• Capacity deficit is prevailing and how to enhance the institutional capacity in relevant policy formulation and implementation will be essential to upscale SCP and resource efficiency.

Source: UNEP in Collaboration with IGES, Japan and CSIRO, Australia, 2013
Main challenges for mainstreaming and upscaling Resource Efficiency and Eco-innovation

• How to enhance the synergy or reduce trade-off between resource efficiency and poverty alleviation for Asian LDCs?
• How to reveal the potential contribution of resource efficiency towards avoiding the middle income trap and achieving sustainable economic growth for rapidly developing Asian countries?
• How to scale up scattered resource efficiency policy adoption to system innovation and transformation?
• How can the prevailing culture be changed from consumerism-dominated aspirations of Asia’s new rich to traditional oriental culture stressing harmony between human beings and nature and spiritual aspirations?
• As eco-innovation remains a new idea in Asia, its wide uptake necessitates an enabling intuitional environment, including correcting the undervaluation of environmental and social capitals, reducing perverse economic incentives, and growing consumers’ preference for environmentally sound good and services.
Conclusion: Why are resource efficiency and eco-innovation vitally important for Asia?

- Current global patterns of production and consumption are hitting the real limits of global resources and ecosystems. The Asian new rich cannot just copy the lifestyle of their Western predecessors.
- Asia still faces dual, and oftentimes divergent, goals of raising standards of living/alleviating poverty and pursuing environmental integrity.
- Sustainable consumption and production and resource efficiency will be essential for Asia to achieve long-term socio-economic development in an increasingly environmentally constrained world (e.g., the emerging carbon budget).
- Policy and governance supportive of resource efficiency and eco-innovation play a vital role in realizing a transition to sustainable socio-economic development in Asia.