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Capacity Building and Policy Needs Assessment for Sustainable Consumption and Production

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United Nations Environment Programme

Final Report

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SWITCH-ASIA Regional Policy Support Component

Capacity Building and Policy Needs Assessment for Sustainable Consumption and Production

Final Report

In collaboration with the:

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Executive summary

This study invested in policy analysis for 17 Asian developing countries, with a focus on sustainable consumption and production (SCP) and resource efficiency (RE) policies and the relevance of National Development Plans and sectoral policies to SCP and RE outcomes. The study team (experts from CSIRO and IGES), in collaboration with the UNEP staff, conducted the analysis based on the notion of the policy process, i.e. the steps that are usually undertaken when developing public policy and putting it to work. Ideally, steps in the public policy process include:

- problem definition
- policy objectives and options (and formulating a policy)
- policy implementation (and change management), and
- policy evaluation.

Public policies are developed in response to a perceived problem or opportunity. In the case of SCP and RE in developing economies in Asia, the analysis shows that the problem of sustainability is not generally recognized by society as a whole and as a consequence there is often no shared view about what needs to be done. In many developing countries in Asia, there are significant development pressures and many policies are designed to enhance national export incomes, to allow for investment in infrastructure and housing, to satisfy the aspirations of an emerging and fast growing middle class and to deal with issues of equity and poverty. There is recognition among political leaders, however, that due to rising global demand for goods and services, demand for natural resources – materials, energy, water and land – will increase accordingly, leading to much higher prices and greater price volatility for these resources. Socio-economic development and the future prosperity of Asian developing economies may well be constrained by the affordability and timely availability of the natural resources that underpin production and consumption systems in the region.

The 'bigger picture' of the need to organize production and consumption differently has not yet been sufficiently recognized by the civil society sector, and by regional and city level policy makers. One objective of the SWITCH-Asia Regional Policy Support Component therefore is to broaden the knowledge base of the broader public, regional policy makers and businesses about the need to collaborate and to improve current production and consumption systems to improve future equity and sustainability. To be successful, public discourse about the need for SCP and RE in Asian developing countries must explicitly deal with distribution issues, to show who the winners and losers will be in the new policy context. Only if SCP and RE can be shown to support the long-term interests of society at large, will they be embraced by the broader public and shared by businesses and communities. This is fundamental to the success of SCP and RE.

The main objective of SCP and RE policies is to reset incentives and expectations so that significant innovation in production and consumption modes can occur, increasing prosperity and equity and simultaneously meeting environmental objectives. There is a whole suite of policy instruments including economic, regulatory, and information-based (voluntary) instruments that can be used to achieve a shift toward more sustainable consumption and production. Some of those policies target

the sphere of production; others are tailored towards sustainable consumption. There is also great potential for improving related activities which have a very high environmental impact, such as housing, mobility, diets, consumer goods, water and electricity.

Because very significant changes in resource use patterns are required, transformational policies are required. Policies can be classified as transformational when they reach an entire economy and affect all processes within the economy, such as for example ecological budget and tax reform would. This does not downplay the need for more traditional policy instruments but highlights the fact that some policies have greater potential to drive the fundamental changes that will be required in Asia and globally.

This report describes a collaborative study, which aimed to identify existing capacities and capacity strengthening needs for SCP policies, and to review existing environmental policy tools in a range of developing countries in Asia. The study identified priorities for capacity strengthening on a regional and sub-regional level and for specific countries, and the report provides suggestions for the development of additional policy tools. The study was undertaken in consultation with national ministries relevant to SCP (including environment, industry, economy and finance, trade, development and planning) and also involved international organizations, donor agencies, civil society organizations and the private sector. It aimed to identify specific country needs regarding SCP policy development and implementation. The study team reviewed the strengths and weaknesses of national SCP policies and other policies relevant to SCP, and helped to identify capacity constraints of key bodies (ministries, sectoral and consumer associations, and the private sector). The researchers also reviewed existing environmental policy tools (laws, agreements, economic instruments, and voluntary initiatives) that aim to enable SCP and RE.

The study found that policy development in many Asian developing countries has matured over the past decade, and many existing policies have the potential to be very beneficial to SCP and RE outcomes. There are, however, a number of barriers to success. One important barrier is the development pressure apparent in many countries, which often leads to contradictions between development and SCP and RE goals in National Development Plans or sectoral policy statements. Another important barrier lies in policy implementation, especially at local levels and in urban settings. Successful policy implementation is challenging, not just because local authorities lack capacity and financial means to drive SCP outcomes, but more importantly, because contradictions between development imperatives and SCP objectives are often more apparent and pose very practical issues at local levels.

Finally, the potential to monitor and evaluate the effectiveness of SCP policies is another important success factor. Very often, the resources and means to reflect upon policy outcomes are not easily available, so policy monitoring and evaluation may be overlooked or indeed sidetracked by other, newer policy initiatives. For SCP and RE policies to become relevant and effective, evaluation is vital and will require a sound knowledge base, including datasets and indicators for use in reviewing progress and the outcomes of policies.

Introduction

Purpose of the report

This report summarizes findings of a collaborative study by the United Nations Environment Programme, the Commonwealth Scientific and Industrial Research Organisation (Australia) and the Institute for Global Environmental Strategies (Japan). The study has been undertaken under the framework of the regional part of the SWITCH-Asia Regional Policy Support Component (RPSC) The aim of the study has been to identify existing capacities and capacity strengthening needs for Sustainable Consumption and Production (SCP) policies in the participating countries, and to review the existing environmental policy tools in all 19 SWITCH-Asia eligible countries. Based on this assessment the study has identified priorities for capacity strengthening on a regional and sub-regional level and for specific countries, and provides suggestions for the development of additional policy tools.

The study has been undertaken in consultation with national ministries relevant to SCP (including environment, industry, economy and finance, trade, development and planning) and has also involved international organizations, donor agencies, civil society organizations and the private sector to some extent. It aimed to identify specific country needs regarding SCP policy development and implementation. The study team has reviewed the strengths and weaknesses of national SCP policies and other policies relevant to SCP, and helped to identify capacity constraints of key bodies (ministries, sectoral and consumer associations, and the private sector). This activity builds upon relevant reviews already conducted for certain countries and for the region, but considerable additional research was required to identify needs and opportunities and create outputs to support future project activities of the SWITCH-Asia PSC.

In addition, the study has reviewed existing environmental policy tools (laws, agreements, economic instruments, and voluntary initiatives) that are aimed to enable SCP and resource efficiency (RE). The review aims to identify gaps and synergies with set priorities, based on outcomes of National SCP Roundtables and Regional Meetings under the Marrakech Process, and other relevant meetings and projects which provided formal input on regional needs and priorities on SCP to the 18th Session of the Commission on Sustainable Development (CSD). The ongoing EC-funded Global Outlook on SCP Policies, being conducted by UNEP, will also contribute to this Asia-focused review.

Steps in the study

The current study of existing SCP policies and capacity strengthening needs for 17 countries in Asia has been based on a review of the main policy documents addressing SCP, National Development Plans, and sectoral policies for housing, infrastructure, transport, energy and water that are influential for SCP outcomes. The desk review was accompanied by a series of interviews with high-level policy officials and experts from academia, international organizations, donor agencies and NGOs in 12 of the 17 countries assessed.

For this purpose, the study team undertook eight one week missions, to Bangladesh, Cambodia, China, India, Lao PDR, Nepal, Sri Lanka and Viet Nam. In addition the study team undertook shorter

(3 days) missions in Indonesia, Pakistan and the Philippines. Meetings were also took place between the UN staff based in Bangkok and representatives of the Thai Government and other Thai stakeholders. During each country mission, meetings with ministries relevant to SCP were organized, offering the study team an opportunity for detailed insight into the policy process and to discuss all issues related to SCP. In most of the visited countries the study team also organized a half-day workshop to assess existing capacities, priorities and capacity gaps for SCP and came up with a draft action plan for future policy support in countries.

There were 5 countries the study team was not able to visit. For these countries we conducted, as far as possible, a telephone interview with the SCP focal point or EU SWITCH office as a starting point for the analysis but had then to rely on a desktop review of relevant policy documents.

One important aspect of the policy analysis was to distinguish the main steps in the policy development process, meaning that the policy analysis for SCP needed to go well beyond the question of whether high level frameworks or policies existed that might guide and enable SCP.

The study took account of the four main phases and steps of the policy cycle, including:

- The **problem framing stage** of the policy process. This is a very important stage for SCP, reflecting the contested and complex nature of SCP problems and the need to define problems with considerable care. This includes the discussion of relevant social goals and public concerns, and the monitoring of natural and social systems and their interaction to identify problematic environmental or social change. Causes of change need to be identified and assessments of risk, uncertainty and ignorance must to be undertaken. Also, assessment of existing policies and institutional settings are required. All these elements then allow for proper definition (framing and scaling) of policy problems.
- The **policy framing stage** which includes the development of guiding policy principles, the construction of a general policy statement and the definition of measurable policy goals.
- The **policy implementation** stage which needs to be explicit the different aspects of implementation as it is often the case that implementation tasks remain overlooked. This includes the selection of policy instruments, planning of implementation and communication, the provision of statutory, institutional and resourcing requirements, and the establishment of policy enforcement and monitoring mechanisms.
- The **policy monitoring and evaluation** stage provides an opportunity to learn from policy interventions, to provide ongoing monitoring including data capture, a mandated evaluation and review schedule and decisions for extension, adaptation or cessation of policies.

Objectives of the study

The SWITCH-Asia Regional Policy Support Component (RPSC) aims to advance sustainable development in the Asian region by strengthening national and sub-regional policies on sustainable consumption and production (SCP) in selected countries, building on activities under the Marrakech Process, the EU SWITCH-Asia Programme on SCP, UNEP's work on resource efficiency and green economy, and UNESCAP's Green Growth Initiative.

The overall objective of the Regional Policy Support Component is to strengthen national and regional policy frameworks to promote a shift towards more sustainable consumption and production patterns and resource efficiency (RE), thus contributing to green growth and poverty reduction in Asian countries and assisting countries in achieving the Millennium Development Goals. To achieve this overall objective and purpose, the project has focused on achieving two specific and interlinked objectives:

(i) Building the capacities of national authorities to create, implement and strengthen policies helping to mainstream SCP and RE in regional, sub-regional and national development programmes.
(ii) Assisting stakeholders in the project countries (government, private sector, and civil society) in designing and implementing specific policy-oriented activities to shift towards more sustainable consumption and production.

This study was necessary as no comprehensive, authoritative source of information about the status of SCP policies in Asian developing countries previously existed. The implementation of more sustainable practices around consumption and production has potential economic and social benefits, as well as environmental ones, and understanding countries' needs is a first step toward assisting them to build SCP and resource efficiency capacity.

The key tasks identified for the study were as follows:

- *Identify capacity building needs of decision makers in the participating countries.* Consult with national ministries and bodies relevant to SCP (e.g. environment, industry, economy and finance, trade, development, planning, private sector, consumers) in all 19 SWITCH eligible countries, and identify specific country needs. Review strengths and weaknesses of national SCP policies and policies relevant to SCP, as well as capacity constraints of key bodies (ministries, sectoral and consumer associations, and the private sector). This activity aimed to build upon relevant reviews that had been already been done for certain countries and for the region.
- *Review existing environmental policy tools (laws, agreements, voluntary initiatives, etc.) that are related to SCP and RE*. Review policy tools, and look for gaps and synergies.
- *Identify clusters of countries with similar challenges to tackle and common interests.* Organize consultation with ministries in the beneficiary countries in order to identify priorities for capacity building, and identify sub-regional groups of countries with similar interests and capacity needs.

Methodology

This section describes the methodology employed in the study, including desktop policy analysis and in-country capacity building needs assessments. It describes the approach taken for policy analysis, including interviews, policy document analysis and literature research to identify existing policies relevant to SCP. It also provide details of the approach taken in country missions, including interviews with main government officials involved in the SCP policy domain and half-day or one-day workshops to assess existing capacities and priority areas for future capacity building investment.

The researchers began by conducting a desk review of existing documents for all nineteen SWITCH eligible countries (Afghanistan, Bangladesh, Bhutan, Cambodia, China, DPR Korea, India, Indonesia, Lao PDR, Malaysia, Maldives, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, and Viet Nam). This was followed by country visits, including interviews with government stakeholders, workshops and consultations, in eight project focus countries (Bangladesh, Cambodia, China, India, Lao PDR, Nepal, Sri Lanka and Viet Nam).

Desktop policy analysis

The desktop policy analysis for the nineteen[1] countries covered:

- General indicators, e.g. population, GDP (total and per capita), Gini coefficient, HDI ranking and per capita water use
- SCP indicators, e.g. per capita material use, material intensity, proportion of energy from renewable sources, per capita CO_2 emissions, CO_2 emissions intensity, per capita CO_2 footprint and proportion of consumers deemed 'middle class'
- Background information on the country, e.g. brief discussion of economic aspects (recent economic developments, main industries, unemployment figures, etc.), brief description of social issues (e.g. population living below the poverty line, gender imbalance, rural versus urban population, extent of new middle-class, etc.), brief discussion of governance issues, brief summary of key environmental and resource constraints, plus information on the policy cycle (problem framing, policy framing, implementation, monitoring and evaluation)
- Summary of national policies, e.g. whether the National Development Plan (often also called the Five-Year Plan), incorporates any SCP perspectives, whether the country has a National Action Plan (or National Programme) on SCP, whether the country has a National Sustainable Development Strategy (NSDS) and to what extent it incorporates SCP perspectives, and whether the country has comprehensive framework laws on SCP, green growth or resource efficiency
- Policies for activity domains, e.g. does the country have SCP policies tools addressing specific activity domains, and are SCP relevant aspects mainstreamed into sectoral policies such as food and agriculture, buildings and construction, mobility and transport, manufacturing and consumer goods, urban development and land use, and energy, water and waste.

[1] This final report contains chapters for only 17 of the 19 countries, as the project team were unable to obtain sufficient information on Afghanistan and DPR Korea to provide meaningful analysis for these countries.

Where possible, one to three key informants were contacted by telephone for each country studied, to gather more information on:

- What National Development Plans, specific policies on SCP, sustainable development strategies, and framework policies and laws exist in the country
- Whether and how the policies have been implemented, what they are delivering, and how they are evaluated
- What the process is for policy development, and how the policy cycle works.

The policy analysis document for each country concluded with a statement about key SCP policy challenges.

Country missions to assess capacity building needs

The project team undertook missions to eight countries for one week each. The objective of missions was to establish rapport with key actors, assess existing capacities for SCP in countries and to identify areas of capacity development in order to establish and enhance capacity. The program in each country included liaising with the UNEP focal point, conducting interviews with representatives of different government departments and other specialists, and holding a half-day to one-day workshop with relevant stakeholders. The table below shows the types of activities in a typical country mission.

Table: Overview of events for a typical mission

		Arrival on the day before
Day 1	Morning	Meeting with the UNEP local focal point to review any last minute changes to the mission
	Afternoon	Meetings and interviews
Day 2	Morning	Meetings and interviews
	Afternoon	Meetings and interviews
Day 3	All day	Capacity building needs assessment workshop
Day 4	Morning	Meetings and interviews
	Afternoon	Meetings and interviews
Day 5	Morning	Meetings and interviews
	Afternoon	Wrap-up of the mission with UNEP local focal point, agreeing on follow-up activities if there are any
	Evening	Departure

Each mission was informed by the policy analysis that preceded it.

All meetings and workshops were organized well before the missions, with the support of UNEP local focal points and other suitable local partners from the UN or beyond.

Meetings and interviews

Many interviews and meetings were conducted in each country. The aim of the interviews was to gain a rich description of the context of SCP and the steps that have been taken to establish SCP

policies in each country. Although a list of questions was developed to guide the researchers, interview partners were encouraged to speak freely about SCP issues in their organizations and country, so not all questions were asked of all participants.

Examples of general interview questions included:

- Can you please explain what your current role is?
- When did SCP last come up in your work?
- How would you assess the understanding of SCP in your country? Who supports SCP? Who remains sceptical?
- How would you assess the process of SCP policy development in your country? Are there existing policy statements for SCP? Has SCP been mainstreamed into more traditional policy domains? Who has supported SCP policies in your country? How is your agency involved?
- How successful has the implementation of SCP policies been? Can you give an example of successful implementation in your country? What has changed and who supported the change?
- How would you assess the current capacity to monitor and evaluate existing policies? Is there an opportunity to learn from past policy interventions?
- What are the main priority areas for SCP policies in your country?
- Are there other policy objectives that create barriers for SCP?
- How would you assess the current capacity for supporting SCP policies and practices in your country? Which capacities need to grow?
- Can you name three players in your country that you see as most important for SCP? Why are they most important?
- We have covered a lot of issues already, is there anything important missing from your point of view?

Interviews and meetings were conducted with a wide range of people and agencies including government officials (from environmental, planning, economic, agriculture, industry, education and other ministries), politicians, representatives of cleaner production centres, chambers of commerce, NGOs, universities and business owners. The research team also met with EU or UN representatives in some countries. The interviews were recorded, either electronically or on paper, and later transcribed to capture the information provided.

In-country workshops

About 20 to 40 participants were invited to each workshop. The workshop approach was hands-on and very interactive. The table below shows how a typical workshop might have been conducted.

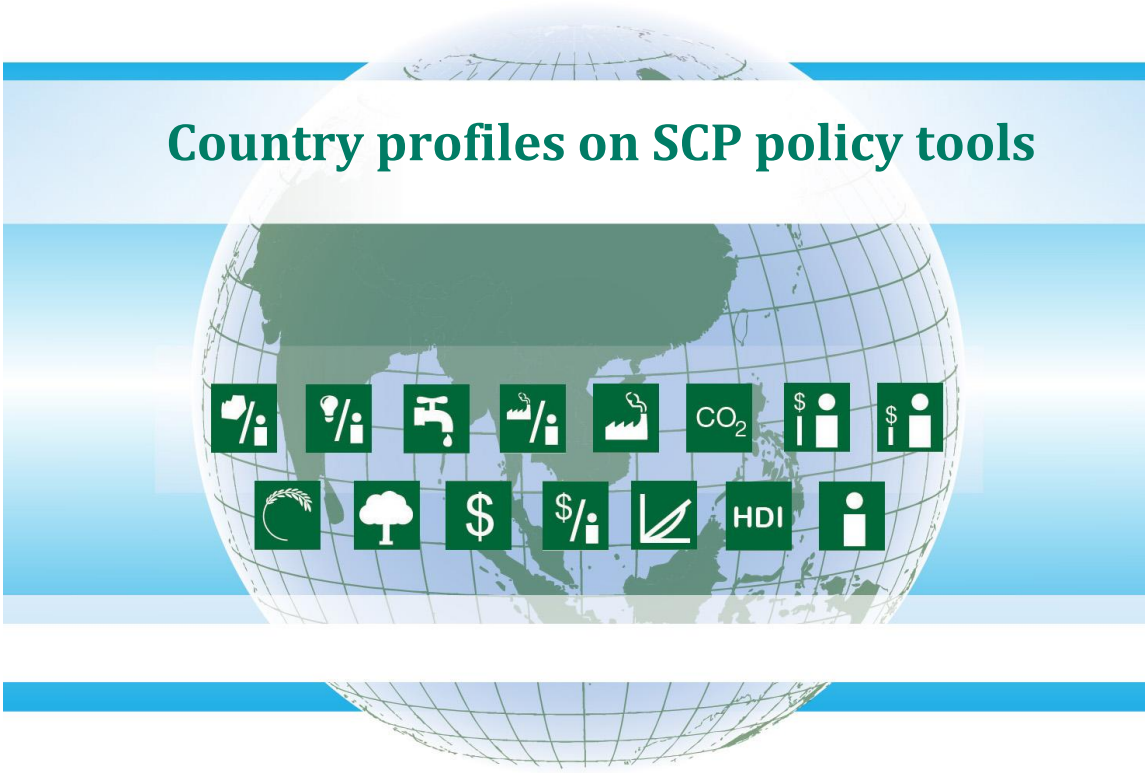
Table: Running sheet for workshop

Time	Activity	Comment
08.00-08.30	Registration	
08.30-09.00	Welcome address and introductions	Establish table groups, welcome participants, short introductions at each table
09.00-09.45	What is SCP and why is it important for a developing country?	Presentation about what SCP might refer to in the country Overview of day's activities and expected outputs for each session
09.45-10.30	Framing SCP	Small group discussions to begin developing a shared understanding of what SCP involves Five minute presentations per table about what has been most important
10.30-10.50	Short break	
10.50-12.00	Assessing existing capacities	Short plenary discussion of activity/capacity domains matrix. Groups work with the matrix. Assess existing capacity for each area on a Likert scale of 1-5 (very low capacity to very high capacity) and provide reasons and examples for their assessment
12.00-13.00	Lunch break	
13.00-13.45	Summary: assessing existing capacities	Groups present their capacity assessments. Plenary discussion and feedback
13.45-15.00	Identifying priority domains for capacity building	Groups continue to work with the activity/capacity domains matrix and are asked to identify the priority of each area for SCP on a Likert scale of 1-5 (very low priority to very high priority) and provide reasons and examples for their assessment
15.00-15.20	Afternoon tea break	
15.20-17.00	Summary: identifying priority domains and gap analysis	Groups present their priority assessments Plenary discussion. Focus on areas of high priority and low capacity Identify major areas for a capacity building plan, and important obstacles
17.00-17.30	Final comments of participants and wrap-up	Groups asked to reflect upon the final outcome of the workshop and to report back in a three minute statement

Workshops were conducted in English but group discussions sometimes occurred in local languages. As for the meetings and interviews, researchers made copious notes, and these were used in compiling the country chapters for this report.

Review of SCP policy tools and capacity building needs assessment

For each country profiled in the section below, the study team gathered general background information about the national context, then reviewed national framework policies and overarching SCP/RE policies, and considered whether the country had policies in place for particular activity domains. For the eight countries visited, interviews and workshops provided more detailed information on policies, implementation, and evaluation. Each country chapter concludes with a summary of policy gaps and capacity building needs.


Country profiles on SCP policy tools
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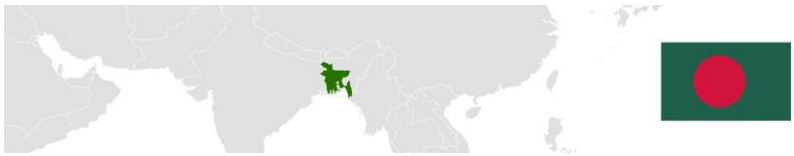


Bangladesh

1. NATIONAL CONTEXT

General Indicators		SCP Indicators	
	Population (2010) and population density [1] 148.7 million and 1,142 people per km^2		**Per capita material use and material intensity (2005)** [4] 2.3 tonnes/ 5.8 kg per US$
	GDP (PPP, US$ 2010) [1] $244.3 bn		**Per capita energy use and energy intensity (2005)** [4] 7.16 GJ/ 16.50 MJ per US$
	GDP per capita (PPP, US$), 2010 [1] $1,643		**Per capita water use (2009)** [5] 244.0 m^3
	GDP per capita, constant 2000 US$ (2010) [1] $557		**Per capita GHG emissions (2005)** [6] 1.1 tonnes
	Gini coefficient (2009) [2] 31.0		**GHG emissions intensity (2005)** [6] 0.66 kg per US$
HDI	**HDI Rank (2010)** [3] 129	CO_2	**Per capita CO_2 footprint (2008)** [7] 0.36 tonnes
	Agricultural land per capita (2008) [1] 0.06 ha		**Number of middle class consumers (2010)** [8] 20%
	Forest cover (2010) [1] 11.1%		**Number of people with income <$2/day (PPP, US$) (2010)** [8] 80%

Sources: [(1)] World Bank (2011), [(2)] UNDP (2009), [(3)] UNDP (2010), [(4)] CSIRO and UNEP (2011), [(5)] FAO (2010); [(6)] World Bank (2011); [(7)] Peters *et al.* (2011); [(8)] ADB (2010).

Bangladesh lies in the northeastern part of South Asia. The country is bordered by India and Myanmar with its only coastline along the Bay of Bengal to the south. Bangladesh is strategically viewed as a bridge between South and Southeast Asia. The climate is typically tropical; hot and humid summers and short, mild winters. The monsoon season normally lasts from June to October and brings heavy rainfall to the country. Like the meaning of its name, wetland in local language, Bangladesh is almost one of the biggest wetlands in the world. Most of the land is flat alluvial deltas of large rivers flowing from the Himalayas. It is also one of the countries most vulnerable to natural calamities in the world. Floods, tropical cyclones, tornadoes and tidal bores occur almost every year. It is very vulnerable to effects of climate change, which may result in more extreme weather events, increase rainfall and a rise in sea level.

Bangladesh emerged from a period of British colonial rule and separation from Pakistan to obtain independence in 1971. Under its constitution, Bangladesh has a British-style legal system and secular parliamentary democracy. Almost 88% of Bangladeshis are Muslims (BBS, 2010). The country is a member of the South Asian Association for Regional Cooperation (SAARC), the Organisation of Islamic Cooperation (OIC) and the Non-Aligned Movement (NAM). Bangladesh has limited reserves of coal and natural gas. The proven reserve of gas will be exhausted within a few years, leaving the

country dependent on imported oil (fossil fuel). The country's main endowments include a vast human resource base and rich agricultural land.

Bangladesh is a low-income country, with a per capita GDP of US$673 (WB, 2010). Forty-five per cent of Bangladeshis are employed in the agriculture sector, with rice as the single most important product. The economy has grown 5-6% per year since 1996 despite poor infrastructure, insufficient power supply and frequent flooding (CIA, 2012). In recent years, garment exports have become an important economic activity and the main source of foreign currency. Garment exports, totalling $12.3 billion in FY09 and remittances from overseas Bangladeshis, totalling $11 billion in FY10, accounted for almost 25% of GDP. Other important exports are labor force, frozen foods (shrimps), leather, leather products, jute, jute products, tea, textile fabrics, home textiles, pharmaceuticals, light engineering and electronic goods. The country mainly imports oil, petroleum products, fertilizer, yarn, machinery, iron and steel, raw cotton and chemicals. Its main trading partners are the USA, EU countries, China, and India.

Bangladesh is the seventh most populous country in the world; the population growth rate is 1.566% – one of the highest in South Asia. At over 1000 people per square kilometre, it is also one of the most densely populated countries in the world. Twenty-eight per cent of the population lives in urban areas – most of them in the capital city Dhaka (CIA, 2012). An estimated 10% to 15% of the population faces serious nutritional risk (USDOS, 2011). To make a living, many people are forced to live on and cultivate flood-prone land. The severe lack of sanitation facilities makes waterborne diseases prevalent all over the country. Soil degradation and water pollution resulting from the use of commercial pesticides and fertilizer have also become major challenges.

2. REVIEW OF EXISTING POLICIES

2.1 National framework policies and overarching SCP and RE policies

The Bangladesh Government's main strategy for development is outlined in the 10-year Social Economic Development Strategy (SEDS): 'Outline Perspective Plan of Bangladesh (2010-2021): Making Vision 2021 A Reality'. Actions that are needed to translate the SEDS into reality are described in the 5-year Socio-Economic Development Plan (SEDP). The Perspective Plan is a strategic articulation of the development vision, mission, goals and objectives; it mainly highlights issues related to architecture, resources, competencies, and capacities. Eradication of poverty, inequality, and deprivation are priorities. The plans are expected to be implemented through the Sixth Five Year Plan (2011-2015) and the Seventh Five Year Plan (2016-2020), (Planning Commission, 2010, Government of The People's Republic of Bangladesh).

Sixth Five Year Plan (SFYP) 2011-2015

The SFYP 2011-2015 is a part of the Vision 2021. Along with higher per capita income, the SFYP presents a development scenario where citizens will have a higher standard of living, be better educated, receive better social justice and have a more equitable socio-economic environment, and the sustainability of development will be ensured through better protection from climate change and natural disasters. The SFYP mainly focuses on agricultural productivity and growth, manufacturing and exports, energy, transport, urbanization, education, sports, culture and religion, health, environment, climate change and disaster risk management.

Table: Selected Bangladesh Policies Related to SCP

Year	Policy
1979, 1994	National Forest Policy
1989	Burning of Bricks (Control) Act
1992	Bangladesh Environment Policy
1995, 2010	Bangladesh Environment Conservation Act
1995	National Environment Management Action Plan (NEMAP)
1997	Environment Conservation Rules
1998	National Fisheries Policy
1999	National Water Policy
2000, 2010	Environment Court Act
2001	National Water Management Plan
2001	National Land Use Policy
2004	Social Forestry Rules
2005	Poverty Reduction Strategy Paper (PRSP)
2005, 2010	National Industrial Policy
2005	National Health Policy
2005	Bangladesh National Adaptation Programme of Action (NAPA)
2008	Renewable Energy Policy of Bangladesh
2009	National Tourism Policy
2009	Bangladesh Climate Change Strategy and Action Plan (BCCSAP)
2010	National Agriculture Policy

2.2 Policies for activity domains of high significance to SCP and RE

2.2.1 Food and agriculture

The agricultural sector in Bangladesh has made little progress in diversification and commercialization; likewise, soil and water tests, as well as farming methods, are not yet modernized. Other constraints in the agriculture and food sectors include the absence of modern technologies to cope with climate change, unstable market prices for agricultural products, lack of agro-based industrialization, and rapid depletion of the underground water table. Haphazard development of infrastructures like dams and roads, non-zonal based cultivation and lack of market chain development, and the overlapping of irrigation units also pose threats to this sector.

Some of the core objectives for agriculture, according to the Sixth Plan, include: attaining self-sufficiency in food grain production, increasing productivity and real income of farming families in rural areas, promoting adoption of modern agricultural practices in drought, submergence and saline

prone areas, encouraging research on adaptation to climate change, and the proper use of genetically modified technologies in agriculture. Other objectives are to bring coastal and hilly areas under intensive cultivation; to ensure sustained agricultural growth, more efficient and balanced utilization of land, water and other resources, and to promote the use of modern technologies with the help of information and communication technologies. Bangladesh wants to form cooperatives and to construct special growth centres only for actual growers to ensure fair prices; to develop crop zoning market-based agriculture on the basis of agro-ecological zones; and to restore genetic seed collection, especially for minor fruits.

2.2.2 Buildings and construction

The urbanization strategy under the sixth plan includes improving city governance, taking steps for better urban land management, better environmental management, developing sustainable urban transportation, providing infrastructure and services, and reducing urban poverty.

Sub-sectoral goals for physical planning and housing include sustainable urban development that supports increased productivity, employment and investment; and achieving a better quality of life by improving the standard and quality of civic facilities in city corporation areas.

Different objectives mentioned in the sixth plan are the development of low cost houses/multi-storied buildings for housing/resettlement of slum dwellers and the poor; strengthening and supporting authorities so as to make them play important roles in town planning and regulation of urban development; development of sites and services for residential accommodation of low- and middle-income groups of people; construction of low-cost houses in the coastal areas of Bangladesh, and involvement of the private sector in the housing sector.

In this sector, related ministries and organizations are Ministry of Housing and Public Works (MOHPW), National Housing Authority (NHA), the Public Works Department (PWD), and the House Building Research Institute (HBRI). The House Building Research Institute (HBRI) will promote the use of fuel efficient brick and low-cost building technology, updating of the National Building Code, development of a process to recycle polymer materials, and production of building materials using the recycled polymers.

2.2.3 Mobility and transport

Challenges in the transport sector of Bangladesh include the constraints to the development of a surface transport system mainly due to three factors: physical conditions (e.g. difficult terrain, periodic flooding, poor soil condition, siltation and erosion of rivers, inherited management weaknesses of Bangladesh Railway, etc.); low investments and maintenance; and an inadequate institutional framework (involving four ministries and nine transport sector state owned enterprises, and a lack of coordination and autonomy among transport state owned enterprises).

The main elements of the overall transport strategy for the Sixth Plan include environmentally friendly and cost effective transport facilities, improvement of sub-standard ferry operation on major road networks, adequate care for the development of the transport network, and services to curb environmental pollution and affect ecological balance.

Some related organizations in charge of transport sector management in Bangladesh are the Bangladesh Road Transport Authority (BRTA), Vehicle Inspection Centres (VIC), Bangladesh Road Transport Corporation, and the Local Government Engineering Department (for maintenance of roads).

2.2.4 Manufacturing and consumer goods

Major constraints in the manufacturing sector include a weak investment climate, and a lack of export oriented trade. Manufacturing suffers from power shortages, and access to credit is still inadequate. Labour productivity remains a problem, research and technology deployment are weak, and there is gender bias in the manufacturing sector.

Objectives of the 2010 Industrial Policy are to overcome these challenges through a framework that creates and sustains a momentum of accelerated industrial growth, employment generation and improvement in living standards. The policy also provides clear signals to the private sector, highlighting government's intention for private sector led industrialization in the country. This is reflected through incentives for higher levels of private investment in areas of dynamic comparative advantage in the economy, and private-public partnerships in areas critical for enhanced private sector participation in the industrialization process. It would also promote cottage, small and medium industries. These will be done in an industrialization process that is compliant with internationally agreed environment, health, safety and work standards.

2.2.5 Urban development and land use

As a country with one of the world's highest population densities, land planning in Bangladesh is a high priority. Soil salinity and contamination, deforestation, water pollution, the falling water table and drainage congestion are some causes of land degradation. Agricultural land is being lost at a rate of one per cent per year, mostly due to erosion and diversion of use. Land use is tied to social issues: some of the poorest people in the country are landless farmers, the slum population is increasing, and rises in land prices are affecting urban housing.

The National Land Use Policy (2001) highlights the need for a National Land Zoning Program for integrated planning and management of land resources; the government concedes that implementation has been inadequate. The government's current plans include creating a database of all land resources and land zoning information, and developing a coastal land zoning project to ensure proper use of land and mitigate land degradation. It will introduce laws to limit activities such as hill-cutting and tree felling that lead to land degradation and, to support the economy, will promote use of land for tea and rubber plantations. The government aims to ensure protection of common property rights for ethnic people, and to continue with programs to support housing for slum dwellers, women and marginalized communities.

The process of rapid urbanization, while bringing benefits, has also led to urban problems such as poor quality of drinking water, pollution, heavy traffic jams, increases in slums and squatter settlements, inadequate drainage and sewerage facilities, etc. The government plans to upgrade urban facilities, and to implement a stronger urban planning system and ensure better coordination among municipal authorities and project planning.

2.2.6 Energy, water, waste

Energy

According to the Energy Development Plan, core objectives for energy development in Bangladesh are to ensure energy security by increasing the generation capacity of electricity, to increase the efficiency of energy use as well as reducing system loss, to diversify fuel use in power generation, to increase private sector participation to mobilize resources in electricity, gas and other energy supply, to reduce the demand-supply gap in both the primary (fossil fuel) and secondary (electricity) sectors, and to conserve energy. Other important objectives are to intensify exploration activities both in onshore and offshore areas to find new oil and gas fields, to introduce a labelling system with a view to ensuring the use of energy efficient equipment, to develop coal fields for reducing dependency on natural gas and to increase the usage of renewable energy by 5% of electricity demand by end of the Perspective Plan period (i.e. by 2021).

Presently, the different categories of renewable energy that are being used in Bangladesh are hydro-electricity, solar power generation, wind power generation, generation of electricity from municipal refuse, production of biogas using waste, and electricity produced by biomass gasification methods using wood, rice husks, etc. In recognition of the vast potential benefits of renewable energy, the government has taken a number of actions on a priority basis. These include creation of the Sustainable Energy Development Authority, preparation of the Energy Conservation Act, expansion of development of renewable energy, implementation of cost effective energy procedure, standardization of energy saving electronic equipment, setting up 14 thousand solar home systems in rural areas, and running pilot projects to produce power from waste. The use of solar panels in all large public buildings is to be made mandatory within three years, and import of solar panels to be made duty-free.

Water

Some objectives for the sustainability of the water sector in SFYP include public conformity with Integrated Water Resources Management (IWRM) principles, enhancing the conveyance capacity of watercourses through river dredging, protection from river erosion, land reclamation, conjunctive use of surface and groundwater for sustainable irrigation, optimizing flows of the common rivers for multipurpose use, regional and international cooperation for basin-wide water resources development and management of trans-boundary rivers, year-round sustainable irrigation, prevention of saline intrusion through augmenting the fresh water flow in the south west region, integrated coastal zone management, strengthening and capacity building of water resources institutions in the fields of climate change issues, data management, river management, etc.

Waste

In Bangladesh, as a measure to reduce industrial pollution, Environmental Clearance Certificates (ECCs) are being issued by the Department of Environment (DoE) to proposed industrial enterprises.

Five Continuous Air-quality Monitoring Stations (CAMS) have been set up in the country under the Air Quality Management Project (AQMP) implemented by the Department of Environment. The Department of Environment is implementing a Clean Air and Sustainable Environment (CASE) project to address different air pollution issues to improve urban air quality. The Ministry of Environment and Forest (MoEF) has also taken initiatives to promote energy efficient brick kilns to reduce air pollution and loss of valuable forest resources, and reduce the degradation of cropland. A number of activities, including holding mobile courts at different points in the city, have been undertaken to control toxic emissions and to resolve the problem of traffic jams in Dhaka City. With assistance from the United Nations Centre for Regional Development (UNCRD), Bangladesh now has a national 3R (Reduce, Re-use and Recycle) Program manage various forms of wastes. With the increasing livestock and poultry population in the country, a huge amount of cow dung and poultry litter is produced every day. This organic material may be used as a good source of renewable energy and organic fertilizer.

3. STRENGTH OF EXISTING POLICIES AND POLICY CHALLENGES

Organization and governance

Bangladesh has a National Environment Council. Chaired by the Prime Minister, and with the Ministry of Environment and Forest acting as secretariat, the council offers overall policy guidance; it does not address individual projects. Responsibility for environmental policy is spread across several of the over 37 ministries.

There are also several implementation agencies effecting SCP-related policy. These include the Department of Environment, Department of Forests, Bangladesh Forest Industries Development Corporation, Water Resources Planning Organization, and the Bangladesh Standards and Testing Institution.

Impressively, most organizational stakeholders interviewed – NGOs, research organizations, government agencies, individuals, and business organizations – were aware of the sustainability problems faced in the country. Although there were sometimes differences in views on how the issues should be approached, there was usually a common voice on their severity. This could be a reflection of the government's and other advocates' awareness raising capacity – at least at the level of defining the issues.

Strategies and Instruments

To prevent pollution, the Department of Environment is responsible for issuing Environmental Clearance Certificates (ECCs) to proposed business operations and projects. Using a traffic light coding system, such operations are categorized as Green, Amber-A, Amber-B or Red, depending on the level of pollution. Red (and Orange) category operations must then carry out environmental impact assessments before they can proceed.

Public interest litigation (PIL) has been used as a tool to call the justice system to action. The Bangladeshi Environmental Lawyers Association has used PIL to seek redress for over 40 environmental problems, some of them covering river, industrial and motor vehicle pollution, encroachment on wetlands, etc.

Policy Challenges

The immediacy of poverty. Sustainability efforts in Bangladesh are driven largely by a combination of large number of people living in absolute poverty, and its vulnerability to climate change. As the Association for Progressive Communications (APC) recently noted, Bangladesh has three big river systems, a large deltaic floodplain, and a long coast, all susceptible to frequent floods, cyclones, tidal surges, salinity intrusion, and sea-level rises (Sarker and Hasan, 2011). With such conditions, and high population, of whom approximately three-quarters live on less than two US dollars a day, most government attention is spent providing short-term solutions. As a stakeholder expressed it, 'the government is in a constant crisis management mode.'

APC observed that the majority of government policies focus mainly on poverty alleviation through creating employment and economic growth. Most donor agencies and international organizations are present in Bangladesh and work closely with the government, quite often proving funding to programmes of mutual interest. This message is reiterated by researchers from the University of Dhaka (see, for example Nasreen *et al*., 2006), and by some ministry officials who add that several of these programmes are directed by international organizations and donor agencies rather than national imperatives.

Implementation gap. Many policies exist; they are likely not enforced or there is no monitoring mechanism to see the effects of implementation. Perhaps the issue starts at the level of policy design. It can be observed that several of the national policies involve multilateral environmental agreements on the issues concerned, with clauses and objectives that easily copy some of the best practices in environmental policy. The tendency is that policy design that does not reflect the practicalities of the country, and without an adequate institutional architecture becomes hard to implement.

Industry and environment. At 0.36 tons of CO_2 per person (World Bank, 2011), Bangladesh has one of the world's lowest ecological footprints per capita. However the industries where its highest strengths lie (such as textiles, leather, and agriculture) also present some of the biggest challenges to the environment and long-term social sustainability. Polluting energy sources, a shortage of energy to the power industry and households, pollution of rivers from industrial, fertilizer and pesticide chemicals, falling soil quality from imbalances in soil nutrients, and salinization of farmlands are just some of the issues arising from operation of these industries. While Bangladesh must sustain the needs of the population, the social and environmental consequences of the methods used are not supportive of the long-term objectives.

Conflicts and contradictions in SCP policy objectives. As an example the government supports waste recycling and offers tax breaks for such operations. At same time, while transporters of waste to landfills are paid, those transporting waste to recycling facilities are not paid. This cuts waste that is supposed to go to recycling facilities, leading to dumping. Similarly, a subsidy on the price of fossil fuels and not for renewable energy makes fossil fuels the cheaper, preferred option.

Sometimes incentives are misaligned with final objectives. As an example, in order to encourage energy efficiency, the government spent substantial amounts of money to buy and provide free energy efficient light bulbs to households. However because the more inefficient light bulbs were still cheaper in the market, households easily went back to buying them when the free efficient ones were spent. Also, there is a tax break on buying environmentally friendly equipment (e.g. a machine for wastewater treatment), but a hefty import duty (12% of price) on this equipment when it is brought through customs, which keeps businesses away from purchasing them.

4. CAPACITY BUILDING NEEDS ASSESSMENT

4.1 Information and knowledge

There is no consolidated knowledge base on either or all of environmental research, policy and practice. The recent climate change strategy recognizes this need and intends to create a central repository of sustainability knowledge. This has not yet been realized. Similarly, there is a need to set up databanks/knowledge centres to serve SMEs – on better technologies, best management practices, guidelines, etc. This should be complemented by a research and training component on adaptability.

At the level of policy design, there is no clear systematic approach to determining which policy area should have priority, what policy options are available and which would be most suitable in the national context, and for modelling the outcomes and effects of the various policy options. An example is government's attempt to address the serious issue of energy shortages by promoting construction of small power plants – some producing just 10MW – through providing subsidies. However, the plants consume diesel (polluting), which is imported from abroad (costly), and the plants can hardly maintain operations without being subsidized. The government will either keep directing large amounts of money to these plants, at the expense of other programmes, or it will soon run out of cash for it and stop the subsidies – in which case the lack of self-sufficiency would

cause the plants to stop operating. Consequently the resources directed to these plants and the pollution they would have caused could have been avoided.

Policy makers need training and effective tools to assess policy gaps, compare the effectiveness of various policy options, and to implement the most sustainable options. Such training should be institutionalized, to ensure against the departure of key staff bankrupting agencies of core competencies.

Awareness raising is needed to reach target consumption and production stakeholders. A case in point is getting knowledge to small farmers. Due to low awareness, farmers have been unable to benefit from two examples of more sustainable programmes being promoted by the government. The first is the use of urea super-granules for fertilizers – injecting them at intersections of four fields. Compared to the more widely used method of fertilizer application, the super-granules can reduce up to 40% water use and produce a 10% to 20% increase in crop yield. Another method which can save water and increase crop yield but which is not yet effectively communicated to farmers, is the alternate wet-and-dry (AWD) farm irrigation method. Instead of constantly flooding rice fields (which farmers do, so as to avoid weeds and to prevent insects from attaching plant roots), AWD practice encourages alternating periods of irrigation and non-irrigation. Once the water falls below required levels, a simple, inexpensive device (a 'pipe' inserted in the ground) automatically triggers more irrigation. The method has seen a 20 – 30% reduction in irrigation water use and 10 – 15% more rice yield. Farmers have nicknamed it the 'magic pipe'. These approaches need to be promoted and scaled up. In this case, they would be even more effective if combined with crop-zoning, which optimizes land productivity by matching crops to suitable farming zones.

4.2 Innovation and R&D

Bangladesh has a coal reserve; though largely dependent upon it for energy, it is getting more and more difficult to extract and the pollution from mining and extraction activities is affecting people's health. Instead of mining, coal gasification technology has been expressed as a preferred method. However, there is little research on how feasible this is in Bangladesh, the sort of technology that could be locally adapted, and what mechanism of technology transfer would be most affordable.

Another expressed opportunity to address the energy issue is the promotion of biogas plants. According to initial observations, it is feasible to set up several plants each of which can supply a village of 200 people. Supporting research to explore such innovative opportunities, in energy, technology, management practices, etc., and budgeting for them or partnering with donor agencies would allow Bangladesh to pursue a more sustainable path to consumption and production.

4.3 Institutions and Governance

A lead agency is needed to take ownership of the concept of SCP and promote it in the country; the MoEF or Ministry of Industry were often referred to. Presently the closest role to SCP coordination is carried out by the MoEF. Some interviewers however expressed that, as there are more sustainable production than sustainable consumption issues, perhaps the Ministry of Industry is better situated to ensure enforcement and compliance by producers. The lead agency would coordinate across ministries and streamline cross-sectoral activities, undertaking monitoring and evaluation.

While MoEF has an environmental policy coordination role, implementation is up to other ministries, agencies and DoE. Some of the most relevant ministries, departments and agencies for SCP involve fisheries, livestock, agriculture, water, industry, economy, the national planning commission, etc. Government has allocated a total of 720 staff for the Department of Environment, and at the time of writing 368 officials and staff were working at DoE and there were 352 vacant posts to be filled over the next two to three years, after which DoE should be able to support MoEF adequately in implementing its increasing coordination role in the country's development process. If the MoEF has to coordinate across such a broad array of sectors and ministries, infrastructure, funds, technical capacity, etc., are only a part of the limitation. Its mandate must also be strengthened to give it influence over sustainability sectors in the other agencies and ministries.

Irrespective of where a lead agency is located, there is still a need to set up a mechanism for cross-sector coordination between ministries, project divisions and implementation agencies. The national Planning Commission, the Ministry of Finance and the Central Technical Procurement Unit should be engaged in this mechanism along with all relevant ministries. If the principles of SCP can be incorporated into national project funding and public procurement practices, this will go a long way in institutionalizing SCP at the design phase level. The national Planning Commission has expressed an inclination towards such an idea.

While there is supposed to be a Productivity Improvement Centre (under the Ministry of Industry) many stakeholders interviewed either didn't know of its existence or what its function was. One of the recommendations from both the Ministries of Environment and Industry was the need for an organization with a similar role to national cleaner production centres. A complementary recommendation was to strengthen an already established SME Foundation by raising its technical capacity and training more personnel to support sustainable production among SMEs – which is the majority of businesses in the country.

4.4 Funding (Investment and Finance for SCP)

Lack of funding was identified at almost every instance as an impediment to progress towards sustainability. Shortage of funds: to develop pilot projects, to scale-up success cases, to deploy energy efficient technologies in manufacturing, to train personnel for monitoring and enforcement of sustainability legislation, to afford the comparatively higher costs of organic fertilizers, to staff the Division of Environment, to carry out awareness-raising among farmers, consumers, policy makers and other stakeholders. It was also suggested that, to generate some finances towards SCP, a few changes could be made to current practices. Suggestions included changing taxation codes to reflect sustainability of businesses (less sustainable businesses pay more), and amending subsidy schemes to reflect environmental priorities (e.g. shifting fertilizer subsidies to organic and/or urea-based fertilizers – which are less expensive and easier to use). Instead of one-off sums, yearly rates should be charged for pumping water for rice irrigation; in addition to paying for pipe water, meters should be mandatory for factories sinking deep wells to draw out water.

The above however are only peripheral adjustments. There will need to be serious structural assessment in Bangladesh in order to prioritize funding for sustainable development.

4.5 Supply chain management

The need for guidelines was often expressed. In several cases where there are policies, there are no guidelines. An example is the policy of efficient water use and conservation in agriculture, where what constitutes conservation or efficiency is not clarified. Guidelines are needed; farmers need to understand the best time to irrigate, what sources are most sustainable to draw water from, how much is enough for which crop, etc. Another example is the textile industry, which is polluting waters from dyeing and finishing activities. Guidelines would be useful, for example, on suitable quantities of chemicals to use, appropriate quantities of dye for corresponding fabrics, or for the treatment of industrial sludge containing toxic chemicals and heavy metals. On the consumption side, labels for energy efficient appliances, for example, would help in positive selective purchases of more sustainable light bulbs, air conditioners, fans, refrigerators, computers, TV sets, etc. As an indicative opportunity, under the Conservation Act the DoE has an unfulfilled mandate to develop guidelines for use of energy and water.

Some areas do have guidelines; it is the use of the guidelines that poses a challenge. The DoE has introduced EIA guidelines for industries but it doesn't have the capacity to enforce the guidelines – there are few inspectors, inadequate training, limited funds, etc. in the agriculture sector, much food is wasted each year through several stages in the production cycle, such as poorly optimized planting, inefficient harvesting, transportation loss, storage loss, etc. There is little understanding about which stages in the production cycle are responsible for the greatest losses and what methods could be used to prevent such losses. Support could help government agencies develop a tool to identify and eliminate such losses. As well as developing guidelines, complementary training should be given both to the enforcement agency and the targeted stakeholders.

Appropriate pricing mechanisms are required for the use of energy, water and for disposal of waste. As an example, poor pricing of water allows overuse of water in irrigation of rice farms and by factories in the textile industry. Businesses are required to pay a lump sum for the deep tubes used for irrigation; after the tubes are installed there are no meters for factories, and so no incentives to conserve water. New mechanisms are needed for appropriate pricing of water for factories and farms – e.g. compulsory use of meters and payment per unit, rather than one-off payments for deep wells and unregulated withdrawal of water thereafter. This should be complemented with other technologies (e.g. alternate- wet-and-dry approach) and guides for optimal water usage and (rice) productivity.

5. RECOMMENDATIONS FOR CAPACITY STRENGTHENING

The assessment identified several opportunities for capacity building. However, recommendations here are restricted to the mandate of the SWITCH-Asia Regional Policy Support Component. Give the current state of Bangladesh, support will be needed to raise awareness of all stakeholders about the benefits provided by SCP, paying particular emphasis to key stakeholders: in a largely agricultural society that is yet to embrace some of the more effective, easily accessible farming practices, raising the capacity of farmers becomes very critical. Another area of potential support is the development of sustainability guidelines for key industries. To ensure that SCP is entrenched in the development path of the country, at this early phase UNEP could facilitate development of mechanisms of

integrating sustainability criteria into procurement and development projects. Below are some suggestions.

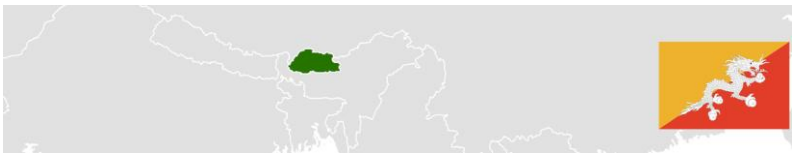
1. Awareness-raising for farmers and increase in capacity for uptake of easily adaptable sustainable farming technologies and practices. Small farmers populate the agricultural community; due to low awareness and the momentum that goes with traditional practices, farmers are not aware of, or are unable to take up some easily adaptable innovative farming practices that are more sustainable and could increase their yield. The use of urea super-granules is more effective than more widely used methods of fertilizer application. Similarly, the alternate wet-and-dry (AWD) method of rice irrigation can save water and increase crop yields. These examples are not well known to farmers. Raising farmers' awareness is critical, given the importance of agriculture and the sustainability problems associated with common farming practices. This should be combined with specific skills training, development of strong farmers' associations to encourage sustainable agriculture, the establishment of effective linkages between government agencies and farming communities, etc.

2. Translating understanding by stakeholders into practice can be easily supported by development of guidelines for trainers and practitioners. This is especially needed in the multiple areas where policies exist but there is a lack of clarity on how to implement them. A critical area in Bangladesh in need of guidelines include is the textile industry, which is polluting waters from dyeing and finishing activities. Guidelines would be useful, for example, on suitable quantities of chemicals to use, appropriate quantities of dye for corresponding fabrics, or for the treatment of industrial sludge containing toxic chemicals and heavy metals. At moment, neither the DoE nor the textile industry have a comprehensive and practical understanding this. As well as developing guidelines, complementary training should be given both to the enforcement agency and the targeted stakeholders.

3. Setting up knowledge and capacity building centres to support SMEs. These centres will maintain databanks on, for example, better technologies, best management practices, guidelines, etc. An opportunity for this is found in the national climate change strategy, which mentions a yet-unrealized intention to create a central repository of sustainability knowledge. It would be complemented by research and training components – for local adaptability. To support this, the Ministries of Environment and Industry made suggestions of the SME support centre being a more streamlined and targeted version of cleaner production centres. One opportunity is to strengthen the SME Foundation by raising its knowledge base and technical capacity, including training more personnel to practically support sustainable production among SMEs – the majority of businesses in the country.

4. Entrenching SCP principles in government policies and practices would need an agency to coordinate across ministries and streamline cross-sectoral activities. The central point is to set up a mechanism of cross-sector coordination between ministries, project divisions and implementation agencies as well as undertaking monitoring and evaluation. The national Planning Commission, the Ministry of Finance and the Central Technical Procurement Unit would be engaged, as would other relevant ministries. If principles of SCP can be

incorporated into national project funding and public procurement practices, this will go a long way in institutionalizing SCP at the design phase. The Planning Commission and Ministry of Environment have expressed an interest in receiving support for such an initiative. Although UNEP cannot itself create such an agency, it can facilitate the process of establishing one, or assist with the mechanism of coordination. In fact, several ministries expressed the need for such a facilitated process by UNEP, while being sensitive to national peculiarities.



Bhutan

1. NATIONAL CONTEXT

General Indicators		SCP Indicators	
	Population (2010) and population density [1] 0.7 million and 19 people per km^2		**Per capita material use and material intensity (2005)** [4] 10.1 tonnes/ 9.9 kg per US$
	GDP (PPP, US$ 2010) [1] $3.9 bn		**Per capita energy use and energy intensity (2005)** [4] N/A, N/A
	GDP per capita (PPP, US$), 2010 [1] $5,289		**Per capita water use (2009)** [5] 473.4 m^3
	GDP per capita, constant 2000 US$ (2010) [1] $1,324		**Per capita CO_2 emissions (2005)** [6] 0.6 tonnes
	Gini coefficient (2009) [2] 46.8		**CO_2 emissions intensity (2005)** [6] 0.57 kg per US$
HDI	**HDI Rank (2010)** [3] N/A	CO_2	**Per capita CO_2 footprint (2008)** [7] N/A
	Agricultural land per capita (2008) [1] 0.78 ha		**Number of middle class consumers (2010)** [8] 50%
	Forest cover (2010) [1] 84.6%		**Number of people with income <$2/day (PPP, US$) (2010)** [8] 49%

Sources: [(1)] World Bank (2011), [(2)] UNDP (2009), [(3)] UNDP (2010), [(4)] CSIRO and UNEP (2011), [(5)] FAO (2010); [(6)] World Bank (2011); [(7)] Peters *et al.* (2011); [(8)] ADB (2010).

Bhutan is a landlocked country on the southern slopes of the eastern Himalayas, bounded by India and China. Despite a limited area of around 40,000 square kilometres, it controls several key Himalayan mountain passes. Owing to huge elevation rises from subtropical plains in the south to Himalayan heights in the north, its climate varies: tropical in southern plains; cool winters and hot summers in central valleys; and severe winters and cool summers in the Himalayas. This great geographical and climate diversity also contributes to Bhutan's outstanding biodiversity. The most frequent natural hazard in Bhutan is landslides during the rainy season, and the main environmental issues are soil erosion and limited access to potable water.

The population of Bhutan is estimated around 700,000; its growth rate is about 1.2%, which is relatively low in comparison with other developing countries (World Bank, 2011). The Bhutanese can be divided into three broad ethnic categories – Ngalops, Sharchops, and Lhotsampas. The Ngalops, Sharchops, and the indigenous tribal people are collectively known as Drukpas and account for about 65% of the population (USDOS, 2011). In recent years, with improved transportation infrastructure, there has been much intermarriage between these groups. Currently, people living in urban areas comprise about 35% of the population of this country (CIA, 2012).

As a small landlocked country, Bhutan's natural resources are limited. The main endowments are timber, hydropower, gypsum and calcium carbonate.

Bhutan became a unified kingdom in 1907, and completed its transition from an absolute monarchy to a constitutional monarchy in 2008. Under its first constitution effected in 2008, Bhutan has civil law based on Buddhist religious law, with the King as the head of state and Prime Minister as the head of government. Bhutan is divided into 20 districts, each headed by a district officer who must be elected. Bhutan's bicameral Parliament consists of the non-partisan National Council and the National Assembly. The Royal Government of Bhutan has ten ministries. Most Bhutanese follow Vajrayana Buddhism, which is also the state religion.

Bhutan is a lower middle income country (World Bank, 2011). Its economy is closely aligned with India's through strong trade and monetary links, and financial assistance from India. India is Bhutan's largest trade and development partner. Bhutan's economic growth is mainly based on hydroelectricity, tourism, agriculture, and forestry. Despite its rugged terrain making it difficult and expensive to develop roads and other infrastructure, hydropower construction continues to be one of the main economic sectors in Bhutan and has boosted the country's overall growth. Most of the hydroelectricity produced is exported to India. Bhutan runs regulated tourism; visitor numbers are strictly restricted and minimum per day spending by visitors is required. With the desire to protect the country's environment and cultural traditions, Bhutan government encourages visits by upscale and environmentally conscientious tourists. Bhutan exports electricity (to India), ferrosilicon, cement, calcium carbide, copper wire, manganese and vegetable oil, while imports include fuel and lubricants, vehicles, machinery and parts, fabrics and rice. Exports and imports totalled an estimated 1.1 billion US dollars in 2009 (CIA, 2012). Bhutan is a member of the South Asian Association for Regional Cooperation (SAARC).

In 2005 the Government of Bhutan made the decision to develop gross national happiness (GNH) indicators in order to check whether policies are consistent with the values of GNH. Even so, in its social development Bhutan still faces many challenges common to developing countries: low literacy of its population (47 per cent); a higher infant mortality rate (44.48 deaths per 1,000 live births); and shorter life expectancy at birth (67.3 years) (CIA, 2012).

2. REVIEW OF EXISTING POLICIES

2.1 National framework policies and overarching SCP and RE policies

Gross National Happiness

Perhaps uniquely among countries, Bhutan's development path has for decades been officially directed by the goal of realizing Gross National Happiness (GNH) – to maximize the happiness of its people, enabling them to achieve beyond the conventional income-based measures of development and to see development as a means to an end. GNH was officially pronounced as a national direction by His Majesty King Jigme Singye Wangchuck, soon after his enthronement in 1972 (Thinley, 2005). Endorsed by the succeeding King, over the years the country has sought to develop more concrete

indicators for measuring and advancing the concept. GNH is being pursued through a set of four key strategies, known as the four pillars. These are:

- Sustainable and equitable socio-economic development,
- Conservation of environment,
- Preservation and promotion of culture, and
- Promotion of good governance.

A Gross National Happiness Commission has been set up, with the objective of ensuring that GNH is centrally reflected in national development planning, policy making and implementation process (GNH, undated). Recognizing the difficulty of measuring GNH in quantitative terms, in 2005 Bhutan started to develop indicators. The Centre for Bhutan Studies (CBS) has led a process of continuous consultations with stakeholders at various levels of civil society, government, research and business. Several agencies are currently carrying out research and policy work on the practicalities of GNH.

Bhutan Vision 2020

Starting from 2000, Bhutan laid out its 20-year national perspective and development goals in 'Bhutan 2020: A Vision for Peace, Prosperity and Happiness'. The Vision draws upon the philosophy of Gross National Happiness; it places Bhutan as a peace-loving member of the international community, modernized, its traditional identity maintained, with a society of harmonious people and a sense of purpose.

Hydroelectric power generation is seen as the centre of the national economic growth strategy, and it is planned that profits from this sector will help finance other development projects. The Bhutan Vision 2020 also expects substantial economic contributions from niche Bhutanese eco-products, a clean manufacturing sector, and a rich, hospitable tourism industry, which it expects to account for a quarter of GDP by 2017.

According to the Vision, Bhutan should by 2020 have a vibrant healthcare system and highly developed indigenous medicine expertise and capabilities. Child and maternal mortality as well as life expectancy would show substantial improvements. From education, natural curiosity will be fostered in children; they will also learn to appreciate rich cultural values and the importance of ethical and moral choices in life. Bhutan aims to achieve full adult literacy levels by 2017.

The Vision aims to preserve the natural environment of the country, and to sustainably utilize its natural resource endowments for socio-economic development. 60% of the country should be forested, the rich biodiversity should be preserved and sizeable tracts of national parks and reserve should be protected.

Several objectives on governance as set out in the Vision 2020 have already been achieved, particularly with the democratization process. The King has delegated several powers to the National Assembly, and a written national constitution, the Tsa-thrim Chenn-mo, has been adopted. There is an ongoing decentralization process, empowering local governments to take more responsibility planning for development by the year 2020.

Tenth Five-Year Plan

The Vision 2020 strategy is further broken down into periodic five-year implementation plans. The current one is the Tenth Five Year Plan 2008–2013 (10FYP), which falls at the midway stage of the 2020 Vision, providing opportunity for both a retrospective and prospective analysis of the sustainability of the current development path. In keeping with its pursuit of Gross National Happiness, the overarching theme of the 10FYP is poverty reduction; this is expanded through six interrelated strategic priorities, namely: vitalizing industry; national spatial planning; synergizing integrated rural-urban development for poverty alleviation; expanding strategic infrastructure; investing in human capital; and fostering an enabling environment through good governance (RGOB, 2009a). Unless otherwise indicated, most of the review in the following sections is based upon the 10FYP.

2.2 Policies for activity domains of high significance to SCP and RE

2.2.1 Food and agriculture

Bhutan's agricultural policy is intricately linked with strategies for rural development and poverty reduction. One approach is to link rural and agriculture production to urban consumption by building more effective supply chains. The government will facilitate the introduction of contract farming, whereby farmers supply private enterprises at predetermined prices, thus helping the farmers to access credit and initial investments. Farm cooperatives will be strengthened and producer organizations encouraged in order to support capacity building for farming communities and produce marketing. The government will promote intensive agriculture and on an experimental basis selectively introduce monoculture agriculture. Stated targets include: at least 30% of farmers to practice sustainable land management, loss of food due to wildlife damage reduced from 40% to 29%, the rural area under certified organic agriculture to double from 150 to 300 acres, and 25% of farmers to be engaged in export of horticulture crops by 2013.

The following policy objectives in the 10FYP are related to food and agriculture:

- Enhance sustainable rural livelihoods through improved agricultural and livestock productivity and expansion of commercial prospects of agriculture and other natural resource endowments
- Conserve and promote sustainable commercial utilization of forest and water resources
- Promote sustainable utilization of arable agriculture and pasture land resources
- Enhance food security through the market rather than emphasize self sufficiency
- Transform subsistence agriculture to small scale commercial agriculture without compromising food security.

2.2.2 Buildings and construction

The government is concerned with providing affordable urban housing and will thus actively promote public private partnerships for housing development in urban areas. The National Housing and Development Corporation is promoting low cost housing techniques and the use of appropriate construction materials, and conducting essential housing construction and market research

activities. Sections of the population that do not have enough income to afford shelter will be supplied with low-income housing. As well as involving the private sector in housing development, land will be made available through long-term leases and lease rentals, coupled with the introduction of financial incentives such as mortgage facilitation, low interest rates and tax subsidies for housing projects.

2.2.3 Mobility and transport

Bhutan is a landlocked country with mountainous terrain, making transportation options limited and difficult. This has resulted in poor communication among parts of the country and food insecurity due to difficulties in food transportation. Access to reliable and safe transport will facilitate trade, tourism and socio-economic development. A goal for the 10FYP is to ensure that three-quarters of Bhutanese live 'less than half a day's walk from the nearest road-head'. This will be achieved through resurfacing, building of highways, construction of thousands of kilometres of feeder roads, mule tracks, suspension bridges, etc. Air transport facilities are to be improved and infrastructure at the Paro International Airport will be upgraded.

Following are selected objectives for better transport under the 10FYP:

- Introduce urban transport where it is lacking, and increase the number of city buses and expand route coverage, where these exist already
- Develop mass public transport such as sky trains, electric trams or trolley buses
- Expand urban transport services and deploy additional buses in major towns, and discourage the use of personal cars through congestion pricing and administrative measures
- Encourage non-motorized transport such as cycling and walking
- Enforce emission standards and develop vehicle maintenance practices
- Establish a regulatory framework and operating standards for automobile workshops
- Explore, plan and develop an environmentally-friendly transport system, including the conversion of diesel engines to appropriate alternative fuels.

2.2.4 Manufacturing and consumer goods

Under the 10FYP, Bhutan plans to develop a clear industrial policy, which until now has been missing. The industrial policy would promote development of micro, small and medium sized enterprises (SME) as an approach to ensuring equitable income distribution. Planned initiatives include enhancement of business development services and establishing an SME resource centre, among others.

The Plan also sees potential in development of industrial parks and special economic zones, where appropriate infrastructure can be provided in an efficient and environmentally sound manner. The areas of Dhamdum, Motanga and Jigmeling have been identified as potential locations to start with. With this, the government aims to raise the manufacturing share of GDP to 12%.

Along with encouraging competition in trade, the government also plans to develop a consumer protection act. It would also strengthen the cultural industry, as the country depends largely on human creativity and capital. It would create an enabling environment for heritage activities and

others such as literature, performing arts, media, etc., and explore possibilities for providing fiscal incentives such as tax holidays and lower cost loans to cultural industries, as is the case with manufacturing sector.

2.2.5 Urban development and land use

Bhutan's strategy for spatial planning is intended to maintain and enhance the quality and diversity of the country's natural environment and cultural heritage and to limit uncontrolled development. Managing urban development is crucial, as underscored by the expectation that half of the population will live in urban areas by 2020. Under its urban development plan for the 10FYP, urban management capacity will be strengthened through human resource development, data collection, GIS, infrastructure design and engineering services. It is currently decentralizing urban services management by granting more autonomy to municipalities that have a demonstrated capacity for self management.

Under its National Urbanization Strategy, Bhutan has adopted a 'growth centre strategy' to spread urban development around the country. Accordingly, while strengthening the current major cities (Thimphu and Phuentsholing), it will also develop selected centres to serve as regional hubs. An example is Gelephu, which is being transformed into a regional centre by upgrading its transportation infrastructure such as airports and highways, installing necessary utilities and boosting its commercial facilities.

Another priority for spatial planning is conservation of the environment and sustainable use of resources. Under the 10FYP, three new protected areas and one new botanical park are planned (in addition to existing ones), four biological corridors will be brought under scientific management, and a database of biodiversity in protected areas will be developed. Tourism will be introduced in one of the designated parks, and bioprospecting will also be promoted for commercialization of biological resources.

Over 70% of Bhutan currently has forest cover. To advance the cause of forestry and the environment, the government has undertaken to establish the Ugyen Wangchuck Forest and Environmental Institute. It will promote education and research as well as strengthen national capacity for natural resource management. Complementing this project are the creation of a Bhutan Museum of Natural History and establishment of academic degree programmes in forestry and environment.

2.2.6 Energy, water, waste

Energy

The primary source of energy for Bhutan is hydropower. It meets both domestic and industrial power needs and also is also the major resource exported; the hydropower sector provides almost 25% of GDP and about 40% of national revenue. The economic targets are to raise electricity's contribution to over 15% of GDP and 36% of total national revenue.

Most of the energy exports are to India. Under a new agreement, Bhutan is expected to export about 5000 MW annually by 2020 – a target which will require 400 MW of additional hydropower energy generation each year. The government has set an ambitious target of developing a total capacity of 10,000 MW by 2020. To prepare for this, through the 10FYP it will carry out detailed feasibility studies, establish a hydropower laboratory, engage the private sector and develop the capacities of the Department of Energy, the Bhutan Electricity Authority and the Druk Green Hydropower Corporation.

Efforts are being made to improve the electricity grid connection between the eastern and western regions by constructing transmission lines and substations. The government has set a target of expanding rural electrification coverage; this will assist in providing electricity to all Bhutanese households by 2013. For the 12% of households that are not connected to the national electricity grid, the 10YFP has committed to developing renewable energy sources – solar, micro-hydro, and other alternatives – to meet their needs.

Water

Bhutan passed its Water Act as recently as 2011 (RGOB, 2011). The plan calls for an integrated water resource management plan to be developed and for a community-based management approach. It requires environmental clearance before any potentially harmful use of water resources by individuals or companies. The Act sets the following priority order for water use: drinking and sanitation, agriculture, energy, industry, tourism and recreation, before any other uses.

The Act calls for the National Environment Commission to ensure the following, among other functions: set water quality standards and guidelines including effluent discharge standards for certain substances into water resources, set minimum environmental flows of watercourses, and regulate water pricing. The secretariat of the Commission shall further establish procedures for monitoring of water quality standards and discharge standards; encourage or conduct research activities on water conservation, management and development, including methods to reduce water consumption and wastage and to promote sustainable water use. It shall then inform the public on sustainable use of water resources through education, training, awareness and other public outreach programs.

The commission shall further establish river basin committees, which will promote community participation in the protection, use, development, conservation, management and control of water resources in their areas of operation through education and other appropriate activities. To encourage community based water management, the Water Act allows for any group of beneficiaries using a particular water source for their water supply needs to form a Water Users' Association to maintain the water source and to manage water supply services. It further allows Federations of Water Associations, to coordinate activities among water associations.

Waste

The recent Waste Prevention and Management Act of Bhutan came into force in 2009 (RGOB, 2009b). It promotes the 3Rs approach of reduce, reuse and recycle for non-hazardous waste, and supports a segregation mechanism and collection facilities. It calls for prevention of manufacture of hazardous waste and, where available, for social and environmentally sound treatment and disposal. Importing hazardous waste into Bhutan is banned. Waste electrical and electronic equipment, pharmaceutical and other biologically hazardous waste must be managed in an environmentally sound manner. Similar to the Water Act, the National Environment Commission shall ensure enforcement of the act; one of its instruments is the use of environmental clearances for companies and projects dealing with potentially dangerous wastes.

3. STRENGTH OF EXISTING POLICIES AND POLICY CHALLENGES

Bhutan's decision to orient its development process towards achieving gross national happiness has made it a poster nation for the transition from materialism to increased ecological wellbeing. Key policy documents (including the national constitution, the vision 2020, the Five Year Plans and policies for various sectors) show a strong consciousness of the interconnections between environmental health, good governance, social wellbeing and preservation of cultural heritage, and the important but limited role of material growth in achieving these. Such an approach is central to achieving sustainable consumption and production.

Furthermore, the pursuit of GNH is embedded in efforts at all levels of governance, starting from the highest level, where it is proposed by the King, to levels of local government, and to small communities where citizen associations are encouraged towards meeting national policy objectives. The GNH Commission remains instrumental, and so is the National Environment Commission. However, given that Bhutan still faces several immediate issues – poverty, low literacy rates, high infant mortality, etc. – like most developing countries, it is struggling to balance the demands of immediate development objectives with long-term sustainability goals.

As much as Bhutan has been praised for its early efforts on GNH, the challenge remains to translate the concept into measureable operational aspects. Part of the practicality of measures such as the GDP comes from having clear indicators and being able to give a quantitative assessment. Quantitative methods don't lend themselves easily to concepts like happiness; thus it has been difficult to find appropriate indicators and methods of measuring GNH. Early efforts involve the development of a GNH Index – a single number aggregated from key indicators under nine domains: psychological wellbeing, health, education, time use, cultural diversity and resilience, good governance, community vitality, ecological diversity and resilience, and living standards. More substantial support is needed towards these efforts to find suitable indicators and methods of accounting for sustainability.

Cambodia

1. NATIONAL CONTEXT

General Indicators		SCP Indicators	
	Population (2010) and population density [1] 14.1 million and 78.1 people per km^2		**Per-capita material use and material intensity (2005)** [4] 1.8 tonnes/ 4.3 kg per US$
	GDP (PPP, US$ 2010) [1] $30.4bn		**Per-capita energy use and energy intensity (2005)** [4] 14.82 GJ/ 35.71 MJ per US$
	GDP per capita (PPP, US$), 2010 [1] $2,150		**Per-capita water use (2007)** [5] 159.8 m^3
	GDP per capita, constant 2000 US$ (2010) [1] $551		**Per-capita GHG emissions (2005)** [6] 1.5 tonnes
	Gini coefficient (2009) [2] 40.7		**GHG emissions intensity (2005)** [6] 0.74 kg per US$
HDI	**HDI Rank (2010)** [3] 124	CO_2	**Per-capita CO_2 footprint (2008)** [7] 0.63 tonnes
	Agricultural land per capita (2008) [1] 0.39 ha		**Number of middle class consumers (2010)** [8] 8%
	Forest cover (2010) [1] 57.2%		**Number of people with income <$2/day (PPP, US$) (2010)** [8] 92%

Sources: [1] World Bank (2011), [2] UNDP (2009), [3] UNDP (2010), [4] CSIRO and UNEP (2011), [5] FAO (2010); [6] World Bank (2011); [7] Peters *et al.* (2011); [8] ADB (2010).

Cambodia is located in Southeast Asia, bordering the Gulf of Thailand, between Thailand, Viet Nam and Laos. It has a total area of 181,035 km^2 and 2,572 km of land boundaries with other countries (Thailand, Viet Nam and the Lao PDR) (UNESCAP, 2004). Cambodia is a predominantly agricultural country with 72% of its labour force engaged in agricultural activities (National Institute of Statistics, 2008) and an accordingly low urbanization rate of 20%. It is one of the least developed countries in the ASEAN region with 92% of its people living on less than $2 per day (ADB, 2010). Political instability throughout the 1970s and 1980s hampered economic and human development but greater stability since the 1990s has allowed for more progress in recent years. Cambodia has a relatively high population growth rate of 1.54% (National Institute of Statistics, 2008) and as a result a very young population. Its population growth rates challenge economic prosperity.

Cambodia's manufacturing sector is nascent and small, employing about 16% of the workforce and focused on secondary industries based on primary resource sectors such as textiles and garments, wood processing, rubber and cement (UNESCAP, 2004; UNDP, 2011). Cambodia has a growing service industry and potential in the tourism industry, which is relatively fast growing. Though economic development is an important focus, environmental concern figures prominently among policy makers, as shown by the extent of environmental legislation that has been established over the last decade.

Most recently, Cambodia has entered global markets and while it produces sufficient electricity for home consumption it is a net importer of crude oil and oil based commodities. The country is exposed to natural hazards including monsoonal rains and flooding, and current environmental challenges include illegal logging, soil erosion, declining fish stocks and a lack of access to potable water (ADB, 2012).

As a least developed and geographically exposed country both the political elite and the general public are concerned about the impacts of climate change on Cambodia's socio-economic development, and government is focused on ways to adapt to climate change impacts.

2. REVIEW OF EXISTING POLICIES

2.1 Overview of national framework policies and specific SCP and RE policies

Cambodia has various existing policies, strategies and plans relating to sustainable consumption and production and resource efficiency. These fall under a range of ministries, including the Ministry of Environment (MOE), the Ministry of Agriculture, Forestry and Fisheries (MAFF), the Ministry of Rural Development (MORD), and the Ministry of Industry, Mines and Energy (MIME). In 2010, Cambodia was one of the first Asian countries to adopt a National Green Growth Roadmap, aiming to shift from a 'grow first, clean up later' attitude to a more considered approach to economic, environmental and social development.

The Royal Government of Cambodia (RGC) is committed to achieving the **Cambodian Millennium Development Goals (CMDGs)** through the implementation of the Rectangular Strategy (for Growth and Employment based on Equity and Efficiency) and the policy settings in the **National Strategic Development Plan (NSDP) of 2006-2010**. The NSDP is under the auspices of the Ministry of Planning and is, as is the case in many Asian developing countries, the single, overarching, guiding and reference document of the RGC and the 'blue print for further progress' in building a modern Cambodia. Government at all levels and external development partners are expected to strictly adhere to the priorities set out in the NSDP.

The seventh Millennium Development Goal to 'Ensure environmental sustainability' is of strategic importance to Cambodia and the government has set an overall objective to mainstream the principles of sustainable development into country policies and programmes to help reverse the loss of environmental resources to secure ecosystem services. In 2005, the CMDGs were comprehensively incorporated into the National Strategic Development Plan to set priorities, goals and targets for 2010. A detailed analysis of progress towards the CMDG targets up to 2010 found

continuing environmental degradation, especially forest depletion, as a shortfall with respect to achieving CMDG7 (Ministry of Planning, 2010, pages 30-31).

Cambodia's NSDP set out 43 specific targets within 18 major goals, of which 'ensure environmental sustainability' is the most relevant for SCP. Also relevant are the goals to 'develop the agriculture sector and enhance agricultural production and productivity' (with the target to achieve two rice harvests in one year) and to 'further develop the energy sector'. In June 2010 the **National Strategic Development Plan Update (2009-2013)** was adopted by the RGC. This document has a growing focus on environmental protection, conservation, climate change mitigation and adaptation, and waste management and calls for sustainable practices in agriculture, fisheries, energy, land and water management, but does not refer to sustainable consumption or production specifically. As is the case in many low income countries, the balancing act between environmental and economic development goals poses a major challenge for public policy making.

To address potential trade-offs between environment and development, in 2009 the country was one of the first to develop a **National Green Growth Roadmap**, in collaboration with and supported by UNESCAP. The roadmap identifies short-, medium- and long-term interventions to improve environmental sustainability while simultaneously achieving economic growth and furthering human development (Ministry of Environment Green Growth Secretariat, 2011).

Cambodia also has a **National Sustainable Development Strategy**, adopted in 2009, proposing strategic measures for making various sectors (e.g. agriculture, forestry, fisheries, mining, tourism, energy and waste management) more sustainable. In 1996, Cambodia instituted the **Law on Environmental Protection and Natural Resources Management**, which regulates environmental protection and natural resource management. There are many sector-specific policy documents relevant to SCP that have been listed in the section on policies for activity domains.

Cambodia has several established bodies, in the public, private and NGO sectors, with interests in and responsibilities for SCP activities. For example:

- The National Cleaner Production Office – Cambodia (NCPO-C). This was established as the Cambodia Cleaner Production Programme (CCPP) by the Ministry of Industry, Mines and Energy with assistance from UNIDO in 2005, and was upgraded to become the NCPO-C in 2009. The NCPO-C promotes cleaner production and resource efficiency in various industrial and non-industrial sectors in Cambodia (MIME, 2010)
- Several universities have compulsory units in environmental studies as part of their curriculum
- The private sector has started to invest in renewable energy systems to improve electricity access and livelihoods in rural villages such as e.g. Sunlabob
- Some NGOs, such as for example, France-based GERES, are working with the Ministry of Industry, Mines and Energy and the Ministry of Environment to provide sustainable cooking stoves and improve energy efficient technologies.

2.1.1. National Green Growth Roadmap[2]

Background

The **National Green Growth Roadmap** was developed in early 2009, following the Low-Carbon Green Growth initiative proposed by **UNESCAP** and the Korea International Cooperation Agency (**KOICA**) to guide sustainable development and enable a low carbon society to mitigate the effects of climate change. Establishing the roadmap has involved comprehensive consultations and interviews with all line ministries involved. In 2009, an inter-ministerial Green Growth Working Group (**IGGWG**) was set up to provide insight into the Green Growth approach to sustainable development and analyse and identify the country's needs, issues, pressures, the legal and policy requirements and assess the opportunity for implementation of green growth policies and programmes through short-term, medium-term and long-term interventions that aim to address environmental concerns and human wellbeing simultaneously.

Contents

In early 2010, the **GG Roadmap** was adopted by the Ministerial Roundtable to provide an operational basis for carrying out concrete policies for green growth development in Cambodia. The Roadmap aims for win-win solutions integrating economic, environmental and social development goals to show that environmentally sustainable economic development and human wellbeing can be achieved through **short- (2-5 years), medium- (5-10 years), and long-term (10-20 years)** interventions in enhancing the socio-economic life of Cambodian people at community and village levels by focusing on seven key areas:

- Access to clean water and sanitation
- Access to renewable energy
- Access to information and knowledge
- Access to means for better mobility
- Access to finance and investments
- Access to food security (agriculture) and non-chemical products
- Access to sustainable land-use

Short-term interventions include creating a National Green Growth Committee; starting a national public awareness campaign and consultation process by, amongst other activities, disseminating 'Greening Workplace' and 'Greening Home' educational materials and information posters; developing measures to strengthen the national environmental industry sector, etc. These **short-term** interventions need to be effectively carried out in order to set the stage for successful implementation of Green Growth through the medium- and long-term interventions.

For the **medium-term**, Cambodia aims to establish eco-towns and eco-villages to integrate supportive social environments with low impact ways of living in cities and rural areas; sustainability of water resources; sustainability of agriculture, forest and energy; sustainability of waste

[2] Acknowledgement: some of the text in this section has kindly been provided by Mr Koch Savath, Director of the National Green Growth Secretariat, Cambodia.

management; and sustainability of transportation. Some of these can be continued as part of long-term interventions.

Long-term interventions will add green fiscal initiatives; ecological agriculture and sustainable use of biodiversity; infrastructure and trade improvement; sustainable energy; education development; health improvement; integrating gender equity into green growth; land use and ecologically sound and healthy urban environments; governance reform and decentralization; and **greening the economy**.

In the toolbox of the Green Growth Road Map, SCP is a major component of Green Growth, and a major driver of greening business, encouraging environmentally sound technologies, building sustainable infrastructures, supported by green tax and budget reform and energy efficiency policies and regulations.

Recommendations
The GG Roadmap recommends that the Cambodian government actively involve private enterprises in greening the development of the private sector, and mainstream Green Growth initiatives through 1) overall awareness raising, 2) sector specific capacity development to increase the eco-efficiency of production, 3) inclusion of Green Growth into the Cambodian National Sustainable Development Plan, and 4) incremental implementation of Green Growth policy tools to guide a sectoral greening of economic activity. Finally the participation of the Ministry of Interior has been recommended for a successful implementation of Green Growth at the provincial level, involving and empowering ministerial departments to ensure that green economic growth projects are effectively mainstreamed into development planning at all administrative levels.

A successful pilot project showcasing Green Growth is the **Sunlabob green business practice** for provision of electricity to improve livelihoods in rural areas and reduce greenhouse emissions. A **Green Flag Award Scheme** is to be established by the Ministry of Environment to reward and commit local enterprises and communities to participate in environmental protection as well as to involve SCP practices in waste management, environmentally sound sanitation, and eco-efficient use of natural resources. The challenge will be to develop green industries that utilize locally available skills and offer affordable technologies that suit the local context.

Next Steps
Recently, the government of Cambodia and the Global Green Growth Institute in Korea (GGGI) have signed a Memorandum of Understanding for Green Growth Cooperation to enhance public awareness and uptake of Green Growth initiatives to secure livelihoods and provide environmental and social benefits.

GGGI and the Government have drafted a Cambodia **National Green Growth Master Plan** (NGGMP) to implement the vision and concept of the Roadmap. The master plan is currently under review by line ministries. The GG Master Plan is planned to be completed in June 2012 and to be launched officially in the same year. The launch ceremony will be conducted by either the Prime Minister or Deputy Prime Minister. Following this, a **National Committee on Green Growth (NCGG)** is planned, and it has been proposed that the committee will be chaired by either the Prime Minister or Deputy

Prime Minister, giving Green Growth the highest possible support and legitimacy and assisting implementation of the master plan across the country.

2.2 Policies for activity domains of high significance to SCP and RE

In 2009 Cambodia adopted the **National Sustainable Development Strategy** proposing strategic measures to guide sustainable businesses in agriculture, forestry, fisheries, mining, tourism, and energy and to improve waste management practices. The new National Strategic Development Plan addresses all policy areas specifically and lays out the planned actions to implement prioritized policies, programs and plans.

2.2.1 Food and agriculture

Agriculture and forestry will be instrumental to SCP in Cambodia and policy settings need to ensure that social goals of food security, rural income generation and poverty reduction can be harmonized with environmental goals of avoiding deforestation, mono-cultures, soil erosion, over-fishing and loss of biodiversity. The main sectoral policies are the Sector Strategic Development Plan for Agriculture and Forestry 2006-2010 and the Strategic Framework for Food Security and Nutrition in Cambodia. The country aims to improve agricultural productivity and diversification and to invest in fisheries and forestry reform. To achieve these goals, major investments in capacity building, information sharing and low cost technology will be required. Cambodia will need to capitalize on the tourism, cosmetic and medical industry potential and sustainable timber production potential of its agro-forestry landscapes.

2.2.2 Buildings and construction

Despite low levels of urbanization, high population growth means large demand for new houses and infrastructure, requiring large amounts of resources and contributing to carbon emissions. Sustainable infrastructure development will be crucial because of the lasting legacy of the infrastructure that will be established over the next decades. Aiming for SCP in buildings and construction requires utilizing local skills and materials such as low carbon kiln technologies for bricks, using sustainably produced timber and bamboo and establishing energy efficient cooling systems that can deal with high humidity. This is addressed in a section on ‘Further Rehabilitation and Construction of Physical Infrastructure’ but should be given even higher priority to contribute to SCP.

2.2.3 Mobility and transport

In many Asian countries, mobility is the single largest contributor to greenhouse gas emissions and good urban planning and development will make a substantial difference to carbon outcomes. Providing comfortable and reliable public transport at affordable costs seems to be the sole alternative to avoid urban transport collapse and early investments in public transport networks will pay a dividend. The relevant section on ‘Further Rehabilitation and Construction of Transport Infrastructure’ in the NSDP includes the planning of urban and public transportation in major urban centres and provides direction for local authorities to invest.

2.2.4 Manufacturing and consumer goods

The manufacturing sector is the traditional area of eco-efficiency and, in Cambodia, is regulated by the Law on Administration of Factory and Handicraft setting out rules for the treatment and discharge of industrial waste. The technical Action Plan 'Direction of Department of Industry' regulates industrial pollution and the Law on Standards of Cambodia provides product standards. Industrial products need to be registered, which could allow to green goods to receive preferential treatment. There is a long way, however, for the industry to adhere to eco-efficient business practices and for consumers to value sustainable and green products and well-designed policies will be instrumental to channel investment and enhance capacities, knowledge and skills and technologies. Government can lead by example, in adhering to green procurement in their business activities.

2.2.5 Urban development and land use

Urban development and planning brings together the domains of buildings, mobility and consumption and requires increased attention. The overall planning agenda sits with the Ministry of Planning but ultimately all levels of government are involved in steering urban development patterns. Whilst cities are a lesser issue in Cambodia, this domain may become important very quickly because of increased urban migration and population growth.

2.2.6 Energy, water, waste

Energy

Development of the energy sector in Cambodia is regulated through the Energy Sector Strategy in the Renewable Electricity Action Plan (REAP) 2002-2012 and the Master Plan for Rural Electrification (see also the section 'Development of the Energy Sector' in the NSDP). Providing sufficient and reliable energy and electricity is a central strategy for the government and traditional technologies coincide with investments in renewable energy and off-grid rural energy solutions. Ingenuity to find affordable local solutions to provide energy security will be rewarded through lower greenhouse emissions and lower energy prices.

Water

Water is a crucial resource and is well addressed in existing policy documents such as the National Policy on Water Supply and Sanitation of 2004, the National Water Strategy (to be implemented in late 2011), and relevant sections in the NSDP.

Waste

As Cambodia modernizes and industrializes its economy, the amount of industrial and residential waste will grow rapidly. This is addressed in the 'Environmental Protection and Conservation and Climate Change' section of the NSDP, which outlines details of legislation currently being prepared by the Ministry of Environment. This includes

- Preparing legislation for the management of solid waste and hazardous waste
- Developing a national policy on solid waste and garbage management to serve as a road map for the concomitant implementation country wide
- Preparing guidelines to promote the implementation of the 3R (Reduce, Reuse, Recycle) principle with application in some pilot areas
- Arranging activities for hazardous waste management.

3. STRENGTH OF EXISTING POLICIES AND POLICY CHALLENGES

Where does Cambodia stand with respect to SCP policies and implementation? The fundamental problems of illegal extraction of natural resources, in particular minerals and timber, environmental issues and vulnerability to climate change impacts have been recognized by the government and the concept of Sustainable Consumption and Production has been taken up by the Ministry of Environment as well as in several initiatives in the public and private sectors to reduce the environmental costs of socio-economic development and thereby put prosperity on a more sustainable path.

The most encouraging development is the creation of the National Green Growth Roadmap, which provides a clear vision for addressing environmental concerns and aiming for long-term environmentally sustainable economic development and human wellbeing. The Roadmap recognizes SCP as a policy tool to achieve this goal and provides clear strategies and action plans.

However, while a range of policies, strategies and laws are relevant to SCP and GG, the policy formation process around these concepts is still comparatively limited and other policies are in conflict with SCP objectives. There is urgency for SCP to be mainstreamed into the national development plan, the education system, curricula and training and to increase the knowledge base of industrial and agricultural producers in Cambodia. Inter-agency, inter-line ministries and multi-stakeholder coordination and involvement needs to be improved to ensure broad-based support for GG/SCP strategies, policies and targets. Cambodia would further benefit from awareness raising and technical training for SCP.

While comprehensive policies exist, implementation of policies (especially at the local level) and monitoring and evaluation of policies remain weak. Because of resource constraints there is limited capacity in Cambodia to implement and enforce relevant policies. A common sentiment in the SWITCH-RPSC interviews was that ministries lacked resources for implementation, or that local level staff lacked the skills to implement policies. Similarly, where policies had been implemented they were often not evaluated, again due to a lack of resources or trained staff. A National Legal

Framework on SCP, together with a flexible and collaborating mechanism, is thus still aspirational but would be essential for the implementation and enforcement of SCP on the ground.

4. CAPACITY BUILDING NEEDS ASSESSMENT

4.1 Information and knowledge

Information and knowledge were by far the most cited areas for capacity building noted by both interviewees and workshop participants. **Raising awareness of SCP** was mentioned numerous times, including the need for information and training in cleaner production technologies, raising awareness of SCP in rural communities and amongst farmers and also increasing the knowledge base on SCP in government.

Often, knowledge and experience in the use of sustainable practices (e.g. optimizing fertilizer use, organic farming principles) or technologies (energy, waste) is lacking, resulting in the **need for SCP information, technical guidelines and training** for producers and communities. Sectors for which this is important include agriculture and fishing, energy-intensive manufacturing, waste treatment and water supply. Examples include education in composting, soil fertility management, sustainable fisheries practices, developing locally suitable energy efficient technologies, fuel alternatives and increasing awareness amongst farmers and manufacturers of the potential economic benefits of upgrading to more efficient technologies.

Promotion of successful examples and pilot projects was mentioned as an important activity, but the sharing of failure stories to learn lessons from unsuccessful projects was considered equally important. To ensure knowledge transfer, documents and information need be available in the Khmer language. Also, the need to preserve traditional (indigenous) knowledge was mentioned, as often locally available technologies and improvements to these best enable livelihoods and environmentally sound production. The number of people with SCP knowledge is still far too small to provide training across the country and therefore the need for more graduates and train-the-trainer programmes was suggested repeatedly.

Often interviewees mentioned the lack of technical expertise in their field and/or their organization. **Staff training in SCP issues** was seen as a priority area for policy evaluation; examples mentioned included on-the-job training/internships/sandwich courses for graduate recruits to ministries, knowledge transfer from (international) experts, refresher courses for ministerial staff and training on SCP for planning/statistical staff (including gender-specific training). Information sharing and the need to train technical people in marketing, management, communication and persuasion were also mentioned.

Issues related to information and knowledge were raised by all ministries contacted during the interview stage, as well as the National Cleaner Production Office. The workshop identified the policy areas of transport and mobility as well as food and agriculture as particularly important for developing capacity in relation to the availability of information and knowledge.

Many of the issues mentioned in this area were also strongly related to potential policy initiatives and tools in the area of SCP expertise, training and education. Importantly, the need to **strengthen**

ministerial collaboration was brought up in several interviews. Better coordination of information sharing (and training) is needed so that SCP elements are included in the policy making process (including guidelines for resource management). This applies across ministries but also across the levels (district to national) within ministry units.

4.2 Innovation and R&D

The need for continuing research on **eco-innovation and adaptation of new technologies** for cleaner production was expressed by several interviewees and was identified in the workshop as an area where current capacity is predominantly low. Most examples were provided by the Ministry of Agriculture, Forestry and Fisheries. Food security is a high-priority issue: Cambodia aims to significantly increase food productivity, especially for rice, without increasing the quantity of land used for agriculture. However, knowledge about soil quality, land availability, industrial fish farming, impacts of fertilizer use or biogenetics is limited. Suggestions for R&D activities and investments included a GIS-based land resource management system, strengthening the Scientific Agricultural Institute, and providing more service laboratories for agricultural or (water) pollution research. Upscaling the use of biogas stoves across the country and the need for wastewater treatment plants for specific industries around the lagoon in Phnom Penh, were also identified as priorities.

In order to support policy and decision making, R&D is needed in the area of **(environmental) economic expertise**. The examples of capacity gaps included econometric modelling, market information, and accounting for ecosystem services provided by forests. This may become especially important for the Reducing Emissions from Deforestation and Forest Degradation (UN-REDD) programme, and for the management of carbon trading, to ensure co-benefits can be harnessed.

Information and communications technology was suggested as a possible support tool, e.g. in the form of 'help desks' on cleaner production, resource efficiency or renewable energy and also as an 'enabler' of SCP, e.g. through social networks, mobile technologies, or access to product information. It will be important to design business opportunities for local communities and urban dwellers that support social development and ensure good environmental outcomes such as, for example, green buildings or green products.

4.3 Institutions and Governance

Frameworks

Policy frameworks, concepts and strategies assist in mainstreaming and funding SCP activities. The need for such frameworks to promote SCP was mentioned by almost all Ministries and NGOs, and at the workshop. The strengthening of existing or emerging SCP initiatives was suggested, e.g. rewarding good practices, capacity development for cooperatives (in agriculture and fisheries) in cleaner production, the upscaling of pilot projects, the creation and facilitation of networking and information platforms, or mechanisms for sustainable investment and technology transfer between developed and developing countries. It was also mentioned that regional programmes and frameworks are needed, e.g. for IT waste management. The Ministry of Environment mentioned the need to prepare a strategy for the implementation of National Adaptation Programme of Action (NAPA) projects.

One issue that was repeatedly mentioned by several ministries (but in particular by MIME and MAFF) was the **lack of implementation of SCP practices**. Even though some regulations and laws have been put in place to support SCP, the actual introduction of sustainable production techniques or consumption practices is often not happening because of a lack of awareness, staff skills or funding.

These issues are essentially areas where policy support is required, rather than capacity building. In particular, the lack of and need for **cooperation** between and amongst ministries, researchers and industry was mentioned numerous times. A process and framework for inter-ministerial coordination is seen as essential in areas such as sustainable land and water management or the use of chemical fertilizers. There is also a need for the preparation of SCP guidelines, standards and best practices for different sectors of the economy, including technical implementation, monitoring and analysis, and evaluation.

The workshop furthermore identified the need to establish a Cambodian eco-label (certifying quality of product, quality of production process, corporate social responsibility, sustainability, etc.) and the need for a system to account for ecosystem services in forests. A certification process for wood from sustainable sources was suggested, and this could provide considerable competitive advantage over other producers in global markets.

Other possible policy support tools are regulatory frameworks on resource efficiency or sectoral programmes on cleaner production.

Policies and Institutions

Most ministries and other stakeholders expressed the need for improved **policy formulation and regulation** in the area of SCP. Examples included policy for **organic agriculture** production and sanitation – including standardization, certification and monitoring, ideally harmonized across the region. The implementation of the National Integrated Pest Programme currently relies on NGOs to do the monitoring and control.

Waste and recycling facilities are not well controlled and the management of IT/electronic waste is not regulated at all. The Master Plan for Rural Electrification relates only to households and communities, but not to producers. It was suggested that a system be developed for selling excess renewable energy produced to the grid.

Institutions need support to strengthen SCP capacities. Staff changes in ministries have meant lack of consistency and loss of institutional knowledge. Corruption and unregulated land concessions remain a problem. The lack of intermediaries between ministries was mentioned again and it was suggested that task forces on SCP and Green Growth should be inter-ministerial.

There is a need for strengthening of legal frameworks and enforcement of existing SCP policies and laws, e.g. on chemical waste and water quality. Technical guidelines are needed on hazardous chemical handling, the operation of gas boilers, and chemical labelling.

The workshop also reiterated the need to provide subsidies or tax incentives for cleaner production, and the need to strengthen legal frameworks and enforce SCP policies.

Possible policy responses addressing the majority of the issues raised in relation to this area are mentioned in the policy support section.

4.4 Funding (Investment and Finance for SCP)

Most ministries and NGOs stated that they lacked financial resources to improve capacity and implement policies for SCP. This was also supported by the workshop results, where the availability and access to funding was consistently rated 'low' across all policy areas.

More specifically, interviewees from MAFF mentioned that funding is needed to **train staff, develop skills** and buy equipment. MAFF has developed survey questionnaires but lacks funds to carry out the survey. There is a lack of laboratories and equipment for agricultural research. Lack of funding also hampers the upscaling of implementation of biogas stoves across the country. It was suggested that a system be developed for microfinancing sustainable agriculture that would avoid the well-known problems of existing systems in other countries through a more locally and socially adapted design.

The need for financial support for technical staff was also mentioned by MORD and MOE. At MOE there is a current shortage of staff skilled in planning/management and there are no funds to build facilities. NCPO confirmed the need for financial support and made a number of suggestions for policies to address this need (see the section on regulation and laws under *Recommendations for Capacity Strengthening*, below).

4.5 Supply chain management

In this area issues were raised relating to integrating life cycle thinking into production techniques, and also raising awareness of the impacts of the entire supply chain from the producer to the consumer. Examples mentioned included the over-supply and over-use of chemical fertilizers, the need for an IT waste management system (to alleviate risk of dumping), and life cycle analyses of different transportation options. It was suggested that eco-labels should be developed and implemented.

A practical example mentioned by GERES was the potential to use ‘wood vinegar’, a by-product of charcoal, as an environmentally friendly pesticide. Currently this product has no market in Cambodia.

At the workshop it was mentioned that thinking across the life cycle of products, across production and supply chains and across sectors and institutions (ministries) would be the most fertile ground for developing and implementing comprehensive SCP policies.

5. RECOMMENDATIONS FOR CAPACITY STRENGTHENING

Develop policy support activities in the area of investment and finance that are closely related to the strengthening of capacities in funding, innovation, research and development, and help to mobilize local funding and implement SCP practices.

Support tools may include tax incentives to encourage long-term thinking and investments, and provision of adequate financing instruments. This could comprise:

- fiscal incentives (e.g. 100% depreciation allowance in first year against tax)
- improved access to investment finance, market-based instruments, or green credit lines
- financing schemes tailored to SMEs, e.g. low interest loans ('soft loans') or (green) microcredit schemes
- funding reimbursement if technology purchased resulted in significant resource savings
- developing a system for selling excess renewable energy produced to the grid
- introducing a microfinance system for farmers (currently the Rural Development Bank cannot provide effective loans because of the high collateral threshold).

Strengthening inter-ministerial collaboration for SCP policies supporting close interaction, coordination, and transparency within and between ministries to address the complexity of SCP policies through organizational principles and government processes. Ensure knowledge and information transfer within and across government departments is supported. This would include collaboration across levels or hierarchies and geographies.

Education and Training

Provide information, guidelines and training to increase the skill of administrators, business leaders, trade professionals and farmers through targeted training and support of curricula at universities and training providers. Use the internet and other media to improve outreach and the accessibility of knowledge and information.

Key areas and methods for skills training may include staff programmes for all ministries, capacity building for commune and district councils, on-the-job training/internships/ sandwich courses for graduate recruits, upscaling of train-the-trainer courses, more training at the grass-roots/community level (especially for farmers and fisheries). Training programmes need to be in the Khmer language and tailored to the recipient communities.

Regulations and Laws

Strengthen legal frameworks and enforcement of SCP policies and laws to help in the implementation of SCP, using good practice examples from other countries that are tailored to the local and policy context of Cambodia. The tool-box of policies could include:

- subsidies or tax incentives (e.g. for organic fertilizers, energy efficiency, or clean technology)
- import duties (on less sustainable products)
- green procurement policies (including for vehicles)

- regionally harmonized standardization and certification systems (e.g. for sustainable forestry, organic agriculture standards, or sanitation)
- regulatory frameworks on resource management and efficiency (e.g. national strategy on solid and IT waste management)

Partnerships between Government, Research and Industry

Establish tripartite partnerships between government, research and the market to achieve greater implementation of SCP technologies and practices and to mobilize funding for research and implementation. Partnerships with business would also increase the possibility of commercialization of SCP innovations.

One specific support activity could be the facilitation of producer networks through information platforms such as, for example, effective regional networks on cleaner production. This would also provide a mechanism for transferring technology between developed and developing countries.

Based on the workshop and interviews conducted in Cambodia, the following **priority areas** of policy support have been identified (note that this list is a summary only and in no particular order; for details we refer to the text above).

Policy support to raise the awareness of and provide training in SCP

Examples of possible policy support in this area are:

- Establish a program to support training in SCP as part staff development in ministries and other public organizations
- Run awareness campaign on SCP through regional, national and local levels of networking, i.e. education, distribution of information, exchanges of best practices and lessons learnt
- Expand programmes on technical training and provide support to develop adequate technical guidelines for SCP technologies and practices.

Policy support to coordinate SCP activities

Examples of possible policy support in this area are:

- Intensify inter-agency, inter-line ministries and multi-stakeholder coordination and involvements (building upon and extending the mechanisms established in the Green Growth Roadmap process)
- Raise awareness of environmental sustainability issues and help to build up skills in environmental and ecological economics at the Supreme National Economic Council (SNEC)
- Strengthen the role of SCP (and GG) in the National Strategic Development Plan and resolve conflicts between development and environmental policy objectives.

Policy support for cooperation and implementation

Examples of possible policy support in this area are:

- Support the mainstreaming of SCP in national development plans, education system and industrial and agricultural production of Cambodia
- Provide comprehensive policy guidance on SCP for Cambodia to encourage stakeholders to support implementation of SCP policies and practices
- Establish a programme to support small to medium enterprises (SMEs) which employ the majority of people but have little capacity to undertake SCP and RE practices, for example through financing schemes tailored to SMEs.

China

1. NATIONAL CONTEXT

General Indicators		SCP Indicators	
	Population (2010) and population density [1] 1.34 billion and 143 people per km^2		**Per-capita material use and material intensity (2005)** [4] 13.7 tonnes/ 9.4 kg per US$
	GDP (PPP, US$ 2010) [1] $10.08 tr		**Per-capita energy use and energy intensity (2005)** [4] 55.10 GJ/ 38.06 MJ per US$
	GDP per capita (PPP, US$), 2008 [1] $7,536		**Per-capita water use (2007)** [5] 409.9 m^3
	GDP per capita, constant 2000 US$ (2010) [1] $2,423		**Per-capita GHG emissions (2005)** [6] 5.5 tonnes
	Gini coefficient (2009) [2] 41.5		**GHG emissions intensity (2005)** [6] 7.24 kg per US$
HDI	**HDI Rank (2010)** [3] 89	CO_2	**Per-capita CO_2 footprint (2008)** [7] 4.32 tonnes
	Agricultural land per capita (2008) [1] 0.39 ha		**Number of middle class consumers (2010)** [8] 62%
	Forest cover (2010) [1] 22.2%		**Number of people with income <$2/day (PPP, US$) (2010)** [8] 37%

Sources: [(1)] World Bank (2011), [(2)] UNDP (2009), [(3)] UNDP (2010), [(4)] CSIRO and UNEP (2011), [(5)] FAO (2010); [(6)] World Bank (2011); [(7)] Peters *et al.* (2011); [(8)] ADB (2010).

In the past three decades China has undergone an astonishing transformation. The highly planned and centralized country of the 1970s has changed into a dynamic market economy (UNDP, 2010). Today, China is one of the world's largest producers of goods and as such a major participant in the consumption of raw materials for the production and transport of goods (Hongtao *et al.*, 2009). China's economy has grown at a very high average rate of 9.8 per cent annually since the country opened up in 1979 (UNDP, 2011). Per capita GDP has also increased significantly, leading to rising affluence and consumption and improvements in the quality of life.

China has made impressive progress on the Human Development Index and has met many of the Millennium Development Goals (MDGs) while being well on the way to achieving others (UNDP, 2010). Since the introduction of reforms, some 500 million people have been lifted out of poverty (UNDP, 2011). However, a serious consequence of China's economic progress since the 1970s has been the widening gap between the rich and poor. Manifestations of inequality in China are the widening rural-urban income gap and increasing gender disparities (Laquian, 2006; UNDP, 2011). For instance, the 2008 HDI was visibly higher for the eastern region than for the western parts of China (UNDP, 2010).

China is home to approximately one-fifth of the world's population. China is also experiencing a rapid process of urbanization. The urbanization rate is expected to reach 50 per cent in 2012 (Li and Yao, 2009). By 2030, urban populations are expected to grow by more than 300 million, with nearly 60% of the population living in urban areas (Laquian, 2006).

China's rapid economic growth in recent decades has been accompanied by substantial depletions of natural resources, degradation of major ecosystems and serious environmental pollution. Some of the more pressing environmental issues include water resource depletion and pollution, soil erosion, desertification, acid rain, sandstorms and forest depletion. A large share of the pollution originates from industrial production (Hicks and Dietmar, 2007).

2. REVIEW OF EXISTING POLICIES

2.1 National framework policies and overarching SCP and RE policies

China does not have one overarching framework policy or national action plan on SCP. Instead, SCP-related objectives are integrated into several national policies and regulations, including the *Circular Economy Promotion Law* and the *Cleaner Production Promotion Law*. SCP principles are also integrated into China's Five-Year Plans for Social and Economic Development.

National Five-Year Plans for Social and Economic Development

Five-Year Plans for Social and Economic Development (FYPs) form the basis for coordinating Chinese national public policy priorities. They are developed by the National Development and Reform Commission (NDRC) and approved by the National People's Congress. SCP principles are integrated through quantified pollution emission targets as well as quantified resource efficiency targets.

The 11th FYP (2006-2010) marked a major shift from previous plans in terms of the objectives of economic policy. It had an increased focus on more balanced and sustainable growth, greater resource efficiency, better living standards and balanced rural-urban development. A key task and strategic priority of the plan is to 'build a resources-saving and environment-friendly society' (WB, 2008, page7). The most important SCP-related targets to be achieved over the five year period include:

- 20% reduction in energy intensity
- 10% reduction in annual SO_2 and COD emissions
- 30% reduction of water consumption per unit of industry value added
- Increasing the recycling rate for industrial solid wastes to 60%

The 12th FYP (2011-2015) is continuing the broad policy direction of the previous plan. Major themes in the current plan are sustainable growth, economic restructuring, social equality and environmental protection. The Chinese government seeks to move the economy up the value chain to more service and high-tech oriented business. For the first time in a FYP, China has set a carbon-intensity reduction target of 17 per cent and intends to reduce energy intensity by a further 16 per cent by 2015. Other legally binding and SCP-related targets include (Lommen, 2011):

- Increase the proportion of non-fossil fuel by 3.1%
- Increase forest coverage by 1.3%
- Reduce annual SO_2 and COD emissions by 8%
- Reduce annual NO_x and ammonia nitrogen emissions by 10%
- Reduce water consumption per unit of industry value added by 30%
- Eliminate the loss of arable land

Seven industries have been selected as priorities for development, consistent with the 12th FYP's goals of sustainable growth and moving up the value chain[3]. Their contribution to GDP is set to rise from 2% in 2010 to 8% in 2015 (KPMG, 2011a).

Circular Economy Promotion Law

China is one of the first countries to embrace the circular economy (CE) approach as a new paradigm for economic and industrial development. The CE concept seeks to change the model of economic growth by radically increasing material use efficiency and sharply reducing pollution discharges. The ultimate objective of the CE approach is to achieve decoupling of economic growth from natural resource depletion and environmental degradation (WB, 2009). The Chinese government has been promoting CE on a number of fronts, including legislation, policy reform, pilot projects, and monitoring and evaluation activities. The *Circular Economy Promotion Law* came into force in 2009. It is a comprehensive framework law which aims to improve resource efficiency, protect the environment and achieve sustainable development. The *CE Promotion Law* is very broad and far-reaching. Its enforcement therefore requires the development of supporting regulation. The Chinese government is currently in the process of drafting the *CE Development Plan*, which will outline the major tasks and measures necessary for achieving more effective implementation.

Several barriers have been identified that impact on the successful implementation of the *CE Promotion Law*. These include the difficulty of changing current industrial structures, the lack of funding, advanced technologies and information support, the poor environmental awareness of the public and private sector, and the lack of effective enforcement mechanisms (Geng, 2009; Xue *et al*., 2010).

Cleaner Production Promotion Law

China began to implement cleaner production (CP) in the early 1990s as a way of confronting the country's serious environmental problems. A network of national and local CP policies incorporated CP activities, such as demonstration projects, training and promotion centres and the creation of the National Cleaner Production Centre (CNCPC) (Hicks and Dietmar, 2007). Today, the *Cleaner Production Promotion Law* (2003) governs the implementation of all CP activities in the country. It seeks to promote cleaner production, increase resource efficiency, and reduce and avoid the generation of pollutants. This law not only encourages CP at the individual company level, but also

[3] The seven priority industries are New Energy (nuclear, wind and solar power), Clean Energy Vehicles, Energy Conservation and Environmental Protection, Biotechnology, New Materials (rare earths and high-end semiconductors), New IT (broadband networks, internet security infrastructure), and High-end Equipment Manufacturing (aerospace and telecom equipment)

supports broader CP efforts at the inter-firm level and even regional level through eco-industrial development. Compulsory CP audits are carried out for key polluting enterprises. Enterprises are also encouraged to reach voluntary agreements with local governments to improve their energy and environmental performance beyond compliance with national and local standards (Andrews-Speed, 2009).

Despite China's relatively long experience with CP, several implementation challenges remain. Overall, it has proven difficult to encourage enterprises to undertake CP measures and to provide adequate resources to ensure CP adoption (Hicks and Dietmar, 2007). Lack of awareness, the absence of an adequate institutional framework and the difficulty of creating a market for CP services have also been recognized as common barriers to CP implementation (Geng *et al*., 2010). For small- and medium-sized enterprises (SMEs) the most prominent barriers to CP adoption are the absence of economic incentive policies, lax environmental enforcement and high initial capital costs (Shi *et al*., 2008).

2.2 Policies for activity domains of high significance to SCP and RE

2.2.1 Food and agriculture

Since the mid 1990s, the Chinese government has been concerned with its ability to continue feeding a growing population. More than 12% of cultivated land is believed to have been lost in the last decade due to urbanization and industrialization (OECD, 2010). These losses of cultivated land have largely been concentrated in the most productive farming areas of the country; the coastal and central provinces, which also have more fertile soils than the remainder of the country (Lichtenberg and Ding, 2008).

The central government places a high priority on the conservation of agricultural land, largely for food security reasons, but also to protect farmers from being forced of their landholdings by local governments trying to convert collectively-owned land for industrial and residential purposes (Kamal-Chaoui *et al.*, 2009). The *Land Administration Law* was implemented in 1999 to protect environmentally sensitive and agricultural land, and to coordinate the planning and development of urban land. The law reinforces farmland preservation efforts by stipulating that the total amount of cultivated land within each administrative area needs to remain unreduced (Lichtenberg and Ding, 2008).

The *CE Promotion Law* contains provisions for developing ecological agriculture and for achieving greater overall efficiency in China's agricultural sector. For instance, agricultural producers are encouraged to adopt planting, breeding and irrigation technologies that reduce the use of water, fertilizers and pesticide. Agricultural departments are also advised to promote the use of energy-saving agricultural machinery.

The modernization of the agricultural sector is also one of the major priorities of the *12th FYP*. Key agricultural targets include (i) reaching an annual grain production capacity of no less than 540 million tonnes, and (ii) ensuring the maintenance of farmland reserves at no less than 1.212 million square kilometres. The agricultural sector is to be modernized and made more efficient through various approaches, which include building logistical support structures, modernizing supply chains,

standardizing production and quality control, increasing rural development funding and ensuring consumer safety (NZTE, 2011).

2.2.2 Buildings and construction

China's rapid rate of economic development and urbanization presents a significant challenge to the country's building and construction sector in terms of energy supply and carbon emissions. China is the world's largest market for new construction projects with around 2 billion m^2 of floor space added annually, mostly in urban areas (Li and Colombier, 2009). While 60% of these new buildings are classified as residential, 30% are public[4] buildings and the remaining 10% are used for industrial purposes (Shui *et al*., 2009). Buildings are a priority area for policy development by the Chinese government due to the large amount of energy wasted for their heating or cooling purposes. At present, the building sector accounts for nearly 30 per cent of China's total energy consumption, and this proportion is growing steadily (Li and Yao, 2009).

The *11th FYP* established an energy-saving target for buildings of 100 Mtce in primary energy units (Levine *et al*., 2010). Energy savings were meant to be achieved through better enforcement of building energy efficiency codes and standards, retrofitting existing buildings and reforming heat supply systems, and improving energy management of government office buildings and large scale public buildings (Price *et al*., 2011). The *12th FYP* has also introduced ambitious energy saving targets for the building sector. [5] In addition, the *CE Promotion Law* contains provisions for the adoption of more efficient building and construction technologies and processes so that savings in energy, water, land and materials can be realized.

In recent years, China has adopted building codes for residential and public buildings, focusing on heating, ventilation and air conditioning, as well as lighting, hot water and power use. National energy design standards for residential and public buildings were developed in 2005. The Ministry of Housing, Urban and Rural Development (MOHURD) regulates the building industry in China and coordinates the country's building energy codes. Regulations, policies and programs issued by MOHURD to promote energy efficiency in buildings are listed in the table below..

[4] Public buildings in China refer to non-residential buildings including commercial, educational and governmental buildings

[5] The details of the 12th FYP for energy conservation of the building industry were not yet published at the time of writing.

Table: Recent Building Energy Efficiency Regulations, Policies and Programs

- National Green Building Innovation Awards (2004-2007)
- Notice on Enforcement of Building Energy Standards for New Residential Buildings (2005)
- Notice on Conducting Building Energy Conservation Inspections (2006)
- Green Building Technology Guidance (2005)
- Management of Energy Conservation in Civic Buildings (2005)
- Guidance on Building Energy Efficiency Evaluations and Labelling (2006)
- Guidance on Energy Audits for Governmental Buildings and Large-scale Public Buildings (2007)
- Green Building Evaluation Labelling (2008)
- Management and Technical Guidance for Energy-efficient Campuses in Universities and Colleges (2008)
- Civil Building Energy Conservation Ordinance (2008)

Source: Shui *et al*., 2009; Levine *et al*., 2010

Implementation challenges in the building and construction sector still exist. For instance, the compliance rate of building codes remains ambiguous for small cities and in rural areas. It is, however, considered accurate in larger cities, where compliance is enforced through regular and random inspections carried out by the local government (Zhou *et al*., 2011).

2.2.3 Mobility and transport

China has experienced rapid motorization since the early 1990s, when the Chinese government designated the automotive industry to become one of the pillar industries of the national economy. Today, China is the leading producer of motor vehicles and it has overtaken the United States as the biggest automobile market in the world (Cao, 2010; Pan, 2011). Although per capita car ownership levels are still low, they are progressing quickly. The number of registered cars increased from around 1 million in 1994 to nearly 33 million in 2008 (Pan, 2011).

The government has therefore put great efforts into the expansion of roadway capacity to accommodate the increased volumes of private motor vehicles.

The Chinese government has adopted a number of regulations to reduce the negative environmental and health impacts of motor vehicles. The revised *Energy Conservation Law* (2007) promotes the use of clean, alternative fuels and provides incentives for the development and use of high-efficiency vehicles, including alcohol-fuelled, hybrid, electrical and compressed natural gas vehicles (Prakash, 2008). Mandatory fuel economy standards have been instituted to achieve emission reductions in private vehicle use.

Demand for public transport services has also increased rapidly, particularly in urban areas. The *12th FYP* prioritizes the development of public transportation. For instance, plans include building up a 45,000 km high-speed railway network and improving subway and light rail coverage (Pew Centre, 2011). However, the *12th FYP* also seeks to extend China's road network by constructing seven new freeways originating from Beijing and nine new expressways running north to south (KPMG, 2011b).

2.2.4 Manufacturing and consumer goods

China is one of the world's largest producers and consumers of household appliances (Price *et al*., 2011). Under the *11th FYP*, national policies on household appliance standards and energy efficiency labels were strengthened to achieve a reduction in energy intensity. Minimum energy performance standards now exist for 30 types of appliances and equipment, mandating an average ten per cent reduction of energy consumption over previous levels (Price *et al*., 2011). A mandatory energy information label, known as China Energy Label (CEL) was established for 13 types of appliances to promote consumer awareness and facilitate market transformation.

Under the *12th FYP*, the manufacturing sector is required to reduce energy intensity. Industrial facilities that fall short of energy reduction targets are in danger of being shut down. Another cornerstone of the *12th FYP* is to increase domestic consumption. A key goal here is to continue establishing a macro environment that encourages domestic spending. Total retail sales of consumer goods are targeted at a 16% increase (KPMG, 2011a). It is expected that individual income tax will undergo major changes and be lowered so that workers have more disposable income.

2.2.5 Urban development and land use

China is undergoing a massive process of urban development. In 2008, more than 600 million people were living in 655 cities, pushing the urbanization level to 45.7 per cent (Woetzel *et al*., 2009). The urbanization rate is expected to reach 55 per cent in 2020 and 58 per cent in 2030 (Li and Colombier, 2009). With the process of urbanization continuing at such a rapid rate, a further 300 million to 400 million rural residents are expected to move to urban areas in the next 20 years. Urbanization in China has led to urban sprawl, the loss of arable land and increasing demand for energy and natural resources, as well as contributing to the challenge of providing social services.

The *11th FYP* placed a much stronger emphasis on the development of metropolitan regions across the country. It also included measures to better integrate strategic towns into metropolitan economies.

The *11th FYP* called for China's urbanization level to reach 47% by the end of 2010. It also promoted urbanization through the 'balanced development' of cities and towns (Kamal-Chaoui *et al*, 2009). The *12th FYP* has set the target of increasing the urbanization rate to 51.5% by 2015 (KPMG, 2011a). Around 8 million rural workers are to be transferred to urban areas each year. At the same time, more than 45 million jobs are to be created in urban areas, while keeping the urban registered unemployment rate at no higher than five per cent. Urbanization is to be particularly accelerated in the central and western regions of the country. This is meant to be achieved through the liberalization of China's hukou system, which has controlled and limited rural-urban migration in the past. The overall goal is to reduce the attraction for the rural population to move to the eastern seaboard. Instead, urban centres are to be developed across inner China in areas such as Inner Mongolia, the Xi'an region, Chongqing and Chengdu, and Kunming and Guizhuo (NZTE, 2011).

2.2.6 Energy, water, waste

China is the world's second-largest energy consumer after the United States and has one of the world's fastest-growing energy sectors (Yang, 2010). The majority of China's energy is generated from carbon-intensive fossil fuels, with coal dominating the country's energy supply (Chai and Zhang, 2010). The Chinese government has made great efforts to reduce energy intensity and to improve energy efficiency. Industry has been the key focus of energy conservation efforts in recent years, with old, small-scale and inefficient plants being closed down (Andrews-Speed, 2009).

China's *11th FYP* required a 20 per cent reduction in energy intensity by 2010 from 2005 levels. Preliminary assessments show that the country fell short of this target by just under one per cent, achieving a reduction in energy intensity of 19.1 per cent (Chow, 2011). The closure of inefficient power and industrial facilities is believed to have contributed to the decline in energy intensity during this period, with a reported 72.1 GW of thermal capacity closed (Lewis, 2011). Following the announcement of the 20 per cent energy reduction target as stated in the 11th FYP, a series of policies were put in place to support the realization of this goal (see table below).

Table: Policies for reducing energy intensity in China

Policy	Key Component
Law on Energy Conservation 2007	- Codifies the major elements of the Medium and Long-Term Plan for Energy Conservation - Places great importance on the behaviour and performance of the government itself with regards to energy conservation
Medium and Long-Term Development Plan for Renewable Energy in China 2007	- By 2010, the share of renewable energy in total primary energy consumption will be raised to 10 per cent, and by 2020 to 15 per cent
Renewable Energy Law 2006	- Promotes the development of renewable energy - Provides a framework for pricing, special funding, special import facilities for equipment and provisions for grid management
Medium and Long-Term Plan for Energy Conservation 2004	- Sets out specific energy conservation targets for industrial, transportation and building sectors - Calls for a revision of existing energy policies and recognizes the importance of economic incentives

Sources: UNDP, 2010; Cao, 2010; ADB, 2010

The *12th FYP* also includes a legally binding energy intensity reduction target of 16 per cent, slightly lower than the target of the previous FYP. The Chinese government is also in the process of developing a range of market mechanisms to complement existing regulations and standards in the energy sector. They key market mechanisms proposed in the *12th FYP* include a carbon tax, a natural resources tax and a carbon emissions trading scheme. [6]

[6] A new Climate Change Law is expected in the next two to three years to draw together existing climate-related policies and to lay a legal foundation for future institutions.

Water resources in China are in short supply, severely polluted, and often wasted (Chunmei, 2010). Water pollution of major lakes and rivers is one of the most pressing national environmental concerns in the country. More than 60% of large lakes are eutrophic and more than 75% of the water in rivers flowing through China's urban areas is unsuitable for drinking or fishing (Wang, 2011). In addition, nearly 40 per cent of the population lives in regions facing water scarcity (UNDP, 2011). The over-exploitation of water resources has led to serious environmental consequences, including ground subsidence, salinity intrusion, and ecosystem deterioration (Jiang, 2009).

The Chinese government has recognized the water resources issues and has taken numerous steps to promote sustainable water use. It has set up a series of policy goals and priorities for water resources management in its *11th* and *12th FYP*. A compulsory 30% reduction target for water consumption per unit of industry value added has been incorporated into both FYPs. Other policy objectives include strengthening river basin management, protecting drinking water sources, combating transboundary water pollution, enhancing water saving in agriculture, and increasing the treatment of urban sewage (Jiang, 2009). The *CE Promotion Law* outlines several provisions for more sustainable water use. These include (i) the use of reclaimed water for road cleaning, greening and landscaping, (ii) the development of water-efficient agricultural irrigation facilities, (iii) the formulation of water use quota for government agencies, and (iv) the development of advanced technologies for wastewater recycling by enterprises. China is also actively investing in projects to augment the water supply. The most prominent example is the $62 billion South-to-North Water Transfer Project. It will provide water for domestic and industrial uses in the arid north and is set to divert up to 45 billion m^3 of water annually (Jiang, 2009).

Driven by urbanization and increasing affluence, China recently surpassed the United States as the world's largest municipal solid waste generator. Yet, compared to other environmental issues, such as air pollution and water sanitation, the issue of solid waste management in Chinese cities has attracted only little attention (Wang, 2011). Policy efforts have focused largely on improving the treatment of solid waste. The Chinese government has issued a series of favourable policies to encourage investment in incinerators. These incentives include tax refunds, prioritized bank loans, subsidized loan interest, and subsidized prices for purchase of electricity (Wang, 2011). Several policies have been implemented to address the serious waste problems in China. These include (i) the *Law on the Prevention and Control of Environmental Pollution Caused by Solid Waste* (1995), (ii) the *Measures for the Management of Municipal Domestic Waste*; and (iii) the recently adopted *China WEEE Regulation* (2011).

3. STRENGTH OF EXISTING POLICIES AND POLICY CHALLENGES

The Chinese government is committed to building a resource-saving and environmentally friendly society and it has successfully developed a large number of policies with SCP-related objectives. Most noteworthy is the adoption of the Circular Economy (CE) approach with the ultimate vision of achieving the decoupling of economic growth from natural resource depletion. The *CE Promotion Law* is the world's first national law to make the circular economy a national strategic focus of economic and social development, thereby differing greatly from the traditional linear economic model.

A further encouraging development is that SCP-related objectives have successfully been mainstreamed into China's national development plans. The *11th FYP* contains binding targets for achieving greater energy efficiency and the reduction of major pollutants. The *12th FYP* builds on previous achievements and sets a binding carbon-intensity reduction target. At the same time, officials are increasingly being measured for their performance in achieving centrally laid out environmental targets from the *12th FYP*.

However, while comprehensive national policies exist, implementation of these remains difficult. Several policies lack supporting regulations that outline more detailed implementation activities. For example, the *CE Development Plan*, which will outline the more practical tasks and measures necessary for achieving implementation of the *CE Promotion Law*, is still in the process of being drafted. This delay has so far hindered the effective implementation of the *CE Promotion Law*, which already came into force in 2009.

Where policies have been implemented they are often not being properly evaluated and monitored due to a lack of technical, financial and human resources. Deficient enforcement mechanisms have also led to poor compliance rates in some sectors and regions of the country. The development of national indicator systems is essential so that policy-makers can assess the effectiveness of policy initiatives and strengthen enforcement.

The difficulty of implementing and enforcing SCP-related policies at the local level of government is one of the major policy challenges to be overcome. In China, the responsibility for environmental compliance and enforcement lies principally at the local level. However, financial and human resources as well as technical equipment at the local scale are often insufficient. Capacities of local government officials need to be strengthened through continuous training and regular information provision on new regulations.

Finally, China still lacks a comprehensive policy approach for promoting sustainable consumption. While the sustainable production side is covered by a large number of environmental laws and standards, there are only very limited policies guiding sustainable consumption for the general public, and private enterprises.

4. CAPACITY BUILDING NEEDS ASSESSMENT

4.1 Information and knowledge

Information and knowledge is a capacity building area that was frequently discussed during the interviews in China. The focus here was predominantly on raising awareness of SCP for three target groups; the general public, businesses and government. Awareness raising was seen as particularly important for officials at the provincial and local government levels because SCP policy implementation is meant to occur at these levels. Interviewees often mentioned the need to provide education and training for local level government officials in SCP and the related fields of cleaner production and environmental protection.

Increasing SCP awareness levels of the general public was seen as a key for changing consumption patterns and lifestyles. Public awareness of SCP was perceived as being relatively low due to China's current stage of development and its huge population. Geographic differences were pointed out. In

general, people living in urban areas are seen to have a fairly thorough understanding of SCP and environmental issues, whilst the environmental awareness of people living in more regional and rural parts of China is considered to be low. Several interviewees suggested the need for a public awareness raising campaign to educate people about more sustainable lifestyles.

Interviewees also pointed out that a large number of businesses lack information and knowledge about SCP. Small and medium sized businesses, in particular, need better information about existing environmental regulations and eco-friendly products. SMEs often do not have the capacity to deal with an increasing array of environmental standards and regulations and therefore need targeted assistance and clear guidance from the government. Improving the capabilities and awareness levels of large industrial enterprises was also considered to be an important issue. It was suggested that concepts such as SCP, green growth, low carbon and sustainable development should be introduced to the management level of larger enterprises. For these organizations, SCP training efforts should initially target high-level management and CEOs as decisions in China are typically made from the top down.

Several technical knowledge gaps were revealed during interviews in areas such as industrial energy efficiency, best SCP practice, e-waste, carbon footprint calculations, and building design standards. Interviewees stated the need for enhancing regional cooperation with neighbouring countries to facilitate knowledge exchange and access technical expertise. Technologies, expert advice and best practice examples from other countries were especially sought for the design and implementation of eco-industrial parks, the management and disposal of electronic waste, the development of pilot and demonstration projects, and the development of a national SCP indicator system.

4.2 Innovation and R&D

Interviewees identified a number of capacity building needs in the area of innovation and R&D. For instance, several interviewees asserted that there was an urgent need for innovative technologies and more funding to progress research in the fields of cleaner production and eco-innovation. Funding shortages have also translated into insufficient R&D for better understanding the relationship between cleaner production, energy efficiency, and reducing energy emissions in China.

It was frequently mentioned that technological innovations and R&D were absolutely vital for upgrading China's industries. Examples where capacity is currently lacking included innovative technologies for improving industrial energy efficiency and for reutilizing industrial wastes.

A lack of innovative processes and technologies was also perceived to be a major capacity constraint in the housing and construction industry. It was noted that the design, engineering and quality of buildings in China lag behind those of developed countries. Enhancing technical and management capacities is therefore perceived to be vital for improving the housing and construction industry.

Another commonly suggested R&D activity was the further development of eco-industrial parks. Eco-industrial parks currently exist in China but expert advice and technologies are needed to improve their quality and to successfully integrate eco-industrial parks into the overall economic and social development of surrounding regions.

4.3 Institutions and Governance

As discussed in the policy review above, China has a large number of policies and institutions with SCP-related objectives, yet implementation remains a challenge. During the interviews, numerous capacity constraints were identified that relate to institutions and governance. A major institutional barrier frequently mentioned by interviewees is the large size of the Chinese government. Due to the massive Chinese bureaucracy, planning for SCP takes a long time and it may take many years to bring new policies and regulations into force.

Another important constraint that was put forward by many interviewees is the lack of coordination and communication between different government ministries. A large number of ministries are involved in achieving SCP and resource efficiency in China, but none has overall responsibility. Different ministries have different environmental criteria, procedures and approval processes, which is causing confusion at lower levels of government and for business owners. Several suggestions were made on how to improve the coordination of often complex SCP initiatives between the various government ministries. These included organizing regular roundtable meetings to facilitate the sharing of knowledge and information, and the creation of a common set of standards and criteria to avoid conflicting policy objectives. It was also suggested that a high-level inter-ministerial consultation should take place so that relevant SCP approaches could be discussed by the ministers of each department. The NDRC and MEP could convene such a meeting since they are the key ministries responsible for implementing SCP policies.

A further capacity constraint that was commonly stated was the lack of policies addressing sustainable consumption. While the sustainable production side is covered by a large number of environmental laws and standards, China still lacks good approaches for promoting sustainable consumption. Policies that guide sustainable consumption for the general public and private enterprises are almost non-existent.

Overall, interviewees mentioned numerous times that some existing policies and regulations with SCP-related objectives should be reviewed. For example, the Circular Economy Promotion Law was criticized for not being practical enough and for lacking detail on how to achieve implementation. Also, interviewees critiqued the overreliance on command-and-control instruments to carry out environmental policy in China. It was suggested that the focus should be broadened to incorporate more effective economic instruments.

Incentives, in particular, were seen as vitally important for promoting SCP and generating change. Several interviewees stated that businesses should receive incentives and be financially compensated for upgrading to more efficient technologies. Support was also voiced for implementing a new environmental tax.

Finally, interviewees discussed the existing challenges of effective SCP policy implementation in China. Overall, the central government is seen to develop a lot of good environmental policies, but implementation and enforcement at the local government level is difficult or not occurring. Capacities of local government officials need to be strengthened through continuous training and regular information provision on new regulations. The monitoring system should also be expanded to assess SCP policy implementation and help carry out environmental enforcement.

4.4 Funding (Investment and Finance for SCP)

Lack of funding was frequently raised during interviews as a significant capacity constraint for achieving the effective implementation of SCP policies. For instance, a lack of finances constitutes one of the major challenges to the deployment of low-carbon technologies in the building industry. MHURD also commented on the difficulty of attracting investments for improving the energy efficiency of buildings from international aid organizations. Moreover, investment problems exist for achieving a greater utilization rate for renewable energy sources, including solar energy.

The China National Cleaner Production Centre (CNCPC) noted that not enough funding was available for the deployment of CP technologies. Chinese government officials typically believe that the use of CP technologies will generate profits for businesses; therefore, it should be left up to businesses to invest in CP technologies while the government instead provides funding for end-of-pipe treatment technologies. However, Chinese businesses operate with very short economic timeframes and payback periods of three years or more are usually considered to be too long for most business owners. Therefore, many businesses are hesitant to invest in cleaner production technologies.

Several suggestions were made during the interviews on how to improve investment and finance for SCP. The first suggestion focused on expanding the share of green financial products, such as green credit and green investment funds. Financial institutions should be encouraged to incorporate environmental considerations into project financing decisions. The second suggested activity centred on providing incentives to businesses for investing in greener technologies and products. A number of instruments were mentioned, including taxation and subsidies for green products. Furthermore, the green public procurement system should be extended to encourage private investment. In addition, it was suggested that the current pollution levy system, which applies to water effluents, airborne emissions, solid waste and noise, should be modified. Levy revenue is mostly being used for end-of-pipe treatment solutions. It would be more beneficial if the levy revenue could instead be invested into upgrading entire production processes.

4.5 Supply chain management

This capacity building area was not as extensively discussed during the interviews as the previous four areas. Some comments were made about raising awareness of the impacts of the entire supply chain from the producer to the consumer. Eco-labels already exist in China but need to be developed further to gain broader recognition.

Difficulties were raised with regards to manufacturing green supply chain products. In some instances, smaller suppliers were not able to meet their environmental requirements determined by the large corporations. Other suppliers were refusing to change to more environmentally friendly practices because the costs of doing so were too high. To address these difficulties, interviewees emphasized the need to not just focus capacity building on the large corporations but to also raise the capacities of the smaller suppliers. Interviewees also recognized the need for transforming the whole supply chain of the building and construction industry, from architectural design to upstream material manufacturing.

5. RECOMMENDATIONS FOR CAPACITY STRENGTHENING AND POLICY SUPPORT

On the basis of the assessment the following activities have been identified as priorities for policy support on SCP in China. While it will be impossible for the SWITCH project to financially support all these activities we believe that with the necessary technical cooperation with competent authorities and academic institutions in China, the first two activities can start to be implemented within the framework of the SWITCH-RPSC project. The remaining activities could form part of a future project.

1. Support the development of a national SCP indicator system. An indicator system would allow policy-makers to monitor implementation and effectiveness of policy initiatives related to SCP.
2. Support the development of low-carbon certification schemes. The Environmental Certification Center (ECC) of the Ministry of Environmental Protection is already working toward the development of such schemes and the SWITCH project may provide additional support.
3. Support the development of energy efficiency benchmarking schemes in the industry. These benchmarking schemes could eventually support the development of relevant standards.
4. Support the organization of a high-level inter-ministerial consultation to strengthen coordination capabilities in the central government to ensure effective SCP policy integration amongst ministries and policies.
5. Strengthen technical capacities of officials at the provincial and local levels of government in SCP skills and methodologies
6. Facilitate greater knowledge and technology transfer for eco-industrial parks with particular focus on regional integration
7. Support a public awareness raising campaign about lifestyles to strengthen sustainable consumption efforts
8. Undertake studies on specific SCP policy instruments (e.g. learning networks, information centres, technology transfer, environmental taxes and charges, subsidies, green public procurement) that could be used by local governments to achieve greater policy implementation

Work on the first two of these activities can start soon since there is currently some work being undertaken by China on these two topics. The implementation of the two activities could be based on the arrangements outlined in the table below.

Table: Implementation arrangements for capacity strengthening activities

Activity	UNEP's role	Focal point in the Government	Technical Partner in China	Other organizations to be involved
Development of a national SCP indicator system	UNEP can provide guidelines and training on developing the indicators. UNEP has already published a guidance framework for SCP indicators that can serve as the starting point for the development of the system in China.	The NDRC is proposed to be the focal point. The role of the NDRC will be to review and provide comments to the final draft of the indicators system NDRC will be the organization that the final system of indicators will be submitted.	It is proposed that the Chinese Academy of Sciences, Institute of Policy and Management (IPM) can be the technical partner. IPM has the necessary scientific and technical knowledge for this task. The IPM will be responsible for the development of the draft of the indicators that will be submitted for review to the Government	The MEP, MIIT and the CNCPC. The MEP and MIIT will provide input for the development of the indicators and they will review the draft system. The CNCPC can undertake specific technical tasks in cooperation with the IPM
Development of low-carbon certification schemes	UNEP can provide guidelines and training on developing the scheme. UNEP has already developed energy-efficiency benchmarks that can be adapted for this activity	The NDRC and MEP can be the focal points for this activity.	It is proposed that the MEP (ECC) will be the technical partner for this activity. It has all the necessary knowledge and is already working towards this area.	To be decided after consultation with the MEP.

India

1. NATIONAL CONTEXT

General Indicators		SCP Indicators	
	Population (2010) and population density [1] 1.171 billion and 394 people per km^2		**Per capita material use and material intensity (2005)** [4] 4.0 tonnes/ 6.8 kg per US$
	GDP (PPP, US$ 2010) [1] $4.20 tr		**Per capita energy use and energy intensity (2005)** [4] 20.56 GJ/ 34.92 MJ per US$
	GDP per capita (PPP, US$), 2010 [1] $3,586		**Per capita water use (2010)** [5] 630.1 m^3
	GDP per capita, constant 2000 US$ (2010) [1] $830		**Per capita GHG emissions (2005)** [6] 2.1 tonnes
	Gini coefficient (2009) [2] 36.8		**GHG emissions intensity (2005)** [6] 0.60 kg per US$
HDI	**HDI Rank (2010)** [3] 119	CO_2	**Per capita CO_2 footprint (2008)** [7] 1.38 tonnes
	Agricultural land per capita (2008) [1] 0.15 ha		**Number of middle class consumers (2010)** [8] 25%
	Forest cover (2010) [1] 23.0%		**Number of people with income <$2/day (PPP, US$) (2010)** [8] 75%

Sources: [(1)] World Bank (2011), [(2)] UNDP (2009), [(3)] UNDP (2010), [(4)] CSIRO and UNEP (2011), [(5)] FAO (2010); [(6)] World Bank (2011); [(7)] Peters *et al.* (2011); [(8)] ADB (2010).

India is the seventh-largest country by geographical area in the world, with an area of around 3.29 million square kilometres. It is bounded by the Indian Ocean to the south, the Arabian Sea to the southwest, and the Bay of Bengal to the southeast. It shares land borders with Pakistan, China, Nepal, Bhutan, Myanmar and Bangladesh. The territory of India represents a geographical amalgamation of mountain ranges, valleys, desert regions, tropical rainforests, fertile plains, dry plateaus, as well as coastal areas.

With a median age of 26 years (World Bank, 2011), India is one of the 'youngest' countries among bigger economies in the world. Medical advances during the past few decades and an increase in agricultural productivity as a result of the 'Green Revolution' have seen India's population grow rapidly. The current population growth rate is about 1.3% (World Bank, 2011). As the second-most populous country in the world and with current growth rates continuing India's population is expected to surpass that of China in the future. Compared with other Asian developing countries, India has been slow to urbanize; currently about 30% of the population lives in urban areas. This situation is changing rapidly, however, with an annual urbanization rate of 2.4% (World Bank, 2011).

India has the fourth-largest coal reserves in the world, and coal accounts for 42% of its annual total energy consumption (EIA, 2009). Because of the growing gap between India's oil demand and its

domestic capacity for oil production, the country now has to import 70% of its oil requirements (IEA, 2011). India is also one of the major producers of iron in the world; iron ore is found in many parts of the country. Other rich endowments in India include manganese, mica, chromites, limestone, bauxite, and titanium ore.

India gained its independence from Britain in 1947. The current constitution came into force in 1950 and has been amended many times since then. Under this constitution, India is a federal constitutional republic governed under a parliamentary system consisting of 28 states and seven union territories. The head of the government is the Prime Minister who is nominated by the majority party in the lower house. In India, there is pluralism of political parties, diversity in interest-group representation and substantial ideological divisions among parties that often affects policy implementation.

With a combination of socialist planning and free enterprise during the first 40 years after its independence, India achieved a degree of industrialization and modernization but with marked differences across different states. Since the early 1990s socialist economic planning has been replaced by liberalization measures, including industrial deregulation, privatization of state-owned enterprises, and reduced controls on foreign trade and investment. Economic liberalization is accelerating the country's growth and a large middle and upper class is emerging; information technology has become an important economic sector. Indian imports and exports totalled almost 600 billion US$ in 2010 (COMTRADE, 2011). Its main trading partners are the US, China and the UAE. The Indian economy is now ranked the world's fourth largest by purchasing power parity (World Bank, 2011). It is one of the five BRICS nations and a member state of the G20. However, due to large inequalities in economic development India on average is still a lower middle-income country.

Despite its vigorous economy, numerous economic and social problems remain unresolved. There is substantial poverty, large income gaps between rich and poor, a large mass of people who lack the skills to participate in the new economy, inadequate public health and infrastructure, limited non-agricultural employment opportunities, insufficient access to basic and higher education, and huge rural-to-urban migration.

Generally speaking, the current mode of economic growth in India is resulting in extensive environmental deterioration all over the country. Having 18% of the world's population on 2.4% of world's total area (World Bank, 2011), India is overstraining its natural resources. In rural areas, most people still mainly use wood as fuel for cooking and water heating. The huge demand for firewood makes deforestation one of the significant environmental challenges for India. Other significant environmental challenges are air pollution from industrial and vehicle emissions, local water shortages from aquifer overuse in agricultural production zones, water pollution from raw sewage and agricultural pesticide runoff, and degradation agricultural land because of unsustainable use of pesticides and fertilizer and soil erosion. As the country’s population and economy continue to grow at a fast pace, the need to find solutions to these environmental challenges becomes more urgent every day.

2. REVIEW OF EXISTING POLICIES

2.1 National framework policies and overarching SCP and RE policies

National Five-Year Plans

At the overarching policy level India develops and implements national five year plans. These plans guide the policies of governmental institutions at both national and state level. The Planning Commission is the coordinating body in charge of developing the five year plans, as well as performing mid-term appraisals. Currently, the country is implementing its 11th Five-Year Plan, 2007-2012 (11FYP) but the approach to the succeeding 12th Plan has already been published in draft form.

The 11FYP is a comprehensive document covering most domains of public policy. Its main objective is to achieve strong economic growth – the target for the period covered by the plan is nine percent growth in GDP annually. However, it also emphasizes that growth should be inclusive and contribute to poverty alleviation. It therefore aims to achieve stronger economic growth in the agricultural sector, since the majority of the poor reside in rural areas. In fact, the plan explicitly states that GDP growth should not be seen as a goal in itself but only as a means to achieve an increased standard of living for as many people as possible.

In addition to inclusiveness, the 11FYP also stresses the need for sound management and use of natural resources. Water and land are especially emphasized, as well as energy and climate change. The plan points out the strong linkages between conservation of nature and resources on the one hand, and the achievement of economic and social objectives on the other. In this context the 11FYP states that 'degradation of natural resources reduces the well-being of people, and the poor and women suffer most' of all groups in society.

The 11FYP sets four specific targets directly related to the environment. Two of these are of particular significance to SCP and RE: (i) to attain WHO standards of air quality in cities by 2011-12, and (ii) to increase energy efficiency by 20% by 2016-17.

National Action Plans and Missions

In addition to the five-year plans, India has a number of specific national plans and strategies. One of the most well known and of the highest significance for SCP and RE is the National Action Plan on Climate Change (NAPCC) of 2008. The NAPCC identifies eight core National Missions:

- National Solar Mission, aiming to add 20 GW of solar power capacity,
- National Mission for Enhanced Energy Efficiency, aiming at saving 10 GW by 2012 through improvements in industry, electric appliances, and buildings, and leading to fuel savings of at least 23 million tonnes of oil equivalent (toe) annually by 2014-15,
- National Mission on Sustainable Habitat, aiming at promoting energy efficiency through improved urban planning,
- National Water Mission, aiming at achieving 20 percent improvement in water use efficiency through water pricing and other measures,

- National Mission for Sustaining the Himalayan Ecosystem, aiming to protect ecological values in the Himalayan region,
- National Mission for a 'Green India', aiming to significantly increase forest cover and to rehabilitate degraded land and forests,
- National Mission for Sustainable Agriculture, aiming to climate-proof the country's food production capacity,
- National Mission on Strategic Knowledge for Climate Change, aiming to stimulate scientific research related with climate change mitigation and adaptation.

2.2 Policies for activity domains of high significance to SCP and RE

2.2.1 Food and agriculture

Agriculture is a critical sector for India, especially since the country is still to a high degree based on its rural economy with the agricultural sector employing more than half of the labour force. However, agricultural productivity is fairly low by international comparison and around two thirds of the sown area is rain-fed. Even so, in average years India manages to produce enough food to potentially feed its population. In reality, however, food security and malnutrition among children are persistent challenges. The reasons for this are manifold and complex, and a National Food Security Mission was launched in response to these challenges aiming, among other things, to significantly increase the production of cereals and pulses.

The 11FYP sets a target to double the agricultural economic growth rate to 4% per year. This should be achieved through actions in the following broad areas: bringing improved technology to farmers (including improved crop varieties and more widespread availability of irrigation), rationalizing subsidies and minimum support prices so that farmers have stronger incentives to increase output, improving market access, and diversifying of production. It also aims to foster inclusiveness by improving access to land, credit, and skills for the poor. Investments in research also need to increase and should focus on how to enhance productivity in various agro-climatic zones. Finally, the system for fertilizer subsidies needs to be revised; it should promote the use of soil improvers that add all nutrients needed to preserve soil health over the long run rather than just nitrogen.

Implementation of the 11FYP in the agriculture sector has been partly successful. Improvements in transportation infrastructure have improved market access, investments in irrigation schemes have increased, and a number of projects aiming to improve water conservation in rain-fed areas have made progress. Furthermore, increases in the minimum price for core agricultural products have strengthened farmers' incentives. There are, however, many remaining challenges, including the need for continued land reform, further improvements in water management, reduction of post-harvest food losses, and soil quality conservation.

2.2.2 Buildings and construction

The majority of Indians still live in villages where houses are built with traditional techniques, usually with mud as the main building material. However, rapid urbanization and huge investments in infrastructure in recent years have made the construction sector a very large industry. Commercial buildings are now the third largest consumers of energy – behind industry and agriculture. More than 20% of the electricity consumed in India is used in buildings – 60% of this for air conditioning.

There is a very large potential for efficiency improvements, mainly for new buildings, but also through retrofitting (Yu and Evans, 2010). Providing building materials such as e.g. bricks in processes with low energy and emission intensity is another major challenge related to the fast growing demand of residential and commercial buildings.

The relatively high cost of energy in India provides incentives for efficiency and the concept of energy-efficient buildings has quickly gained ground. The development of standards and codes in support of energy efficient buildings is, however, still nascent. Recently, the Bureau of Energy Efficiency (BEE) introduced a star rating system for buildings. This system is now in a pilot phase and considerable effort is required to strengthen capacities of key stakeholders and to stimulate demand. Improving the accessibility of finance for low-cost energy-efficient buildings is one of the key challenges to mainstreaming energy efficiency in the sector.

2.2.3 Mobility and transport

Rapid growth of private motorized vehicles has increased the demand for petroleum fuel, resulting in increased air pollution, especially in cities. The demand for the transport of goods and air travel are also on the rise. These massive increases in overall transport demand put severe pressure on existing infrastructure and the 11FYP identifies an urgent need for increased investments in the sector.

The Central Government has taken measures to improve urban air quality by reducing the sulphur content in diesel and by introducing emission norms. Basic norms have been extended to the entire country for all categories of motor vehicles manufactured after 2005. Stricter emission norms have been introduced for four-wheeled vehicles in the National Capital Region and other major cities. Enforcement of these policies, however, leaves room for improvement.

For long distance transport, the 11FYP identifies a need for large investments in both road and rail infrastructure. However, in its mid-term appraisal of the plan the government notices that railways have been losing ground to road transport. The plans intention is to reverse this trend by promoting the more fuel and emission efficient rail transport system. For example, the line capacity and number of engines and carriages will be increased, high speed trains will be introduced, and two dedicated freight corridors will be established by 2016.

2.2.4 Manufacturing and consumer goods

Increasing industrial production is one of the key elements of the 11FYP. It is regarded as one of the most important measures for creating job opportunities. The role of micro, medium and small enterprises (MSMEs), which often involve highly labour-intensive processes, are especially emphasized.

The growth of the manufacturing sector is hampered by a number of challenges, including the poor quality of power supply and limited access to funding. The latter obstacle is especially notable for the MSME sector. Additional challenges for further expansion are the difficulties in acquiring land for industrial facilities, complicated governmental regulations, and a shortage of skilled workforce.

Industry is responsible for a significant share of India's power consumption and the government has identified large potential for improvements. The Bureau of Energy Efficiency (BEE) runs a programme

targeting the 477 most energy consuming production units. For these companies, individual targets for energy consumption are set for each three-year period. Under a recently introduced market based system companies can trade energy saving certificates.

The electrical appliances category of consumer goods is growing rapidly, leading to increasing household electricity consumption. The Bureau of Energy Efficiency (BEE) has established an energy star rating system for a wide range of appliances, which was originally voluntary but has now become mandatory for selected product groups.

2.2.5 Urban development and land use

In comparison with other developing countries, India has been slow to urbanize. However, the urban population proportion, currently estimated at 31.2 percent, is expected to reach 40 percent by 2030. Most cities are ill prepared for such a surge in urban residents since the existing urban infrastructures for water, electricity, and transportation are already insufficient. The current delivery mechanisms have difficulties in securing enough funding and do not focus enough on the quality of services provided. They also lack a focus on improving the housing conditions of the urban poor. Huge investments are required in order to provide urban residents with the necessary urban services. Major improvements in urban planning, financing and governance will also be needed for building cities that enable residents to live decent lives with reduced environmental impacts.

India is densely populated and different sectors are competing for limited land resources. The government aims to increase the forest cover and recognizes the need to preserve high-yielding agricultural land in order to secure the country's capacity to produce food. At the same time, accelerating urbanization, industrial expansion and new infrastructure require land resources. The measures identified by the government include the clustering of industrial facilities, establishment of satellite cities, and dedicated transport corridors.

Current rules for land acquisition are regarded as unfair by many and have resulted in numerous conflicts and serious delays for development projects. The government intends to revise the legal framework to facilitate land acquisition while ensuring the rights to fair compensation, resettlement and rehabilitation.

2.2.6 Energy, water, waste

Energy

India depends to a very high extent on fossil energy sources. The most important source is coal, which is extracted domestically but to an increasing degree imported. Renewable sources play so far only a minor role. The national plan and its energy strategy recognize the need to promote renewable energy, but in reality India seems to head towards an increasing use of coal, at least over the short- and medium-term.

The 11FYP also emphasizes the importance of improving energy efficiency, both in the distribution system and in the final use of energy. Expansion of renewable sources and efficiency improvements are motivated not only by concerns about climate change but also to a high extent by energy security objectives and by the ambition to protect India's forests. Forests are a main source of

energy in rural areas and most of the country's coal reserves lie under forests. India has put in place national programmes to promote energy efficiency in all key sectors.

The Indian energy market is characterized by a complicated system of subsidies put in place by a number of different ministries. The government recognizes that a reform of these systems is highly needed in order to create sound incentives to promote energy efficiency and energy security. The approval of an Integrated Energy Policy in 2009 was an important step in this direction. This policy aims to achieve a gradual harmonization of domestic energy prices and global prices, while still allowing for targeted subsidies to low-income segments of the population.

Compared to other countries in the region, electricity prices in India are relatively high especially when adjusted for average incomes. This provides an incentive for frugal use and efficiency. However, there are a number of factors that work against efficiency improvements: low knowledge and limited access to information, risk averseness in industry and the finance sector, and split incentives for the construction sector and users of housing. In response to these obstacles, the Bureau of Energy Efficiency (BEE) was established in 2002 under the Ministry of Power. It has established a labelling scheme for appliances and commercial buildings, an energy saving scheme for highly energy-consuming industries, including a trading system for energy saving certificates, and regulations to improve the fuel efficiency of vehicles.

Water

Management of water resources is critical to India's development. Many parts of the country are characterized by an arid climate. Around 80 percent of water use occurs in the agricultural sector. Surface water bodies are already heavily utilized and often polluted by agricultural runoff and urban and industrial effluents, and falling groundwater tables resulting from over-extraction and deforestation have been observed in many parts of the country. These trends could soon lead to a declining agricultural output and shortages in potable water (Rodell *et al*., 2009)

The significance of improved water management is well recognized in the 11FYP. It clearly stresses the need to enhance supply (mainly through afforestation, dam construction and rainwater harvesting), improve use efficiency (especially in agriculture), and to encourage recycling (especially in the industrial sector). The plan recognizes that achieving sustainable water use will require suitable mixes of policy measures, including economic incentives and regulation as well as other policy tools, and that the approach taken needs to be tailored to local conditions and capacities.

Water pricing has been identified as one of the keys to more sustainable management; currently, water is severely underpriced or provided for free. The government has indicated that future water pricing policies for the domestic sector may involve lifeline water supply at very low prices combined with appropriate pricing for additional use.

The situation for groundwater in rural areas is especially worrisome since drilling of new wells is unregulated in many regions. In addition, electricity is often subsidized for agricultural use, and sometimes even provided free of charge, making it very cheap to extract excessive amounts of water.

For surface water there are issues related with unfair distribution among users. However, in some regions there are examples showing how inclusive management has been successful both in limiting use and achieving a better distribution among users. Many projects implemented as part of India's

National Rural Employment Guarantee Programme have focused on rehabilitation of ponds, watercourses, and canals and have brought significant improvements. Pollution is also a great challenge, which severely limits the usefulness of many potential water sources.

Waste

Like all countries in the region, India faces challenges associated with increasing volumes of urban and industrial waste. The waste stream is also becoming more complex, containing increasing amounts of plastics and hazardous substances.

India's waste management policies are fairly comprehensive and advanced. The regulation on general municipal waste emphasizes the resource value of waste and promotes composting and energy recovery. The new regulation on e-waste is based on the principle of extended producer responsibility and aims to make the producers and importers responsible for the end-of-life treatment of the products they place on the market. It has been noticed, however, that the capacity to fully implement these policies is insufficient. Local authorities often lack the resources needed for providing the expected services to the urban residents. Industries often show low awareness and lack incentives to reduce their waste generation and to dispose of waste through appropriate channels.

3. STRENGTH OF EXISTING POLICIES AND POLICY CHALLENGES

India is clearly advanced and ahead of most countries in the region when it comes to governmental strategies, policies and regulations. At least on the production side, there is a fairly well-developed legal framework in place for environmental protection and to some extent for resource conservation. However, in general, existing policies pay little attention to the consumption of goods and services as a driver of resource use and pollution. Exceptions are water, land and energy where resource constraints are already having a negative impact on people's quality of life and the prospects for future development. In these areas there are policies in place to promote efficiency and sound resource management. However, as indicated in the policy review, there is considerable room to improve these policies further, for example by strengthening the economic incentives for efficiency and by removing implementation barriers.

A challenge for India's policy makers is the country's great diversity and the associated difficulties in making regulations that work across the entire nation and to consider the large differences among different income groups. Many issues are handled at lower levels of government, where local conditions can be reflected in the policy process. However, at lower levels the government offices typically have limited capacity for policy development, implementation, and monitoring.

Furthermore, the government's potential and readiness to influence consumption patterns are influenced by the country's economic history. Until 1991, India had a centrally planned economy and it is only in the last two decades that consumers have been offered a wide range of products and brands. Most people view these changes very positively and there is therefore a strong aversion to governmental interventions guiding consumer choice; regulations similar to 'choice editing' would be seen as a return to the old, highly unpopular, system and are therefore likely to be met with strong resistance.

Finally, the study observed that there is no strong coordinating body for SCP in the Indian government; institutions to be involved and role-sharing are worked out on a case-by-case basis. Naturally, this absence of a lead organization can result in confusion, duplicated efforts, conflicting action, and inertia. The Ministry of Environment and Forests (MoEF) represents the country in international policy forums on SCP, but domestically – given their mandate and resource allocation – they cannot be expected to be the main coordinating body. They certainly have a very important role to play in promotion of SCP and RE, but mainly as expert and knowledge provider on environmental issues.

4. CAPACITY BUILDING NEEDS ASSESSMENT

In India there is already a small but growing community of policy makers and other professionals who are familiar with the concept of Sustainable Consumption and Production. Since 2006, three national SCP round tables have been held, helping to foster a common understanding of key SCP concepts, as well as the major challenges and opportunities for the country. At the first of these meetings, five SCP priorities for India were established: agriculture, channelling consumer demand, energy, water, and waste. In subsequent meetings, a number of emerging themes were identified, including green public procurement, tourism, transportation/mobility, and urbanization/habitat.

The current study conducted a number of consultations with government officials, international organizations, and non-governmental organizations, focusing mainly on the priority issues identified through the process of the national round tables. The purpose of these consultations was to review ongoing activities relevant to SCP and RE and to identify related needs for capacity strengthening.

4.1 Information and knowledge

India has a fairly large and growing segment of highly educated citizens but the country is also home to a very large number of people with low education and limited capacity to effectively access and use new information. According to the 2011 census, the average literacy rate for people above the age of seven is 74 percent, with large differences between men and women, and among states. The level of knowledge on environmental issues among the general public is thus very low, especially concerning complex issues of high relevance to SCP, such as life cycle impacts of products and services.

Within the Central Government, there is a high degree of technical knowledge pertaining to immediate priorities of the concerned Ministry. However, it appears that the decision making process is highly centralized and in the hands of a relatively low number of over-burdened officials who have to set priorities. These officials are focused on their own tasks and find it difficult to make linkages with other related tasks which may fall in the purview of other Ministries. There also appears to be great concern for economic sustainability and to some extent, sustainability measured by social criteria while long-term environmental concerns are typically given much lower priority.

At lower levels of government, at state level and below, the knowledge of complex environmental issues and long-term sustainability is generally lower.

The private sector in India is highly dominated by Micro, Small and Medium Enterprises (MSMEs). Compared to large corporations, these companies in general have very little knowledge and

awareness of environmental issues. They also face difficulties in accessing and using information on cleaner production technologies and on how to redesign products for reduced environmental impacts during the use, recycling and waste treatment phases.

Rural residents hold considerable traditional knowledge for sustainable consumption and production practices, and they often practice resource efficiency out of pure necessity. However, they have a somewhat limited understanding of environmental impacts and of the linkages that occur between environment and health. Strengthening farmers' knowledge for sustainable water management and on how to maintain soil health/productivity seems to be particularly urgent.

General citizens/consumers have limited knowledge of the environmental and social impacts associated with the products and services they consume. India started an eco-label scheme 19 years ago, aiming at providing consumers with guidance on which products are preferable from an environmental perspective. However, for a variety of reasons, including an inappropriate institutional set-up, the scheme was never very effective. For household appliances the energy star rating system provides information on energy efficiency. This system has been well received, not least since energy saving also leads to decreased costs for households. It is however doubtful whether a general eco-label scheme, where consumers can see few direct benefits or incentives, could be as successful.

India has a number of consumer NGOs that are actively promoting SCP. They publish product reviews and consumer guides, some of which focus entirely on environmental issues, such as climate change. Awareness campaigns utilize various media to reach consumers, including TV. The Ministry of Consumer Affairs is supporting these groups together with the German agency for international cooperation and development, GIZ.

A system of consumer advice centres is currently piloted in some states and the ambition is to expand this system to cover all of India. While the main objective of consumer advice centres is traditional consumer protection and consumer rights issues, it provides a potential platform for disseminating information for sustainable consumption.

An obstacle to the promotion of sustainable consumption through awareness raising and information targeting consumers is that the responsibility falls between different ministries. The Ministry of Consumer Affairs, Food and Public Distribution is the main governmental body responsible for consumer issues. However, their main mandate and competence is for consumer protection and consumer rights. The ministry has adopted the concept of SCP but is not strongly championing sustainable consumption. The Ministry of Environment and Forests, on the other hand, is mainly focusing on the production side and has no responsibility to promote sustainable consumption. So far, there have only been few examples of these two ministries working together. There is great potential for good results if the Ministries were to strengthen collaboration for enhancing SCP.

The importance of the media for public awareness raising and to engage various media in capacity strengthening efforts may well complement government programs.

4.2 Innovation and R&D

India is technically advanced in many areas, but the development of green technologies has not been a priority. Therefore, while the government is aiming to guide the economy on a more sustainable path, domestic industry faces difficulties in responding. For example, the National Solar Mission aims to expand India's capacity for solar power generation drastically, but so far the technology used is mostly imported. The awareness of the private sector for the market potential of green sectors needs to be enhanced so that more resources are allocated to innovation and R&D for such technologies and systems.

The MSME sector has particular challenges in innovating and developing products that would meet improved sustainability standards. Even if the capacity to produce more sustainable products would exist businesses typically lack the administrative capacity to generate credible evidence and to meet verification requirements. There is a need for capacity strengthening activities to reach out to MSMEs and engage these companies. Efforts to strengthen capacity for SCP within the government clearly need to go hand in hand with efforts involving industry, including also MSMEs.

There is a role for higher education and a need to include environment and sustainability in university curricula if SCP in India is to progress. For example, a lack of properly trained engineers and architects creates as a bottleneck in the promotion of energy-efficient and sustainable buildings.

One specific area is the limited capacity to conduct life cycle assessments and the lack of tools for calculating life cycle costs. These shortcomings are obstacles to, for example, green public procurement, which needs to be based on credible assessments.

Economic incentives for SCP business activities will drive investment by the private sector the government could make more use of economic instruments in order to create an environment that stimulate innovation as well as investments towards resource efficiency and SCP.

4.3 Institutions and Governance

The government of India is highly compartmentalized, consisting of 53 individual ministries and departments. This division of responsibility amongst a large number of bodies poses challenges for efforts to promote SCP policies. All the key provision systems, such as providing citizens/consumers with food, housing and mobility, involve several governmental organizations that are typically not well co-oriented and do not work together much. For example, efforts to bring about changes towards sustainability in the food system would have to involve at least four key ministries/departments at the national level: Agriculture, Chemicals and Fertilizers, Food Processing, and Consumer Affairs, Food and Public Distribution. There is a need for improved coordination among governmental institutions to overcome working in 'silos' with limited contact with others. The need for more integrated policy making is strongest in the following sectors: transportation, urban development, water, and agriculture.

The high degree of specialization of different parts of government would not be a problem if there were effective mechanisms in place for policy coordination and a tradition of collaborative strategic planning and policy development. However, in general this does not seem to be the case; the Cabinet Office and the National Planning Commission, which are the two bodies with a mandate to coordinate other parts of the government, rarely interfere in the policy making of individual

ministries and departments. Some efforts to establish dedicated bodies for inter-ministerial coordination are reported to have lacked clear agendas and sufficient resources and became therefore largely ineffective.

The Indian Ministry of Environment and Forests (MoEF) is the key governmental organization for safeguarding the environment; it is also the governmental body representing the country in international policy processes on SCP. It therefore plays an important role in efforts to promote SCP in India. However, the MoEF's main implementation mechanism is the Central Pollution Control Board (CPCB) which in turn regulates the State Pollution Control Boards. These organizations have a major role in the environmental sustainability of all industrial manufacturing and production in the country, and are the policy-making and regulating bodies for waste management. Hence, MoEF is focused mainly on regulating emissions from production; it lacks clear mandate and delivery mechanisms for addressing consumption patterns.

While the MoEF needs to play an important role in promotion of SCP and RE, the consultations pointed at the need to integrate sustainability and environmental protection into the mandates and responsibilities also of other line ministries. Most ministries have much larger budgets than the MoEF and are in many cases directly responsible for investment decisions. Mainstreaming sustainability in the objectives of different ministries would be key for increasing the effectiveness with which the government can steer India towards SCP and RE.

In addition, India has several levels of government: central, state, district and development blocks. Also this division raises coordination challenges. The role sharing among levels of government is not always clear, and lower levels often lack capacity to properly implement policies decided at higher levels. Especially in the field of urban planning and transportation, the role of officials at lower levels is very important and the need for capacity strengthening was highlighted.

4.4 Funding (Investment and Finance for SCP)

Access to capital is a bottleneck for investments in industry and agriculture. This is true for investments in general, but especially for those investments that aim at improving energy efficiency or sustainability in a broader sense. Banks have little experience in assessing financial risks related with such investments and therefore often demand very high interest rates. There is a need to strengthen the capacity of financial institutions to provide funding to projects promoting SCP and RE. This could have a catalysing effect, since the lack of financial resources is a common bottleneck.

Financing is a critical issue also for infrastructure development in cities. Local authorities in charge of providing basic urban services to residents have difficulties in securing the resources needed. As a result, service provision is lagging behind and citizens have to rely on alternatives that are often less sustainable. For example, a lack of wastewater treatment leads to water pollution and health problems, and a lack of public transportation leads to over-reliance on private vehicles with air pollution and traffic congestion as result.

The Ministry of Finance could play a critical role in promoting SCP by designing suitable fiscal incentives and disincentives. It has in the past decade attempted to simplify and rationalize the complicated taxation structure, but could now be ready to craft fiscal tools to encourage greater sustainability for both industry and consumers.

4.5 Supply chain management

Supply chain management becomes important when businesses change their practices and consumers demand green solutions for example in the housing sector. If technologies and parts are not readily available sourcing the necessary supplies such as e.g. solar panels, double-glazing or energy efficient heating and cooling systems then sustainable practices are severely hampered. A related issue is the availability of solutions that meet the financial capacity of businesses and households in India, which often means to design new systems that meet those requirements.

5. RECOMMENDATIONS FOR CAPACITY STRENGTHENING

While India has a number of areas where its capacities for SCP policies could be further strengthened it also has several areas where its policies are already strong and effective and where it could serve as a model or source of inspiration for other countries in the region. Capacity strengthening efforts carried out on a regional or sub-regional basis should recognize this potential and try to utilize India's strengths and expertise.

For areas where capacity strengthening for SCP policies is likely to be beneficial for India, this study has tentatively identified the following:

- Policy dialogue on SCP. India has held three National Roundtables on SCP. These roundtables have created a good momentum for SCP in India and it is time to start building up some more concrete activities on SCP. Towards this end the organization of a 4th roundtable focusing on the development of policy recommendations and roadmap(s) for SCP in specific sectors could be highly beneficial. This would serve a dual purpose – a) of bringing into the ambit of the Roundtable discussion the newly emerging priorities such as Urbanization, Tourism and Green Public Procurement and b) preparing the Indian delegation to Rio+20 by arming them with a cross section of data and opinions from different Ministries and civil society organizations. A similarly oriented Roundtable in anticipation of CSD-18 had been found very useful.
- **Sustainable (or Green) Public Procurement**. This is an area where already some momentum has been built and where a certain degree of interest exists in key governmental organizations. Decisions for purchasing electrical appliances with Energy Star ratings of three or higher indicate an interest in using the governments purchasing power to further SCP and they have set a precedent by doing this. However, establishing an effective and comprehensive system for Sustainable Procurement is not going to be easy; a number of components need to be developed, including guidelines and training, and a coordinating body needs to be established within the government. It is also necessary to pass a revised procurement law with provisions for sustainable procurement. A strengthening of the government's capacity needs to be complemented by capacity strengthening on the supply side; in many sectors suppliers have limited capacity to comply with strict environmental demands and lack the ability to provide credible evidence of compliance. A first step should be to identify a specific sector where Sustainable Public Procurement could play a significant role in terms of overall positive impact and with high estimated cost performance ratio.

Such a potential sector could be the Indian Railways given the size and importance of the sector to public procurement.

- **Consumer awareness and consumer-oriented product information**. This is a broad area with considerable potential for improvement. Currently, the role sharing between the two related ministries (environment and consumer affairs) is not clear and their collaboration seems to be weak. Educational efforts, including both formal education in schools and more general awareness raising campaigns targeting the general public, need to go hand in hand with improved access to easily understandable consumer information. The current non-functioning eco-labelling system could be revived, support to environmental NGOs working on consumer education could be strengthened and these organizations could be made more professional and better coordinated, school curricula could be revised to include sustainable consumption, more resources could be allocated to professionally designed campaigns involving celebrities and other informal leaders, and mandatory requirements for producers to provide consumers with environmental product information could be instituted.
- **Water Consumption**. Water was not initially a focus of the study but many informants emphasized the great importance for India to improve its current consumption patterns for water. The significance for health and food security as well as for environmental protection was pointed out. It was also repeatedly stated that there is significant potential for reducing wasteful usage of water. The study therefore recommends a follow-up study to review current policies, institutions and capacities in this area with a view to identifying opportunities for capacity strengthening towards sustainable water consumption. Such a study should probably focus on one or a few states where water supply challenges are especially severe.
- Organizing a Workshop within India where Indian achievements in **energy efficiency** could be explained to representatives of Government from other developing countries in Asia and elsewhere. This is mooted since the Indian achievements in this area have been very creditable and would be very useful for other developing countries.
- Conducting a research study on the actual **impact of eco-labelling** on consumer purchasing in countries at a similar stage of development and with a broadly similar socio-cultural milieu as India. If research shows a significant impact (or at least the potential for it), then the evidence could be presented to the concerned Ministries in India as a case for reviving the Indian Eco-mark. If evidence is to the contrary, then perhaps other means of influencing consumer demand should be prioritized.
- Assisting the Central and State Ministries of Tourism to arrive at an **appropriate certifying mechanism** for rating according to the Indian Sustainable Tourism Criteria. This could be followed by a training the trainers programme to build capacity for stakeholders in the tourism industry.

This list is in no way exhaustive and reflects the study team's analysis in which areas capacity strengthening would have potential to bring about tangible improvements within a relatively short time frame.

The study also found a need for capacity strengthening efforts to take a two-pronged approach. It is important to promote **general knowledge and awareness on SCP**, especially on the importance of consumption patterns and lifestyles. Government officials at central, state and municipal levels are a key target group for such awareness raising efforts. In this regard, it seems important to build on the series of national round tables and to continue this activity, hopefully broadening its participation to a larger number of ministries and broader public sector involvement. It is equally important to initiate more concrete **capacity strengthening actions in specific sectors and for major provision systems**, such as those related to housing, food and mobility.

The consultations also found that many past and current efforts on capacity development are regarded as having limited effect. This was said to be due to a focus only on training individuals without addressing organizational structure, rules and regulations, and resource allocation. In order to enhance the capacity of policy making institutions, projects will also have to **work with organizational and institutional aspects**.

Indonesia

1. NATIONAL CONTEXT

General Indicators		SCP Indicators	
	Population (2010) and population density [1] 239.9 million and 132 people per km^2		**Per capita material use and material intensity (2005)** [4] 5.4 tonnes/ 5.7 kg per US$
	GDP (PPP, US$ 2010) [1] $1.03 tr		**Per capita energy use and energy intensity (2005)** [4] 34.08 GJ/ 36.17 MJ per US$
	GDP per capita (PPP, US$), 2010 [1] $4,293		**Per capita water use (2002)** [5] 517.3 m^3
	GDP per capita, constant 2000 US$ (2010) [1] $1,144		**Per capita GHG emissions (2005)** [6] 2.5 tonnes
	Gini coefficient (2009) [2] 39.4		**GHG emissions intensity (2005)** [6] 6.07 kg per US$
HDI	**HDI Rank (2010)** [3] 108	CO_2	**Per capita CO_2 footprint (2008)** [7] 1.58 tonnes
	Agricultural land per capita (2008) [1] 0.20 ha		**Number of middle class consumers (2010)** [8] 47%
	Forest cover (2010) [1] 52.1%		**Number of people with income <$2/day (PPP, US$) (2010)** [8] 53%

Sources: [(1)] World Bank (2011), [(2)] UNDP (2009), [(3)] UNDP (2010), [(4)] CSIRO and UNEP (2011), [(5)] FAO (2010); [(6)] World Bank (2011); [(7)] Peters *et al.* (2011); [(8)] ADB (2010).

After more than six decades of independence, Indonesia has made significant progress in its economic development and has emerged as a lower middle-income country (MEA, 2011). Over the past decade in particular, Indonesia has undergone a major economic and political transition. Due to relatively successful political and institutional reforms, Indonesia has transformed into a competitive, decentralized electoral democracy (WB, 2011a).

Originally a traditional agriculture-based economy, Indonesia has shifted a large portion of its economic activity toward manufacturing and services. However, its economic structures are still primarily based on the extraction and harvesting of natural resources and only a few industries focus on products with added value (MEA, 2011). In fact, a comparative assessment of material consumption and resource productivity in Asia found that Indonesia had the lowest resource efficiency of 19 Asian countries in 2005 (Giljum *et al*., 2010).

Indonesia is the fourth most populous country in the world. Its huge population and the rapidly increasing buying power of its inhabitants are creating a significant market. The country is also

experiencing a rapid process of urbanization. In 2010, 53% of the population lived in urban areas. The urbanization rate is expected to reach 65% by 2025 (MEA, 2011).

Indonesia is on track to achieving many of the Millennium Development Goals (MDGs) by 2015, including targets related to health and education, gender equality, poverty reduction and environmental sustainability (UNDP, 2011). Robust domestic economic growth, rising household incomes and positive labour market outcomes have all contributed to the gradual decline in poverty (WB, 2011a). However, latest figures show that around 30 million people still live below the poverty line and the informal sector accounts for about 67% of the workforce (WB, 2011a; ADB, 2011). Urban poverty is increasing and there is also a major development gap between the western and eastern parts of Indonesia (MEA, 2011).

Indonesia has an abundance of natural resources. It has numerous energy sources, including crude oil, natural gas, and coal, and an abundance of renewable energy sources, such as geothermal and hydro power (MEA, 2011). Indonesia has the third largest area of tropical forest in the world, and a large number of rural people depend directly on forests for their livelihoods. However, rapid deforestation as a result of large scale illegal logging is a major problem and more than 50% of forest areas have already been degraded (Leitmann *et al*., 2009; Sari *et al*., 2007).

Indonesia, with its vast shoreline and very high coastal population, is particularly vulnerable to climate change impacts. Rising sea levels and temperatures, in combination with changes in rainfall periods and extreme weather events, are expected to significantly affect human life (Bakrie *et al*., 2007). Indonesia plays an increasingly important role in international climate change negotiations. In 2005, Indonesia emitted around 2.1Gt CO_2e, which is equivalent to 4.97% of global greenhouse gas (GHG) emissions. In the same year, Indonesia contributed only 0.6% to global Gross Domestic Product (GDP). Most of Indonesia's GHG emissions do not originate from industrial activities, but are due to peat fires and deforestation (Jupesta *et al*., 2011).

2. REVIEW OF EXISTING POLICIES

2.1 National framework policies and overarching SCP and RE policies

Medium-Term Development Plan (2010-2014)

The National Development Planning Agency (NDPA) is responsible for developing Indonesia's development plans. The current *Medium-Term Development Plan* (RPJMN) (2010-2014) sets out Indonesia's overall development framework and outlines the general policy direction for a number of policy domains. Its key focus is on economic growth for wealth creation at all levels of society, based on equity, justice and diversity. The *RPJMN* identifies 11 national priorities, which include poverty reduction, food security, energy, and environment and disaster management. People's welfare is meant to be increased through sustainable economic growth. The Indonesian Government seeks to achieve an average economic growth rate of 6.3 to 6.8% annually until 2014 (NDPA, 2010). Environmental targets of the *RPJMN* include:

- Reducing pollution from wastewater and emissions in 680 industrial and service activities in 2010

- Reducing the number of forest fire hotspots by 20% annually
- Reducing the overall pollution rate by 50% by 2014.

The current RPJMN also contains renewable energy targets. The utilization of renewable energy is to be increased to reach 2,000 MW in 2012 and 5,000 MW in 2014 (NDPA, 2010).

Master Plan for the Acceleration and Expansion of Indonesia's Economic Development (2011-2025)

The President of Indonesia recently announced a new *Master Plan for the Acceleration and Expansion of Indonesia's Economic Development* (MP3EI) (2011-2025). The *MP3EI* is a long-term strategy that seeks to move Indonesia into the top ten global economies by 2025. Economic growth rates of seven to nine per cent annually are targeted and the *MP3EI* recognizes the need for Indonesia to structurally transform its economy (WB, 2011b). The *MP3EI* has been designed to be integrated and coordinated with the five-year development plans. It also considers the provisions of the *National Action Plan Addressing Climate Change* (see below) (MEA, 2011). The *MP3EI* does not directly mention SCP but it contains a few objectives and provisions that are related to SCP.

National Action Plan Addressing Climate Change (2007)

Indonesia's *National Action Plan Addressing Climate Change* provides government institutions with guidance to undertake coordinated and integrated efforts to address climate change mitigation and adaptation. The conservation of energy is one of the main targets of the plan. Energy intensity is to be reduced through efficiency improvements and clean technology implementation (Bakrie *et al*., 2007). Climate adaptation is identified as another key aspect of the national development agenda. It covers initiatives in a number of sectors, including agriculture, energy, transportation, housing and mineral resources. The *National Council for Climate Change* was created in 2008 to coordinate climate change policy in Indonesia. It comprises 17 ministers and is chaired by the President (Townshend *et al*., 2011). Furthermore, in 2009 the NDPA developed a *Climate Change Sectoral Roadmap*, which is meant to mainstream climate change objectives into development planning. The Roadmap provides detailed policy guidance for climate change planning, programming and actions. Agriculture, forestry and energy have been chosen as priority sectors (Boer *et al*., 2010).

National Action Plan on SCP

The Indonesian government is currently in the process of developing a National Action Plan on SCP. However, at present it only covers selected sectors and therefore requires further improvements in order to be more comprehensive. The Ministry of Environment is in charge of Indonesia's SCP programme.

2.2 Policies for activity domains of high significance to SCP and RE

2.2.1 Food and agriculture

The agricultural sector remains an important source of livelihood for a large number of households, employing around 46% of the labour force (ADB, 2009). However, by international comparison Indonesia's agricultural productivity is fairly low due to the limited use of modern agricultural equipment and an inadequate irrigation network. Food insecurity remains a threat to stable and

continuous economic and social development in Indonesia. More than half of all districts have malnutrition rates of more than 25% for under-five year old children (NFSC, 2005).

Major priorities in agricultural policies over the past decade have focused on achieving self-sufficiency and price stability for commodities, such as rice, sugar and palm oil. Indonesia also has a significant subsidy programme to increase agricultural productivity. In 2008, around 0.4 per cent of the country's GDP was used to subsidize rice, fertilizers, seeds and agricultural credit (Osorio *et al*., 2011). New rice varieties, as well as the application of new agrochemicals, have been introduced, but with mixed results. Efforts have often been hindered by the very small size of agricultural holdings and the steady decline of paddy field areas, which are being converted into urban settlement developments (Leitmann *et al*., 2009). Despite these challenges, Indonesia successfully achieved rice self-sufficiency in 2008 (Boer *et al*., 2010). Palm oil plantations have also increased rapidly over the past two decades, from about 0.6 million ha in 1994 to 6.6 million ha in 2008 (Boer *et al*., 2010).

Phase 1 of the *National Programme for Food Security* (NPFS) 2006-2009 was produced by the National Food Security Council (NFSC) in 2005. Its key objective was to achieve household food security in 192 highly vulnerable districts (NFSC, 2005). The NFSC is preparing a similar document to cover 2010-2014.

Food security is one of eleven key priorities of the current *RPJMN* (2010-2014). Increased food security is to be achieved through the revitalization of agriculture and by increasing the competitiveness of agricultural products. New agricultural areas covering two million hectares are to be developed by 2014. In addition, concrete steps are to be taken to adapt the food and agricultural system to the impacts of climate change.

2.2.2 Buildings and construction

Due to massive shortages in adequate and affordable housing, informal and self-constructed settlements, or *kampong*, have become a key feature of cities in Indonesia. Kampongs are often the only housing option for the poor and their density is increasing every year (Tunas and Peresthu, 2010). The Indonesian government has implemented several national policies to improve the conditions in kampongs and to provide more low-cost housing options. The *National Million Houses Programme* (2004) plans to build 1,014,480 new housing units by 2020 for low-income groups (Tunas and Peresthu, 2010). The *RPJMN* has a target of constructing 685,000 subsidized houses to accommodate low income families by 2012. However, none of these national policies make specific reference to improved energy efficiency of buildings or sustainable building design.

2.2.3 Mobility and transport

The transport sector is the biggest and most rapidly growing primary energy consuming sector in Indonesia, using about 48% of Indonesia's primary energy. At the same time, emissions of local pollutants from road transport in urban areas have been growing at an average annual rate of 8 to 12% (ICCSR, 2010c). Limited investment in new infrastructure and maintenance in past years has led to the worsening condition of roads, increasing traffic congestion in urban areas and the need to modernize the country's railway network. Car ownership is increasing, following the liberalization of

import motor vehicle rules. It is estimated that there are currently almost 12 million vehicles in Jakarta alone, of which around 73% are motorcycles (WB, 2011c).

The current *RPJMN* (2010-2014) recognizes these issues and emphasizes the need to improve Indonesia's transport infrastructure. It sets a range of infrastructure development targets to be achieved by 2014. These include, for example, constructing 19,370 km of roads and building 2,800 km of toll roads (WB, 2011a). The *Blueprint on Urban Transportation* seeks to enhance transportation systems and networks in four large cities (Jakarta, Bandung, Surabaya and Medan). This includes completing construction of the electric railway system by no later than 2014.

2.2.4 Manufacturing and consumer goods

Strengthening the manufacturing sector is seen as vitally important for increasing Indonesia's competitiveness in the global economy. The current *RPJMN* (2010-2014) sets a target for the manufacturing sector to grow by around 6% annually until 2014. The *National Industry Development Policy* (2008) aims to strengthen the competitiveness of the manufacturing sector as a driver for economic growth.

Indonesia adopted the *National Policy on Cleaner Production* in 2003 to encourage companies to implement the 5R principles (rethink, reduce, reuse, recycle, recover). The *Indonesian Cleaner Production Center* (ICPC) was established in 2004 to promote cleaner production (CP) implementation in the country. The ICPC also facilitates CP training.

The *Ministry of Environment Decree No. 31/2009* contains provisions for the implementation of environmental management systems (EMS), eco-labelling and environmentally sound technology. Indonesia has several minimum energy performance standards for electrical appliances. A new energy labelling system is currently being developed to provide information on the energy efficiency of electrical appliances and lighting products.

2.2.5 Urban development and land use

In the past three decades, urban development in Indonesia's major cities has grown rapidly. Urban sprawl has led to the extensive conversion of prime agricultural land into residential areas and other urban land uses on city peripheries. Between 1981 and 1999 land conversion resulted in the loss of almost 480,000 ha of paddy fields (Firman, 2004). In Jakarta, rapid urbanization has given rise to large-scale infrastructure and environmental problems, including massive traffic congestion, informal settlements, widespread flooding, a lack of clean water and solid waste management services, and land subsidence. Land subsidence, which is caused by high rates of groundwater extraction, reflects the pressure that the growing urban population is putting on limited resources and infrastructure (WB, 2011c). In addition, open green space in Jakarta City has greatly decreased from about 29% in 1984 to just over 6% in 2007 (Firman, 2009).

Overall, environmental concerns are not well integrated in Indonesia's urban development planning. The current *RPJMN* (2010-2014) recognizes that the rapid growth of cities and urban sprawl needs to be averted. This will be achieved through the creation of employment and business opportunities in smaller cities outside Java. The *MP3EI* acknowledges that rapid urbanization is a challenge that must

be addressed in order to achieve sustainable development. Proposed strategies for addressing urban growth focus on infrastructure improvements, including the development of a mass transportation system, and expansion in water supply and waste disposal systems.

2.2.6 Energy, water, waste

Energy

Indonesia's energy consumption has grown rapidly over the past three decades. From 1970 to 2003, the growth in final energy consumption averaged 7% annually, compared with an annual global growth rate of only 2% (Bakrie *et al*., 2007). More than 50% of Indonesia's energy demand is met by fossil fuels. One underlying factor in Indonesia's increasing energy consumption is the existence of significant energy subsidies. The Indonesian government introduced energy subsidies to make energy available as a basic need at a price affordable to the poor. The total amount of fossil fuel subsidies provided by the government in 2008 was considered high by international standards (Mourougane, 2010). However, in the current *RPJMN* (2010-2014) the government announced its objective to remove fossil fuel subsidies by 2014. In addition, the government plans a gradual reduction of total subsidies by 15% on average per year from 2011 to 2014 (OECD, 2011).

Indonesia's *Regulation for Energy Conservation* (No.70/2009) introduces mandatory actions to conduct energy conservation, particularly for high energy consumers. Energy conservation is meant to be achieved through the implementation of energy management, which includes the appointment of energy managers, the preparation of energy conservation programmes, and the occurrence of regular energy audits.

Indonesia's *National Energy Policy* (2003-2020) seeks to reduce the country's dependence on oil imports. It includes provisions for promoting renewable energy sources, including solar, hydro, and geothermal. Under this policy, the share of renewable sources in the total energy mix is predicted to increase from 4% in 2006 to 15% in 2025 (Jupesta *et al*., 2011). However, this policy also calls for the expansion of coal resources, the use of coal in households, and the promotion of coal to small and medium-sized industries (Leitmann *et al*., 2009). The share of coal in the total energy mix is targeted to increase from 16.8% in 2005 to more than 33% in 2025 (Boer *et al*., 2010). Increased coal use would lead to significant negative environmental impacts.

Interestingly, in 2010 the National Energy Agency proposed to enhance the share of renewable energy to 25% by 2025, in a plan called *Vision 25/25*. However, this proposal is still under discussion in parliament and has not yet been formalized into legislation.

Finally, Indonesia pledged to reduce greenhouse gas emissions by 26% by 2020 at the Copenhagen Climate Change Conference in 2009. This target is to be achieved through reduced emissions from deforestation and land use change (Stern, 2009). Further emissions reductions of 41% are expected with international support (Boer *et al*., 2010).

Water

Indonesia has an abundance of water resources. However, seasonal and spatial variation in rainfall patterns as well as a lack of adequate storage creates competition and conflicts amongst users. Indonesia's water consumption is steadily increasing due to population growth and rising economic activity in urban and rural areas. Some regions of the country, including Java and Bali, are already experiencing periodic water shortages (ICCSR, 2010a). The situation is exacerbated by rising levels of water pollution. For instance, municipal and industrial wastewater is discharged virtually untreated into the waterways causing rapid deterioration in the quality of river water.

Over the past decade, the Indonesian government has increased efforts to conserve water resources and control water pollution. The *Law on Water Resources* (2004) regulates the sustainable use of water resources in Indonesia. The efficient and effective utilization of water resources is a major objective of this law. It also addresses issues related to water pollution, shortages and natural disasters. In 2005, the President of Indonesia announced the *National Partnership Movement to Save Water*. This initiative focuses on six strategic components, which include (i) savings in water consumption and management of water demand, and (ii) utilization of water resources in a fair, efficient and sustainable manner (Bakrie *et al*., 2007). Finally, the *MP3EI* addresses provisions for clean water. For instance, the Indonesian government has to ensure availability and access to water for all while also preserving water resources in order to maintain sustainability (MEA 2011).

Waste

A growing population and changing consumption patterns have significantly increased the volume of waste in Indonesia. In 2005, around 48.7 million tonnes of municipal solid waste was generated (Boer *et al*., 2010). Landfill is used as the predominant method for municipal solid waste disposal. In urban areas, most landfill sites are open dumping areas, while uncontrolled dumping of waste is a widespread problem in rural parts of the country.

Indonesia's *Strategy for Solid Waste Management* (2006) focuses on the promotion of the 3R approach (reduce – reuse – recycle). Through this approach, there is a target to reduce the amount of solid waste generation by 20% in 2014 (ICCSR, 2010b). The *Waste Management Law* (2008) includes provisions for solid waste reduction and recycling. To reduce emissions from solid waste, open dumping practices will be prohibited by 2013. The Indonesian government is also conducting several pilot projects on 3R implementation and provides subsidies to local governments for the development of 3R facilities.

3. STRENGTH OF EXISTING POLICIES AND POLICY CHALLENGES

Indonesia has implemented a relatively extensive set of laws, policies and programmes to achieve environmental outcomes. SCP-related objectives are beginning to be mainstreamed into Indonesia's national development plans. Progress has also been made to address climate change mitigation and adaptation in an integrated and coordinated way. However, existing policies only rarely address the consumption of goods and services as drivers of resource use. In addition, several recent policies,

such as those related to the expansion of coal resources and road networks, will contribute to the further deterioration of environmental outcomes.

Overall, a number of policy challenges threaten progress towards the implementation of SCP policies in Indonesia. For instance, there are significant gaps between national policy and practice at the local levels of government. In 1999, the Indonesian government initiated a decentralization process which made natural resource and environmental issues the responsibility of provinces and municipalities. This has created additional policy challenges for SCP implementation due to limited financial and technical resources at this level of government. The Ministry of Environment is a coordinating ministry, which means that it has no responsibility for implementation. While it establishes SCP-related policies and programmes, it has no direct control over lower levels of government. As a consequence, implementation and enforcement at the local government level is difficult.

Furthermore, there is a lack of coordination between different government ministries. Each ministry has its own structures, rules and policies. This has led to a legislative framework which is often overlapping or even contradictory.

A final policy challenge is the overall low level of SCP information and awareness. Most Indonesians have no understanding of the SCP concept. The public needs more information on sustainable lifestyles. The development and promotion of SCP guidelines and tools for the public are needed. Industrial organizations should also be provided with more SCP information.

Indonesia was selected as one of four target countries of the EU Switch-Asia Programme. Activities are currently being carried out to strengthen policy support and to raise the government's capacity for implementing SCP policies. This work is being undertaken in collaboration between the Indonesian government and the EU.

Lao PDR

1. NATIONAL CONTEXT

General Indicators		SCP Indicators	
	Population (2010) and population density [1] 6.2 million and 27 people per km^2		**Per capita material use and material intensity (2005)** [4] N/A
	GDP (PPP, US$ 2010) [1] $15.8bn		**Per capita energy use and energy intensity (2005)** [4] N/A
	GDP per capita (PPP, US$), 2010 [1] $2,543		**Per capita water use (2007)** [5] 718 m^3
	GDP per capita, constant 2000 US$ (2010) [1] $553		**Per capita CO_2 emissions (2005)** [6] 0.2 tonnes
	Gini coefficient (2009) [2] 32.6		**CO_2 emissions intensity (2005)** [6] 0.56 kg per US$
HDI	**HDI Rank (2010)** [3] 122	CO_2	**Per capita CO_2 footprint (2008)** [7] N/A
	Agricultural land per capita (2008) [1] 0.36 ha		**Number of middle class consumers (2010)** [8] 24%
	Forest cover (2010) [1] 68.2%		**Number of people with income <$2/day (PPP, US$) (2010)** [8] 76%

Sources: [(1)] World Bank (2011), [(2)] UNDP (2009), [(3)] UNDP (2010), [(4)] CSIRO and UNEP (2011), [(5)] FAO (2010); [(6)] World Bank (2011); [(7)] Peters *et al.* (2011); [(8)] ADB (2010).

Among the countries surveyed in this report, Laos stands out for having natural resource abundance in a context of relative domestic stability, as well as for its ecologically sensitive 'upstream' position in the Mekong river basin.

The opening of its economy since 1986 to foreign trade and investment means that the one-party state has also enjoyed high levels of GDP growth (averaging 7.9% during the period 2006-2010, and more than 6% during the prior five years) (Ministry of Planning and Investment, 2010).

However, it is important to note that these high rates of economic expansion have been off a relatively low base and that the country has also experienced relatively high rates of population growth resulting in a moderate increase in per capita GDP and disposable income of households.

Lao is a mountainous country with a multi-ethnic, mostly rural society still affected by unexploded ordnance and low maternal and child health. Four out of five Laotians rely on natural resources, while 60% of foreign direct investment is land and natural resource-intensive (National Land Management Authority, 2010). Although more than half of its GDP is derived from agriculture, forestry, and fisheries, the amounts of suitable arable land and high biodiversity forest have been identified as constraints.

Particular engines of Laos' recent growth have been mining (for copper, gold and silver) and hydropower. Hydropower and mining exports made up more than 50% of total exports (WEF, 2011). Laos receives 20 percent of its total fiscal revenues from approximately twenty mining and hydropower projects. Another 180 such projects have been proposed (World Bank, 2010).

The classification of Lao as a least-developed country means that it has attracted the international donor community, bringing significant technical assistance and financial support along with a range of sustainable development agendas. However, summarizing human development outcomes during the 2000s, UNDP stated that:

> [T]he increase in GDP largely fuelled by expansion in the hydropower and mining sectors has not resulted in comparable growth in employment and household income. Furthermore, income inequalities are rising in the urban areas and high regional disparities are seen. Social challenges continue to affect the development outcomes of the country. There has been little improvement in the high rates of child malnutrition and maternal mortality over the past decade, and migration patterns are increasing due to population pressures and economic vulnerabilities.
>
> (UNDP, 2010b, page 4)

In order to make stronger progress on meeting human development outcomes (the Millennium Development Goals) Laos needs to ensure that foreign direct investment, the main source of economic activity, is managed in a way that enables health, education, and other people-centred development outcomes. This will require significant ongoing governance reforms (Foran *et al.*, 2010; World Bank, 2010).

2. REVIEW OF EXISTING POLICIES

Lao does not have one overarching framework policy or national action plan on SCP. Instead, SCP-related objectives are integrated into several national policies and regulations, such as the National Socio-Economic Development Plan (NSEDP), and the national policy on sustainable hydropower development.

2.1. National Five-Year Plans for Social and Economic Development

The seventh National Plan (NSEDP VII, for 2011-2015) has a clear focus on rapid economic growth and poverty reduction. The country has set formal targets for growth in per capita GDP. Industrialization and modernization are also identified as broadly desirable pathways. This is notable in a country where approximately 80% of the population consists of smallholder farmers, and where food insecurity is endemic in upland areas (World Food Programme, 2007). The 7th Plan states a goal of reducing the proportion of people working in agriculture and forestry to 70%, and increasing the proportions working in the services sector, and in mining and industry (Ministry of Planning and Investment (MPI), 2010, page 30).

The Government of Laos (GoL) has identified the industrial sector as growing more rapidly than agriculture (15% vs. 3.5% per annum respectively). Large hydropower and mining projects are to be

the principal export earners (MPI, 2010 page 4); explicit targets are proposed such as constructing ten additional large dams by 2015 along with quantitative targets for production of copper plate and gold bars, and coal (MPI, 2010 page 30). In the agricultural sector, modernization targets include increased use of dry season irrigated agriculture, for value-added processing and commodity export.

Quantitative targets have likewise been set for development of education, public health, and skill training, which are key components of the 'social sector.' The social sector (i.e. mainly health and education) is allocated 35% of the total of $15 billion USD of investments identified by the 7th Plan. (The total investment is 127 thousand billion Kip, or about 32% of GDP.)

Compared to these rather traditional emphases on economic and human development, SCP is less of an explicit priority. Comprehensive framework laws or a national action plan on 'SCP' do not exist. However, a number of national policy agenda items relevant to SCP can be identified. First, the NSEDP expresses support for establishing clean development and carbon credit mechanisms, as well as support for improved urban environmental quality (e.g. listing 25 towns to meet national environmental standards). Second, the Plan identifies a need for regulations (administrative laws) to be established to give implementing force to the Environment Law (Ministry of Planning and Investment (MPI), 2011, page 51). Third, the notion that economy is embedded within ecosystems which will undergo dangerous and undesired changes (e.g. floods, drought) – thus requiring ecosystem assessment, management and restoration - is on the Lao agenda, through strategic planning efforts such as the Lao National Adaptation Programme of Action to Climate Change (NAPA).

Both the NAPA and the NSEDP identify a need to halt shifting cultivation, to redirect farming systems, to provide secure land titles to farmers, and to invest in reforestation and forest restoration. The implementation of such policies is however complicated by people's capacity to resist or circumvent involuntary resettlement, as well as by government capacity. The latter has improved but is still regarded as inadequate in land management (National Land Management Authority, 2010).

2.2. Policies for Activity Domains

Overview: cross-cutting issues

The table below shows a number of Lao PDR policies, as well as policy gaps observers have argued exist, in a number of activity domains, beginning with cross-cutting agendas in Table 1.

What emerges from the table is an attempt to integrate environmental policy issues into the strategic planning of other sectors through approaches such as strategic environmental assessment (SEA). However, basic gaps remain with respect to compliance with Environment Law.

Basic cross-cutting sustainability issues are raised with respect to the GoL's ongoing efforts at land and forest management, with UNDP (2010a) urging pro-poor land reform. Observers have expressed concern about the official emphasis put on GDP, in terms of high numerical targets, as opposed to scrutinizing the quality of economic activity (e.g. foreign investment in natural resources) and the social implications of that investment (Glofcheski, n.d.).

Table: Cross-sectoral policy agendas in Lao PDR relevant to SCP

Level in SCP System (items in brackets refer to identified needs) *Items in italics are general examples*		
Social institutions & values (Systemic, cultural level)	**System of provision** (Sub-system level)	**Practice** (Sub-system and niche level)
Modernization & industrialization are needed to improve human development outcomes	New initiative around integrated environmental planning at provincial level (Interview 2); Decision to use strategic environmental assessment (SEA) to evaluate draft national Renewable Energy strategy; Forest conservation policy promoted as having benefits for soil and water quality (Interview 2) [Need to strengthen compliance with EIA process as required by Environment Law (Interview 2)] [Need pro-poor land reform] (UNDP 2010a) [Quality and sustainability of land development policies need to be reviewed (Glofcheski, n.d.)] *(e.g. mainstreaming environmental policy)*	Lao national climate change strategy involves inter-ministerial working groups (Interview 2) [Need to issue land titles to local communities, not just individuals] (UNDP 2010a) [Shift burden of proof about public impacts to developers of major projects using recoverable assurance bonds as mechanism (Costanza et al. 2011)] [Need for effective HR development & on-going education for government and civil society (Interview 2)

2.2.1. Food and Agriculture

Lao agriculture is dominated by smallholder systems. These consist of both relatively food secure lowland smallholders, some of whom may be able to grow a dry-season rice crop, and food insecure upland farmers, who may practice shifting cultivation, a practice which the Lao state has framed as unsustainable and has targeted for eradication.

Complicating this longstanding social divide, a considerable number of rural people may be vulnerable to the loss of capture fisheries resources as a result of hydropower and water storage development. For example, some 300,000 people in Laos are estimated to be vulnerable resource users under the Mekong River Commission's (MRC) so-called Definite Future Scenario. This scenario consists of projects expected to be complete by 2015, including 26 dams on Mekong tributaries, including several large schemes in central, northern, and southern Lao watersheds, plus upstream dam development on the Mekong (Lancang) in China.

That number increases to almost 700,000 people in Lao under a 'Foreseeable Future to 2030' scenario, with additional thirty tributary dams, many of which would be in Laos (Mekong River

Commission (MRC), 2010a, Table 37). Although this MRC study is optimistic about new livelihood opportunities in aquaculture and in irrigated farming, other analysts have cautioned that aquaculture requires capital investment and is unlikely to be a viable option for the most vulnerable (Costanza *et al.*, 2011). Meanwhile, policies favouring expansion of large-scale plantations (e.g. for rubber, eucalyptus, and other crops) in Lao create other complications.

With these complexities in mind, the UNDP has suggested a dual strategy of agricultural intensification for more secure farmers, and improving access to alternative employment for those who are not food self sufficient. The latter suggestion will be difficult to implement as it depends on viable opportunities. Trade-offs exist when moving to market-based livelihood strategies including increased wage labour.

2.2.2. Buildings and Construction

There is ample activity in Laos' building sector because of considerable population pressures. Overall population density is however still very low and urbanization is occurring at a much slower speed when compared to other Asian developing economies. Even the larger cities are still comparatively small but problems of air pollution, traffic congestion and waste management have been recognized by local authorities and the housing ministry. Investment in public transport infrastructure is low and buildings are a domain where significant policy gaps exist with respect to improving energy efficiency. Current priorities include building safety codes, as opposed to environmental performance. The low electricity tariff is regarded as an obstacle to greater emphasis on energy efficiency.

2.2.3. Mobility and Transport

Lao has approximately one million personal vehicles including motorbikes, which represents a very low per capita saturation of private transport vehicles . The country is, however, experiencing a rapid transition in mobility, especially in urban areas where there has been an upsurge in private motorcycles and motorcar ownership.

Most investment in transport has gone into roads with the GoL prioritizing regional roads over rural roads (Asian Development Bank, 2010). Investment in cross-border road construction can allow greater social mobility and market access for small holders, but also brings with it a range of public health and trafficking issues (Foran and Lebel, 2007; Asian Development Bank, 2010).

Development partners such as the ADB (which has funded more than 350 million USD of loans to the transport sector in Laos) advocate an environmental and social management (safeguards) approach. The Lao Ministry of Public Works and Transport has responded by generating an environmental and social operations manual which was being piloted as of 2010 (ADB, 2010).

Public transport

The country is in relatively early stages of public transport policy making, conducting various strategic planning studies with donor support. In Vientiane, transport planners have suggested that public transport can increase from 3.9% of all trips (2007) to 25% by 2018 and 40% by 2025 (Katahira

Engineers International, 2008). Planners have further suggested that the GHG emissions reduction from implementing bus rapid transit lines in Vientiane could link to emission offset mechanisms such as the CDM (Mitsubishi UFJ Morgan Stanley, 2011). However, planners admit that promoting increased use of public transport is challenging because it runs against modern consumerist values.

Air pollution related to transport is becoming a more important topic for public policy. Lao has made it illegal to import private vehicles more than five years old (statistics are not available). However, many vehicles which are technically illegal still enter the country, as they cost less. Regarding transport fuel prices, a trade-off exists between taxing fuel and monitoring fuel standards to promote mode switching and environmental sustainability, on the one hand, and exacerbating income poverty. Some planners believe the 10% biofuel substitution policy will moderate price increases (Interview 9).

2.2.4. Manufacturing and Consumer Goods

Mining

We include mining in this section because of its importance to Laos. The GoL is developing a new Minerals Law to provide a more structured, stage by stage process by which mining concessions are granted to large projects. The new legislation is intended to improve clarity for investors, and to support higher environmental performance standards and social development provisions (WEF, 2011).

Provisions for benefit sharing with immediately affected communities already exist. But the capacity of local communities to participate in informed negotiations needs to be strengthened. This capacity deficit applies not just to benefit sharing negotiations with mining companies, but to other forms of resource development such as hydropower and land concessions.

Cleaner production

A cleaner production project organized by UNIDO ran from 2005 to 2009 and involved almost twenty demonstration projects with a focus on textiles and food processing. The project noted an ‘obvious urgent need for productivity/product quality improvements’ in Lao but at the same time argued that most producers are motivated mainly by financial ‘bottom line’ considerations, rather than possibilities for reducing their environmental footprint (Ministry of Industry and Commerce, 2009, page 17).

A Cleaner Production office now exists under the Ministry of Industry and Commerce (MIC). An ongoing issue is that the domestic advisory services industry for ‘clean production’ is still small despite increased training of local professionals. The MIC report pointed to the important role customer requirements could play, expressed for example through demands for third-party environmental and social certification (2009, page 17).

2.2.5. Urban Development and Land Use

The Lao Land Law requires that Master Plans be created for 'urban' areas (generally with populations greater than 10,000). Such plans are typically at 1:20,000 or finer scale and specify either the current situation or future plans, subject to rules for permitted land uses, such as maximum building height and coefficients of land use. Master Plans are approved by different authorities depending on the size of the urban area. For example, the Prime Minister's Office is the approver of Master Plans for the five major cities of Vientiane, Luang Prabang, Pakse, Savannakhet, and Thakhek; the Ministry of Communications, Transport, Post and Construction (MCTPC) approves plans for the next tier down in size (Rabe *et al.*, 2007).

Planners work with spatial planning principles such as zoning to prohibit development in floodplains and key habitats, but encroachment is a problem. Placing development controls to protect sensitive areas in a context of rapid development (e.g. world heritage in Luang Prabang, wetlands in Vientiane) is a challenge.

Complicating the spatial planning process are familiar challenges such as staff capacities and resources (e.g. lack of digital mapping technology and related skills). In addition, the Government has established a number of new actors with responsibility for planning, such as Land Management Agencies and Urban Development Authorities. The Master Plan however has not been particularly strong as a planning instrument: plans may be inaccurate, they may be weakly enforced, or they are insufficiently used by the new actors (such as the National Land Management Agency) and other responsible government agencies (Rabe *et al.*, 2007, page 50).

2.2.6. Energy, water, waste

Energy

Energy policy in Lao contains important tensions and ambitions. A tension exists between the national commitment to developing large hydropower (for export and domestic supply along a centralized power system model) on the one hand and reality on the ground at the rural household level. This reality includes the lack of access to utility supplied electricity, self-provisioning of electricity using pico-hydropower, as well as NGO-mediated investment in household biogas digesters which provide modern cooking energy as well as fertilizer.

These small-scale systems have been overlooked by planners who believe that larger-scale power stations will inevitably dominate the system. In terms of ambition, a specialist we interviewed expressed concern that the biofuel development goal (to replace 10% of oil) may not be easy to achieve, given current low levels of refining capacity for sugar cane. Expansion of sugar cane, cassava, and other bioenergy crops could lead to encroachment of forest land.

Water

The UNDP has identified a need for increased allocation of public revenues and donor funding to provide safe water supplies. The required sums are considerable, for example, more than $200 million to improve supply systems to 72 poor districts; and $267 million to upgrade urban water

systems. But more than funding is needed. UNDP also suggests that reform is required of the state water utility (NamPapa), and that integrated water utilities need to be scaled out to more small towns. On the other hand, it states that communities need to be empowered to choose water delivery systems that they want, can afford, and can maintain (2010a, page 73). A variety of technologies are available. Here we see a clear parallel to the energy domain, in which both centralized and decentralized systems exist. Hybrid business models (e.g. publicly subsidized service delivery by entrepreneurs – 'public private partnerships') are considered important policy tools to sustain decentralized systems (UNDP, 2010a).

Waste and pollution

Water pollution from proposed mining operations poses other important challenges. The World Bank (2010, pages 18 &31) points to particular areas such as the Nam Ngum catchment where cumulative impacts can be expected from large copper and gold mining, along with hydropower and plantation development.

Laos' growing urban population translates into growing need for more effective waste management. At present only half of the municipal solid waste (MSW) in cities such as (World Heritage) Luang Prabang is collected. Collectors, which include a mix of private and state organizations, suffer from vehicle limitations and lack of public awareness. Private operators separate saleable waste (e.g. plastic bottles) out of unmixed waste streams but markets for such recycled materials appear to be thin and approximately only ten percent of household waste is recycled. Appropriate solutions include digesters (for non-industrial sewage treatment from institutions and households) and methane capture (for mixed waste in landfills).

3. STRENGTH OF EXISTING POLICIES AND POLICY CHALLENGES

At the beginning of this chapter, we noted that making stronger progress on human development requires that government revenues (e.g. from mining, hydropower, and other resource development) be managed so that they deliver to health, education, and other people-centred development outcomes.

One likely risk is that Laos could be afflicted by a 'resource curse' – a situation where wealth from the exploitation of national resources makes the rest of the economy less competitive, and may even be lost to the public through corruption (World Bank 2010). (Laos is ranked near the bottom in terms of perceptions of corruption (Asian Development Bank, 2011).

But this need not occur. The World Bank argues that:

> even though Lao PDR is rich in natural resources, it does not have to develop all its natural wealth to achieve the NSEDP goals and economic growth targets, including the 2020 goal of becoming a middle-income country (2010, page 5)

In other words, achieving sustainable development outcomes will require the capacity to reassess development priorities. It will also require increasing the transparency and effectiveness of government. The use of SCP as a conceptual framework may support the process of reassessing

where and how to invest more holistically in development, but any talk about the capacity to reassess or rebalance development goals is of course at heart a question of governance.

The challenges of governance are multi-layered. First, the national government needs to create sufficient incentive to businesses and individuals to participate in the SCP agenda. It will be important to give voice to domestic actors and to strengthen civil society to advance agendas which may support sustainable consumption and production. Existing Lao policies are essentially framed by a storyline that favours the benefits of rapid modernization but do not always sufficiently integrate rural livelihoods. The potential for green growth and related alternative policy narratives to influence decision makers depends on whether such storylines can inspire and mobilize actor networks in civil society, which can interact with the state over time. Still, some observers believe that rapid economic change since 2006 has triggered a relative expansion of freedom of expression to civil society and media (Porter and Shivakumar, 2011, page 160).

Meanwhile, at the whole-of-government scale, an ongoing need exists for effective public financial management (World Bank, 2010). Lao PDR has made notable progress in this regard through the intervention of development donors. For instance under the 'Revenue Management Arrangement' for Nam Theun 2, Government of Laos revenues from this project are meant to be spent on health, education, and rural roads. In addition, the World Bank and the ADB have also supported the Public Expenditure Management Strengthening Program, a technical assistance package aimed at reforming public expenditure systems in Laos (Porter and Shivakumar, 2011, pages 39-40). Success would mean that the Lao PDR would have processes such as budget execution reports and financial statements that could be audited as a matter of routine, not just for high profile projects such as Nam Theun 2.

For environmental policy integration (i.e. bringing an environmental agenda into other sectoral planning) a need exists for strategic environmental assessment and cumulative impact assessment tools. At the level of specific projects, a need exists to standardize the process by which major projects are developed through the life cycle from permits for feasibility study through to post-implementation monitoring (Foran *et al.*, 2010; World Bank, 2010).

4. CAPACITY BUILDING NEEDS ASSESSMENT

The workshop conducted in Vientiane (10 August 2011, with a number of specialists from government and non-government agencies) allowed us to identify a number of current gaps. These 'gaps' were defined as the difference between 'priority' and 'capacity' in each of five activity domains, as rated by workshop participants based on facilitated small group discussion. Water (i.e. basin and urban water) as a domain was not assessed during the workshop due to time limitations. We completed the gap analysis for water based on literature review and interviews.

According to workshop participants, the specific domains that have the largest capacity gap, relative to other activity domains are:

- buildings and construction – where **supply chains**, **innovation culture**, and **R&D funding** were identified;

- food and agriculture – where **knowledge** and **funding** were particularly identified as experiencing gaps in capacity relative to priority;
- consumer goods and manufacturing – where **knowledge** and **funding** were similarly identified as areas experiencing capacity gaps.

According to workshop participants and interviewees, the most important things that need to happen, ranked in (descending) order of priority, are as follows:

1. Increasing the flow of **funds which are effectively distributed** into productive activities;
2. **Improving supply chains**, that is, the ability of businesses and consumers to access intermediate and final products required for sustainable production and consumption. Participants also gave equal importance to **improved R&D funding** to create a national innovation culture.
3. **Translating existing policy frameworks** aimed at improving sustainability into action at the sectoral and regional (local) level.

Each of these points is discussed below, along with other dimensions of capacity. We also include our reflections based on desktop analysis.

4.1 Information and knowledge

Framing of SCP

SCP was seen as another agenda or discourse which the international community seeks to introduce to Laos. Some interviewees noted its similarity to other discourses such as sustainable development and mitigation and adaptation to climate change. This reaction raises the urgent question of what SCP perspectives are most appropriate to a diversifying, but still overwhelmingly rural society such as Lao. We would suggest that conceptualizations of SCP useful to Lao would need to:

First, challenge uncritical applications of mainstream economic development theory which assumes for example, that having people exit completely from subsistence agriculture is necessary and desirable. The Lao manufacturing sector (unlike the mining and energy sector) has been stagnating and is not regarded as competitive for reasons ranging from relatively high capital and labour costs, to low export quality for agribusiness, and low logistics performance (World Bank, 2010, pages 44-46).

Second, be more explicit about the need to sustain large-scale ecosystem services (as opposed to, say, only a focus on industrial ecology). The predominantly modern and technological focus of 'sustainable production and consumption' needs to be adapted to this context of strong resource dependency and vulnerability. One way to do so is to **provide much stronger policy support for decentralized energy and safe drinking water systems**, furthering contributions Lao-based innovators such as the Lao Institute for Renewable Energy have already made.

Following on both of the above points, maintaining a **focus on sustainable land management**, bearing in mind the natural need intensive nature of foreign investment, appears to be appropriate.

There is an **urgent need to issue individual and communal land titles** as well as a need to deliver **consistent standards of benefit sharing, compensation and livelihood restoration**. This requires stronger regulatory frameworks (Foran *et al.*, 2010; National Land Management Authority, 2010).

Next, a Lao perspective on SCP could include democratizing governance – that is, making agenda setting and decision making more inclusive and participatory. An **explicit emphasis on including more voices and protecting affected people** makes sense because national planning aspires to use mega-projects as vehicles of development, while at the same time the state's regulatory capacities are limited. Finally, ongoing knowledge-related issues include low public awareness, which was raised several times by interviewees, and the **importance of initiatives that target SMEs** (e.g. involved in unregulated gold mining).

4.2 Innovation and R&D

Laos' geographic position (e.g. hydrologically 'upstream' of Cambodia and Vietnam) and its natural resource intensive development strategy makes it worthwhile to study the complex relationships between development projects, and their impacts on food, energy, and water security (Bazilian *et al*., 2011).

Research is needed not only around ecosystems and technologies, but also in the domain of governance. For example, previous interventions have been made in the name of sustainability such as the use of safeguards by international lenders; the World Bank attached revenue management conditions to its Nam Theun 2 project. It is not always obvious in which way such interventions may have contributed to Lao society and economy (Foran *et al*., 2010b).

4.3 Institutions and Governance

Several key *policies* that would help advance SCP have already been mentioned in this chapter, and are restated here for convenience:

- provide much stronger support for decentralized energy and safe drinking water systems
- plan power systems according to rigorous cost, efficiency, and sustainability criteria (Porter and Shivakumar, 2011)
- issue individual and communal land titles, informed by principles of sustainable land management
- define consistent standards of benefit sharing, compensation and livelihood restoration
- create initiatives that target SMEs, particularly those using hazardous materials
- in major project decision making, provide explicit emphasis on including more voices and protecting affected people.

High level policy *frameworks* aimed at improving sustainability are available in relative abundance across a number of policy and issue domains. The Lao National Policy on Sustainable Hydropower Development is one example. However, the study team heard frequent comment that what is needed is to translate such frameworks into actions at the sectoral and regional (local) level. In

modern legal systems, the implementation of a high-level (first-order) policy statement requires more specific administrative law, which in Laos takes the form of an implementing decree. Developing such specific legislation can be time consuming, but at least for some domains such as renewable energy, the Government has allowed academic and NGO experts to provide specific input.

In addition, a number of rule or incentive systems (i.e. *institutions*) that would accelerate the development of SCP processes in the economy. Those that appear immediately relevant to Lao include:

- shifting the burden of proof about public impacts to developers of major projects using recoverable assurance bonds as mechanism (Costanza *et al*., 2011)
- technical guidelines and standards for best practices such as *minimum* energy performance standards (MEPS) for buildings and appliances; provide incentives to improve building and appliance efficiency using a rating system; electric appliance standards could be harmonized to Thai standards (Foran *et al*., 2010a)
- third party certification (voluntary regulation) schemes for mining, hydropower, and forest plantations, e.g. the Hydropower Sustainability Assessment Protocol (International Hydropower Association, 2011)
- for commercial and government buildings, charge higher and progressive tariffs for electricity and water.

The reader should review recommendations made in the Cambodia chapter of this report for additional recommendations (such as disseminating best practice guidelines in fisheries and agriculture).

In addition, it is important to strengthen the rule of law and regulatory capacity in monitoring and enforcement.

4.4 Funding (Investment and Finance for SCP)

Increasing the flow of **funds which are effectively distributed** into productive activities (e.g., delivering rural energy or safe drinking water services) should be given high priority.

This needs to be combined with substantial investment in human resources development, to improve technical and administrative capacity, both in terms of quality and number of staff.

4.5 Supply chain management

Supply chains, that is, the ability of businesses and consumers to access intermediate and final products required for sustainable production and consumption need improvement. One relevant example is very small (pico) hydropower. Turbines (e.g. Chinese manufactured) are already widely used; one estimate is 60,000 across the country (Smits and Bush, 2010). The question is how to

improve the supply chain to improve safety, design, and quality. No government labelling scheme exists. Retailers already stock a range of turbines. Customers need support on how to choose, install, and maintain such systems safely.

However, bearing in mind the importance of large mining and hydropower, and agribusiness projects to the economy, this point needs to be slightly reconceptualized. For example, project developers need capacity to manage environmental and social dimensions in parallel with managing construction or operations.

5. RECOMMENDATIONS FOR CAPACITY STRENGTHENING

The development *context* in Lao is one of tension between potential national benefits from natural resource development (mining, hydropower, agri-business revenues) versus threats to smallholder sustainability. One of the greatest development *challenges* the country faces is how to convert potential financial wealth from natural resource investment projects into sustainable human development outcomes. Acknowledging this context and the ongoing development challenge that it creates should be central to developing an SCP policy agenda that involves Lao.

The challenge raises a number of issues beginning with fundamental models of 'development,' especially whether vision for the future of smallholder farmers is adequate; the adequacy of criteria used to make decisions about industrial projects (project design, selection and approval); integrity and accountability in applying those criteria; and compliance during implementation. These issues are both institutional (they demand adequate processes and policies) and relate to human capacities.

On the basis of the assessment the following activities have been identified priorities for policy support on SCP in Lao.

Investment and Finance

An order-of-magnitude stronger policy support for decentralized, small scale energy and safe drinking water systems appears appropriate for Lao (see Energy and Water above). The private sector believes that it can administer and deliver such services more efficiently than government agencies. However the major donors traditionally fund government agencies. Another issue is that the small scale of these projects appears to have rendered them less visible to large donors and government agencies (Smits and Bush, 2010). Introducing government to hybrid business models (e.g. subsidized service delivery by entrepreneurs; 'public private partnerships') are important policy tools to sustain decentralized systems. For example, one preferred model is to have the public sector invest 100% of the capital cost, with operations and maintenance costs paid for by the users. This means that relatively poor users pay for energy or water services and not for the infrastructure.

Integrating SCP into government policy agendas

State promotion of SCP work is likely to fall to the Ministry of Natural Resources and Environment (MONRE). MONRE is a new ministry which has 16 departments including Forestry, Geology, the

National Land Management Agency, the Environment Department (responsible for climate change), and the EIA Department. EIA is one of the main policy instruments for regulating development projects. It needs to be seen which Department will be responsible for green growth. Departments within MONRE have insufficient capacity to manage existing mandates (such as the EIA process), let alone administer a separate initiative on 'SCP'. Nonetheless, there is interest in government for engaging with regional green growth initiatives, such as any organized by ASEAN or through the ADB-GMS program. Such international engagement would enhance the stature of SCP work in Laos, as well as link to additional resources. Inter-ministerial working groups, previously used for formulating climate change mitigation and adaptation policy, appear to be useful. But basic organizational and institutional issues related to MONRE's new structure and its ability to moderate the GoL's focus on rapid economic development (led by Ministry of Planning and Investment) remain.

Education and Training

It is clear that a variety of needs exist, ranging from specific technical needs to more general ones around conceptualization of development and green growth. The latter we can consider as 'social learning'.

A general suggestion is to provide a series of short continuing education courses with general content as well as content tailored to specific sectoral needs, organized under a single curriculum. The challenge is how to reach actors such as market vendors and rural people (e.g. gold miners) in order to intervene effectively in their practices.

Another suggestion would be that Lao create a multi-stakeholder platform (a series of conferences and workshops) that would raise the profile of green growth/SCP while providing social learning opportunities. Although difficult to meet all interests and expectations, such a platform would acknowledge the reality that responsibility for SCP is distributed across multiple sectors and scales of development. It is important that any capacity strengthening and technical support considers the specific constraints under which the Lao government has to operate. It needs to be tested if regional collaboration and information exchange could be a useful tool for enhancing human capacity in the Lao government sector.

Regulations and Laws

Limited labelling and standards regimes exist in Lao for appliances and buildings. Imported electrical devices are one obvious area where opportunities to review existing standards and labelling (e.g. for devices imported from Thailand or China) could lead to improvements in efficiency and safety.

Weaknesses in state regulation mean that voluntary regulatory schemes (including transnational codes of conduct, sector-specific sustainability principles) have a role to play in improving sustainability of production and consumption outcomes.

Recommendations

1. Reconceptualize SCP for Laos, identifying models, techniques, and indicators appropriate to Laos' natural resource intensive development context, paying particular attention to tensions between the needs of small farmers, on the one hand, and mining, hydropower, and agri-business concessions on the other;
2. Raise the profile of SCP through multi-stakeholder dialogue platforms;
3. Conduct an independent study on how to strengthen delivery of decentralized energy and water services. The study could focus on evaluating a range of public-private partnership models;
4. Building and appliance energy standards and labelling – conduct a study to explore most cost effective options to institutionalize;
5. Strengthen capacity of officials at provincial and local government to engage in priority areas.

Malaysia

1. NATIONAL CONTEXT

General Indicators		SCP Indicators	
	Population (2010) and population density [1] 28.4 million and 86 people per km^2		**Per capita material use and material intensity (2005)** [4] 19.1 tonnes/ 4.1 kg per US$
	GDP (PPP, US$ 2010) [1] $414.4bn		**Per capita energy use and energy intensity (2005)** [4] 101.24 GJ/ 22.82 MJ per US$
	GDP per capita (PPP, US$), 2010 [1] $14,591		**Per capita water use (2007)** [5] 488.3 m^3
	GDP per capita, constant 2000 US$ (2010) [1] $5,174		**Per capita GHG emissions (2005)** [6] 7.6 tonnes
	Gini coefficient (2009) [2] 37.9		**GHG emissions intensity (2005)** [6] 0.53 kg per US$
HDI	**HDI Rank (2010)** [3] 57	CO_2	**Per capita CO_2 footprint (2008)** [7] 6.45 tonnes
	Agricultural land per capita (2008) [1] 0.28 ha		**Number of middle class consumers (2010)** [8] 89%
	Forest cover (2010) [1] 62.3%		**Number of people with income <$2/day (PPP, US$) (2010)** [8] 7%

Sources: [1] World Bank (2011), [2] UNDP (2009), [3] UNDP (2010), [4] CSIRO and UNEP (2011), [5] FAO (2010); [6] World Bank (2011); [7] Peters *et al.* (2011); [8] ADB (2010).

Since its independence in 1957, Malaysia has successfully transformed itself from a low-income country to an upper middle-income nation. Today, Malaysia has a strong record in economic growth and poverty reduction and aims to be among the high-income countries and developed nations by 2020.

Malaysia has undergone a major transformation in economic activity and successfully moved the economy up the value chain. Starting in the 1970s, Malaysia shifted economic activity from dependence on the primary sector and diversified its economy into manufacturing and services. In recent years, manufacturing has been the fastest growing sector of the economy and the country has become a major exporter of consumer and industrial electronic products (NEAC, 2010). The services sector has become the largest contributor to Malaysia's GDP, and tourism is the largest component of this. In 2010, services accounted for 57% of GDP, manufacturing 28% and agriculture only 7 % (UN, 2011).

Over the past decade, Malaysia has experienced a rapid rise in urbanization, with population in urban areas growing at a rate of 2.2% compared with rural population growth rates of 1.6%. In Peninsular Malaysia, around 67% of the total population live in urban areas (EPU, 2010). Economic growth and increased household income have led to an overall increase in consumption.

Malaysia is on track to achieving seven of the Millennium Development Goals (MDGs). Most remarkably, poverty has been substantially reduced. The incidence of overall poverty fell from 5.7% in 2004 to 3.8% in 2009 (EPU, 2010). However, at the regional level there are pockets of inequality, particularly between those living in rural, remote areas or urban slums and those in the better-off urban locations. Income inequality remains high and has not been significantly reduced over the past 20 years (UN, 2011). Recent household income surveys indicate that income growth has only been strong for the top 20% of Malaysian income earners since 1990 while the bottom 40% have experienced very slow growth in average income (NEAC, 2010).

Malaysia is one of the most resource-rich countries in the world (Vincent, 1997). The country is well endowed with conventional energy resources, such as oil and gas, as well as renewable energy sources, including hydro, biomass and solar energy (APEC, 2011). Malaysia is also one of the top 17 mega-biologically diverse countries in the world, with rainforest covering 60% of the country's landmass (NEAC, 2010). However, rapid industrial growth has highlighted some environmental issues related to air, water and mining that may need to be managed. Air pollution is worsening due to private car use and industrial emissions and water is being polluted from raw sewage. Deforestation is an emerging problem, caused by large-scale land development, mining, dam construction and logging (Sumiani *et al*., 2007).

2. REVIEW OF EXISTING POLICIES

2.1 National framework policies and overarching SCP and RE policies

To date, Malaysia does not have a national policy or action plan for SCP[7]. Instead, SCP-related objectives have been mainstreamed into the country's national development plans, including the 10th Malaysia Plan and the New Economic Model for Malaysia.

10th Malaysia Plan 2011-2015

The *10th Malaysia Plan 2011-2015* was developed by the Economic Planning Unit (EPU) of the Prime Minister's Office which is the main government body responsible for the preparation and evaluation of Malaysia's socioeconomic development plans. EPU is also the focal point for SCP in Malaysia. The *10th Malaysia Plan* has a strong focus on economic growth and on improving the quality of life of its citizens. Its primary objective is to transform the country into a high-income nation by 2020. This would require an average annual GDP growth of 6% during the plan's life period, as well as double-digit growth in private investment (EPU. 2010).

The *10th Malaysia Plan* does not directly address SCP but it does emphasize the need to protect Malaysia's environment. It states that '*the Government will be guided by sustainable production practices to decouple economic growth from environmental degradation*' (EPU 2010, page 297) as a high-level objective. Several progressive policies have been introduced that set the national agenda for environmental protection and conservation. A key focus of the *10th Malaysia Plan* is to operationalize these plans during the plan period.

[7] The Malaysian government is currently working with the European Union as part of the Switch Asia National Regional Policy Support Component to develop a National SCP Action Plan. Implementation of this project will commence in 2012.

New Economic Model for Malaysia

The *New Economic Model* (NEM) presents an overall framework for transforming Malaysia from a middle income to an advanced nation by 2020. It was developed by the National Economic Advisory Council (NEAC) in 2010. The *NEM* outlines eight Strategic Reform Initiatives (SRIs) that are thought to be fundamental for achieving the model. One of these eight SRIs addresses environmental concerns. Its key objective is to preserve natural resources by applying appropriate pricing, regulatory and strategic policies to achieve improvements in resource efficiency.

The NEM also highlights Malaysia's leadership role in green technology and for becoming a strategic green hub in high value green industries and services. Within its proposed policy framework, the following actions are needed to achieve environmental sustainability (NEAC 2010):

a) Internalising externalities

b) Promoting energy efficiency and green growth

c) Favouring sustainable agriculture

d) Striving for energy resource sustainability.

2.2 Policies for activity domains of high significance to SCP and RE

2.2.1 Food and agriculture

The *NEM* seeks to achieve sustainable agriculture, which will be enhanced through the development of productive, competitive and efficient agricultural techniques and processes (NEAC, 2010). This would be based on the production of high-yield crops to raise farm income whilst ensuring the integrity of soil fertility, biodiversity, and water and air quality.

The *National Agriculture Policy III* (1998-2010) launched in 1998 to provide a framework for agricultural development contains the overarching goal of income maximization through optimal utilization of the sector's resources. The specific objectives of this policy include (i) enhancing food security, (ii) increasing productivity and competitiveness, and (iii) conserving and utilizing natural resources on a sustainable basis (Ngah, 2010).

Agriculture has been identified as one of twelve national key economic areas in the *10th Malaysia Plan*. A special focus has been given to high value agriculture activities, including swiftlet farming, aquaculture, seaweed, sago, ornamental fish, organic fruits and vegetables, and floriculture. While these high value agricultural activities contributed about 1% to GDP in 2009, they are targeted to double their contribution to GDP by 2015.

The *10th Malaysia Plan* also outlines food security objectives. Food security will be based on strategies to ensure the sufficient supply of rice, the main staple crop, and to maintain the rice stockpile at a level of around 290 thousand tonnes. Malaysia wishes to establish long-term contract

agreements for rice imports, and to increase the productivity of existing granary and non-granary areas through upgrading of infrastructure. A secure supply of rice should be achieved without growth of the current paddy cultivation area (EPU, 2010).

2.2.2 Buildings and construction

In many Asian countries building and construction are essential for sustainability outcomes because of their large impact on energy and water use and emissions. In Malaysia, commercial and residential buildings account for about 13% of the country's total energy consumption but 48% of electricity consumption (Al-Mofleh *et al*., 2009). At present, the Malaysian government is leading initiatives for the construction of state-of-the-art energy efficient and green buildings. Existing building stock is audited and retrofitted to achieve the new performance standards. In addition, the *Malaysia Green Building Confederation (MGBC)* was launched in 2009 with a vision to be the leader in green buildings in Southeast Asia. Malaysia has established a *Green Building Index (GBI)* supplying a voluntary rating tool that provides a comprehensive framework for building assessment (Chua and Oh, 2011). The GBI ranks commercial and residential buildings according to six criteria, which are (i) energy efficiency, (ii) indoor environmental quality, (iii) sustainable site planning, (iv) materials and resources, (v) water efficiency and (vi) innovation (APEC, 2011).

According to the *10th Malaysia Plan*, the government will strengthen efforts to deliver environmentally sustainable housing. For instance, all new government buildings will be designed to meet green standards. Furthermore, the construction of environmentally friendly townships and neighbourhoods will be encouraged through the introduction of green guidelines and a green rating system (EPU, 2010). The Malaysian government is also reviewing tax incentives for buildings that incorporate green design elements such as solar panels for heating, rainwater harvesting facilities and water conservation features.

2.2.3 Mobility and transport

An increasing number of vehicles have caused a deterioration of air quality, particularly in major cities especially in Kuala Lumpur. The Malaysian government recognizes the importance of a comprehensive and efficient public transport system. The transport sector is the second largest energy user in the economy with the share of 36.9% of the final energy use in 2008 (APEC, 2011). Improving urban public transport has been chosen as one of six National Key Result Areas (NKRAs), which are national policy priorities. In 2010, the government allocated approximately RM2.8 billion (in US$) to significantly increase public transport networks in three urban areas; Kuala Lumpur, Pulau Pinang and Johor Bahru (EPU 2010). In addition, the *National Automotive Policy* (2006) contains objectives for making Malaysia a regional automotive hub for green cars and technologies, as well as attracting more local and international companies to manufacture and assemble green cars (Chua and Oh, 2011).

According to the *10th Malaysia Plan*, major public transport initiatives are planned for the Greater Kuala Lumpur urban area. The plan outlines the expansion of the Kuala Lumpur Light Rail Transit coverage and the implementation of a high capacity mass rapid transit system as major investment priorities. In addition, the bus network and covered walkways will be extended to provide better

connectivity for commuters and pedestrians (EPU, 2010). The *10th Malaysia Plan* has also set the target to increase the public transport modal share in Greater Kuala Lumpur from 12% in 2009 to 30% in 2015 (EPU, 2010).

2.2.4 Manufacturing and consumer goods

The growth in manufacturing has been the driving force in Malaysia's transition to middle-income status. However, the performance of the manufacturing sector has stalled in recent years and it seems at odds with the objective of moving up on the value chain (NEAC, 2010). To enhance the future competitiveness of Malaysia's industry, the Malaysian government wants the country to embrace a leadership role in green technology and become a strategic niche player in high value green industries and services (NEAC, 2010). The *Green Technology Policy 2010* is seen as being the cornerstone of green development in Malaysia. It promotes low carbon technologies and sustainable development to conserve natural resources and the environment (Chua and Oh, 2011). One of the main aims of the policy is to provide a more positive environment for green technology development through the introduction of innovative economic instruments. Green training and education packages will also be developed.

In the 2010 budget, the Malaysian government set aside 1.5 billion RM (approx. US$480 million) for the establishment of the *Green Technology Financing Scheme* (GTFS). GTFS is a special financing scheme introduced by the government to support the development of green technology in Malaysia. It specifically targets four sectors: (i) energy, (ii) water and waste management, (iii) buildings and (iv) transport. Once a company has been assessed and receives a green certificate through the scheme, the government will provide a guarantee of 60% of the financing amount of new investments with only the remaining 40% financing risk to be borne by the participating financial institution. So far, take-up of the scheme has been low because banks have been hesitant to finance innovative projects and technologies. Banks also often don't have the capacity to assess these innovative applications.

As another major project, the Malaysian government is currently in the process of implementing green procurement across all government agencies. The expansion of eco-labelling schemes for easier identification by consumers is also being developed to enable middle-call consumers to favour environmentally responsible consumer decisions.

2.2.5 Urban development and land use

The Malaysian government recognizes the need to manage growth in urban areas. 'Building world-class vibrant and liveable cities' has been recognized as a major objective in the *10th Malaysia Plan* (EPU, 2010, page 250). The government encourages compact urban development to accommodate the ever growing urban population. According to the plan, compact cities will be achieved through various policy mechanisms, including zoning, urban growth boundaries, growth control regulations, urban renewal efforts and other development incentives (EPU, 2010). Urban sustainability and minimizing the ecological footprint of cities are seen as an important challenge that Malaysian cities are faced with.

Malaysia's *National Urbanisation Policy* (2006) is the basic framework for urban development in Malaysia. Key objectives with SCP-relevance include (i) developing a high-capacity public transport system, (ii) conserving environmentally sensitive and major agricultural areas, (iii) implementing sustainable solid waste and toxic management systems, (iv) providing sufficient and affordable housing, and (v) utilizing environmentally friendly development to improve the urban quality of life (Government of Malaysia, 2006).

2.2.6 Energy, water, waste

Energy

Malaysia's electricity demand is expected to reach 23 GW by 2030, which is a significant increase from 14 GW in 2008 (Chua and Oh, 2011). Around 93% of Malaysia's energy consumption is dependent on fossil fuels, including natural gas, coal and oil (Shuit *et al*., 2009). The key Malaysian government ministries involved in renewable energy and energy efficiency improvement are the EPU and the Ministry of Energy, Green Technology and Water (MEGTW). While the EPU provides the general policy direction, the MEGTW is responsible for the implementation of national policies relating to renewable energy and energy efficiency.

The *10th Malaysia Plan* sets a renewable energy target of 985 MW by 2015, which would mean that renewable energy would contribute 5.5% to Malaysia' total electricity generation (EPU, 2010). Several policy measures have been initiated to achieve this target, including (i) the introduction of a 1% Feed-in Tariff, and (ii) the establishment of a Renewable Energy Fund to support the development of renewable energy.

The *National Energy Policy* was formulated in 1979 to include broad guidelines about long-term energy objectives and strategies (APEC, 2011). It addresses Malaysia's energy issues, including the sufficient supply of safe and economical energy, the use of efficient energy, and environmental protection in the process of consuming and producing energy (NEAC, 2010).

The Malaysian government is currently in the final stages of developing the *National Energy Efficiency Master Plan (NEEMP)*. This plan is going to be a holistic implementation roadmap to drive energy efficiency measures across sectors. It has the target to achieve cumulative energy savings of 4,000 kilotonnes of oil equivalent (i.e. 167 PJ) by 2015. Compared to a business-as-usual scenario, the plan also seeks to lower electricity consumption by 10% by 2020 (Yob *et al*., 2011). A large number of initiatives will be implemented to drive energy efficiency efforts in Malaysia. These include:

- Phasing out incandescent light bulbs by 2014
- Increasing energy performance labelling to ten electrical appliances
- Introducing guidelines for green townships and rating systems
- Introducing Minimum Energy Performance Standards for selected appliances
- Revising the building by-laws to integrate renewable energy systems and energy saving features in buildings

- Increasing the use of thermal insulation for roofs in air conditioned buildings

The MEGTW was created in 2009 and has been very active in developing new policies and regulations to drive the promotion of energy efficiency and renewable energy in Malaysia. Some important pieces of legislation currently being developed include (i) the Energy Efficiency Act; (ii) the Low Carbon Green Growth Act; and (iii) the Low Carbon Cities Framework.

Water

Despite the abundance of water resources in Malaysia, shortages occur in some states due to uneven distribution and demand, as well as seasonal variations (UNDP, 2005). At the same time, water demand is increasing due to a growing population and economy. In 2005, the annual aggregate domestic, industrial and irrigation demand was estimated at about 11 billion m^3. This demand is projected to increase to about 17 billion m^3 by 2050 (Government of Malaysia, 2008).Therefore, the sustainability of the country's water resources is becoming an increasingly important issue. The highest demand for water comes from the agricultural sector for irrigation purposes.

Malaysia has adopted *Integrated Water Resources Management (IWRM)* as an innovative approach to managing the country's water resources. The IWRM approach is believed to provide for better cross-sector coordination while also reducing inefficiencies in the management of water resources. The *10th Malaysia Plan* contains several objectives for managing the country's water resources. These include (i) the development of a long-term strategy for water resource management to achieve water security, (ii) the protection of rivers from pollution, and (iii) the management of water endowment and supply. A *National Water Resources Policy (NWRP)* is currently being developed by the Ministry of Natural Resources and Environment. It will outline measures to ensure the efficient and effective management of water resources.

Waste

The rate of waste generation in Malaysia is increasing rapidly due to the development of urban areas, increases in per-capita income and changes in lifestyles and consumption patterns. In 2006, 19,100 tonnes of municipal solid waste were generated in Peninsular Malaysia on a daily basis (Periathamby *et al*., 2009). This is estimated to increase to more than 30,000 tonnes by 2020 (MHLG, 2005). Landfill is currently the only method for the disposal of municipal solid waste in Malaysia. Most of the landfill sites are open dumping areas posing serious environmental and social threats (Manaf *et al*., 2009). Furthermore, uncontrolled dumping of waste in open spaces and watercourses are widespread problems that further exacerbate environmental and human health impacts.

The *National Solid Waste Management Department* is a regulatory body that was established in 2003 within the Federal Government to develop policy and undertake planning and management of solid waste in the country. It has developed fiscal incentives for the promotion of waste reduction and has employed a combination of statutory control and voluntary measures to increase resource and energy recovery from waste (MHLG, 2005).

The *National Strategic Plan for Solid Waste Management* was implemented in 2005. It forms the basis for solid waste policy and practice in Peninsular Malaysia until 2020. The plan emphasizes the importance of waste reduction at the source of production. It has set a waste reduction and recovery target of 17% by 2020. Recycling targets for specific waste streams to be achieved by 2020 have also been determined (e.g. 30% for paper and board, 20% for plastic, 50% for glass and 75% for metals) (MHLG, 2005).

The *Solid Waste and Public Cleansing Management Act* was adopted in 2007 to comprehensively deal with all aspects of solid waste management. It introduced Malaysia's first take-back and deposit-refund system and also focuses on the 3Rs (reduce, reuse, recycle) principle (Periathamby *et al.*, 2009). In addition, Malaysia's *National Policy on Solid Waste Management* was developed in 2008. It emphasizes the need to create a sustainable solid waste management system that focuses on environmental conservation. Priority is given to waste minimization and recovering resources.

In the *10th Malaysia Plan*, the government is placing an increased emphasis on sustainable waste management. Waste is acknowledged as a resource that should be recycled and reused, for example through waste-to-energy initiatives. A deposit refund scheme and a take back system are also planned to be implemented during the five-year planning period (EPU, 2010).

3. STRENGTH OF EXISTING POLICIES AND POLICY CHALLENGES

SCP-related objectives have successfully been integrated into Malaysia's national development plans such as the *10th Malaysia Plan* and the *New Economic Model* for Malaysia. At the same time, the Malaysian government has developed a large number of sector-specific policy instruments, including economic incentives, to promote SCP. Overall, the regulatory framework appears to be fairly strong and comprehensive, and institutional development is reasonably mature.

However, several policy challenges still hinder the effective and efficient implementation of SCP policies in Malaysia. For instance, better horizontal integration of environmental policies is needed to minimize contradictions between environmental and sectoral policies (Hezri and Hasan, 2006). At the same time, interagency coordination and communication needs to be strengthened to ensure broad-based support for SCP strategies and policies. In addition, Malaysia has relatively low energy prices due to fuel subsidies, which does not promote the conservative use of resources. Finally, while the general environmental knowledge amongst Malaysians has been slowly rising in recent years, the awareness and understanding of the SCP concept is very low, both in the private and public sectors.

Malaysia has been chosen as one of four target countries under the EU SWITCH-Asia programme, and activities to strengthen policy support and to raise the government's capacity for SCP policies are being carried out in collaboration between the Malaysian government and the EU.

Maldives

1. NATIONAL CONTEXT

General Indicators		SCP Indicators	
	Population (2010) and population density [1] 0.3 million and 1053 people per km^2		**Per capita material use and material intensity (2005)** [4] 8.5 tonnes/ 3.2 kg per US$
	GDP (PPP, US$ 2010) [1] $1.8 bn		**Per capita energy use and energy intensity (2005)** [4] N/A, N/A
	GDP per capita (PPP, US$), 2010 [1] $5,683		**Per capita water use (2009)** [5] 18.9 m^3
	GDP per capita, constant 2000 US$ (2010) [1] $3,395		**Per capita CO_2 emissions (2005)** [6] 0.9 tonnes
	Gini coefficient (2009) [2] N/A		**CO_2 emissions intensity (2005)** [6] 2.93 kg per US$
HDI	**HDI Rank (2010)** [3] 107	CO_2	**Per capita CO_2 footprint (2008)** [7] N/A
	Agricultural land per capita (2008) [1] 0.03 ha		**Number of middle class consumers (2010)** [8] N/A
	Forest cover (2010) [1] 3.3%		**Number of people with income <$2/day (PPP, US$) (2010)** [8] N/A

Sources: [1] World Bank (2011), [2] UNDP (2009), [3] UNDP (2010), [4] CSIRO and UNEP (2011), [5] FAO (2010); [6] World Bank (2011); [7] Peters *et al.* (2011); [8] ADB (2010).

The Maldives is a nation of over 1,100 islands spread out over a vast area in the Indian Ocean. Around 200 of the islands are inhabited, but many of them have fewer than 200 residents. About 40% of the population lives in urban areas and around one third in the capital city of Malé. The overall size of the population is fairly stable, partly due to emigration, but urbanization is progressing at a rate of 4.2% annually (CIA, 2012).

The country was for many years a sultanate, first under Dutch and later under British protection. It only became a republic in 1968, three years after its independence. In 2008, the Maldives adopted a new constitution and held its first elections under a multi-party multi-candidate system.

The Maldivian economy depends to a high degree on tourism, which accounts for 28% of GDP. Fishing is also an important economic sector, employing around 11% of the workforce, but has faced a downturn in recent years. The country has few natural resources, limited arable land and vulnerable water resources. It is highly dependent on imports for its food supply, making it vulnerable to price fluctuations in global food markets. It also imports practically all of its energy, mainly in the form of petroleum products. Its main export commodity is fish.

The Maldives suffers from high unemployment, especially among youth and women. Other development challenges include: child malnutrition, insecure access to safe drinking water, drug abuse, and growing income disparities.

The island nation has very rich biodiversity, especially in its extensive coral reefs. However, these ecosystems are threatened by coral bleaching, tourism related construction works, and inappropriate fishing methods. The islands are also very vulnerable to climate change and sea level rise; 80% of the land area is less than one metre above sea level. Other significant environmental issues include depletion of freshwater aquifers, waste management, and air pollution (ADB, 2007).

The Maldives has set a unique national target of becoming carbon neutral by the year 2020. Given the existing power mix and transportation infrastructure, this is a very ambitious and challenging target. Another unique point is that the country's latest revision of the constitution in 2008 added a clause that identifies protection of the environment as a fundamental right of the people. There seems to be a high general awareness in the Maldives that natural resources are limited and cannot be taken for granted. This is probably the result of being a country with very small land area and under constant threat of natural disasters.

2. REVIEW OF EXISTING POLICIES

2.1 National framework policies and overarching SCP and RE policies

Environmental Protection and Preservation Act (Law No. 4/93)

This law establishes the basic principles and rules of environmental protection in the Maldives. It identifies the ministry responsible for safeguarding the environment, and the responsibilities and authorities of this ministry. In the current government structure, these duties fall under the Ministry of Housing and Environment.

National Strategy on Sustainable Development (2009)

This strategy was developed by the ministry in charge of environmental protection, with support from UNEP. It covers seven areas crucial to both development and environment: climate adaptation, coral reef protection, energy, transportation, food, health, and employment and social security. For each of these areas it sets a number of concrete targets, lists potential policies and measures and proposes a set of indicators for monitoring progress. Several of these areas contain elements of SCP and RE, especially the sections on energy, transportation and food.

National Framework for Development, 2009-2013

This five year national development plan is known as 'Aneh Dhivehi Raajje', meaning the other Maldives. It is a comprehensive document centred on five 'pledges' (transport, living costs, housing, health, and drug abuse) but also covering extensively a wide range of issues pertaining mainly to governance, social justice, and economic development.

Third National Environmental Action Plan, 2009-2013

This plan is intended as the basis for environmental budgeting and performance evaluation. It covers six strategic areas: climate and disaster resilience, carbon neutrality, ecosystems and biodiversity,

health, safe water, and environmental stewardship. Annual reviews are conducted and submitted to the parliament as part of the budget process.

2.2 Policies for activity domains of high significance to SCP and RE

This review is based mainly on the National Framework for Development, the Third National Environmental Action Plan, and the National Strategy on Sustainable Development. In addition, the National Assessment Report of 2010 provided valuable information on policy implementation and related challenges.

2.2.1 Food and agriculture

Agriculture is the main source of livelihood for a significant proportion of the population. However, agricultural output is limited and the country depends to a high degree on food imports. This makes the country very vulnerable to fluctuations in world market prices for agricultural commodities. Fishing is also an important source of livelihood and fish is the major source of protein for Maldivians. However, food access is a challenge and child malnutrition remains high; a survey in 2004 found that 27 per cent of children under the age of five were underweight. Food security is therefore a key priority of the government.

The limited availability of arable land severely restricts the expansion of the agricultural sector. However, the sector is also facing other obstacles, including a lack of incentives for farmers and a shortage of labour. Many people practise subsistence farming, but commercial farming is relatively undeveloped. The reasons behind this are many: undeveloped and unreliable transportation infrastructure, lack of storage facilities, spatially dispersed markets, and difficulties in accessing finance. Agricultural research is also relatively weak and the extension systems are unable to meet the needs of farmers and entrepreneurs.

The government is trying to increase agricultural output and access to food. Measures undertaken include: expansion of agricultural land, establishment of food storage facilities, and various kinds of support to farmers. In addition, efforts are being made to reach preferential trade agreements for essential food items.

Fisheries were prosperous in the past and many fishermen invested in large vessels. However, in the last few years catches have decreased, and it has become apparent that current fishing technologies are not fully appropriate. Reef fishing, especially, has become a problem since it threatens biodiversity in coral reef ecosystems. Tuna fisheries are also facing difficulties with declining catches. Diversification of targeted species seems to be needed.

Both agriculture and fisheries can be negatively affected by climate change, and the government has initiated studies on how to climate-proof these two important sectors, for example by introducing improved seeds and plant varieties.

2.2.2 Buildings and construction

The construction sector has grown considerably over the past decade, both due to increasing demand for housing and because of the expanding tourism sector. The reconstruction work after the

disastrous tsunami in 2004 gave an extra boost to the industry. Due to the limited availability of natural resources and high transportation costs, building materials are generally expensive. Shortage of land also contributes to high costs of housing, especially in Malé. The sector is still not well regulated and monitored. Building codes have been established relatively recently and workable construction standards are still to be implemented.

2.2.3 Mobility and transport

Ninety-nine per cent of the Maldives is ocean but to date there is no timetable-based public transportation network between the islands. People residing in the islands typically do not have affordable means of transport, even to neighbouring islands. For the tourism industry there is a well-developed and expanding network for domestic air transport. A new international airport was opened in 2008 in the southern part of the country; this is expected to reduce congestion in Malé.

In order to make the sea transport system more convenient and efficient the government is trying to establish a scheduled ferry system. It is also planning to develop direct linkages among islands so that passengers and goods do not always have to go via Malé.

Increasing land transport has become a concern because of road safety and air pollution. The government is therefore trying to make cities and roads safer and more pleasant for pedestrians and cyclists. It is also reviewing the system for driver education, and running awareness campaigns on road safety. To further reduce air pollution the government is encouraging cleaner vehicles.

2.2.4 Manufacturing and consumer goods

Industrial scale manufacturing is very limited in the Maldives; most consumer articles are imported. There are many micro, small and medium enterprises in the country, but these are fairly informal and it is difficult even to estimate how much the sector contributes to the national economy.

2.2.5 Urban development and land use

There has been strong in-migration to Malé in recent years, not least after the devastating tsunami disaster in 2004. The city is therefore becoming crowded, and infrastructure for urban services is insufficient. In response, the government is developing other cities and improving the availability of housing and services in these alternative locations.

On islands, a traditional system is practiced where the government can provide land for free to a family to build their own house on. However, in urbanized areas there is a shortage of alternative forms of housing such as rental flats.

Since 2002, the Maldives allows private land ownership, but the country is still to some extent in a transition phase from the old system of state ownership. Land use is to some extent regulated. For example, on resort islands developers are only allowed to cover 20% of the land area with buildings. However, more integrated policies are required and a comprehensive national physical development plan is still to be drafted.

2.2.6 Energy, water, waste

Energy

The Maldives depends almost entirely on imported petroleum fuels for its energy supply and with urbanization, increasing tourism and a growing need for transportation, the demand for energy is rising. National energy consumption increased by 56 per cent in the period 2002 to 2008. Sixty per cent of all electricity generated is consumed in tourist resorts. Power demand in Malé is predicted to grow by 11 per cent annually.

The government is planning to achieve a massive expansion of renewable energy sources (to 50% by 2015 and carbon neutral by 2020). Solar and wind are considered to have the largest potential.

The national energy policy also stresses the need for demand side management and it aims to achieve a 7.5 per cent reduction in energy consumption by 2020 through efficiency improvements. It identifies public buildings and the tourism sector as priorities. It further points out a number of areas with potential for improvement: building design, air conditioning and ventilation, low energy lamps and solar lighting, and solar water heaters. Policy measures to be taken include a reduction in subsidies for power (while keeping lifeline tariffs to ensure affordability for the poor). An action plan on energy efficiency is proposed. This would focus especially on the tourism sector and air conditioning in Malé.

Water

Freshwater is scarce in the Maldives and many of its aquifers are overexploited. This poses serious challenges for the country since it affects both drinking water availability and prospects for increased agricultural production. Facilities for desalination of sea water have been built in Malé and a few other cities, producing around 500m^3 per day. This reduces the pressure on freshwater reserves, but comes at the price of high diesel consumption.

The government is very much aware of the serious situation and it has identified a number of activities to improve water availability. A feasibility study of solar desalination is planned and pilot projects on filtration are currently being run. In addition, there are plans to make rainwater harvesting mandatory for public buildings and to make rainwater collection tanks available free of charge for poor households.

Waste

As a result of population growth, urbanization and changing consumption patterns the Maldives is facing increasing challenges related with solid waste. It is basically only Malé that has a functioning waste collection system and a proper treatment facility. On other islands open burning is widely practised. Only a few islands collect fees for waste collection and treatment. The resources available for investment and operation of improved facilities are therefore very limited. Due to long distances and high transportation costs it is not economically feasible to ship waste to central facilities. The small volumes generated on each island lead to high per-unit treatment costs.

A study conducted by the government found that the current regulatory framework is weak, leading to difficulties in monitoring. It also concluded that there is a lack of leadership on waste issues within

the government, and that the roles and responsibilities of different governmental bodies are not well defined.

Tourist resorts generate large amounts of waste but are required by law to have waste treatment systems installed – usually small-scale incinerators – and to conduct some sorting and pre-treatment. Food waste from resorts is often dumped in the ocean. Some waste from resorts is transported to landfill site close to Malé.

3. STRENGTH OF EXISTING POLICIES AND POLICY CHALLENGES

The government of the Maldives is fully aware of the vulnerability of the country and the need to use the country's natural endowments wisely. The country has therefore not surprisingly been very active in developing strategies and action plans where the need for environmental protection and the inter-linkages between resource conservation and social goals are well recognized. It also has a number of ambitious targets, such as to become carbon neutral by 2020.

However, current socio-economic trends with increasing tourism, ongoing urbanization and changes in consumption patterns are sometimes difficult to fully reconcile with these lofty ambitions. In addition, national strategy documents are in many cases not very specific when it comes to actual delivery mechanisms and concrete policy tools to be used for realizing the objectives. Generally speaking, the capacity for implementation and enforcement appears to be moderate at best. Clear standards and guidelines are lacking in many areas and human and financial resources are limited. Furthermore, there seems to be a certain degree of institutional confusion with unclear responsibilities and mandates among governmental bodies. This adds to the challenges of effective policy implementation.

The Maldives is very active on the international environmental policy arena, not least on climate change and adaptation, and biodiversity. The government is also working in partnership with a number of intergovernmental organizations and bilateral donor agencies. International collaboration offers an opportunity to strengthen the country's capacity to develop and implement policies that can ensure long-term sustainability.

Mongolia

1. NATIONAL CONTEXT

General Indicators		SCP Indicators	
	Population (2010) and population density [1] 2.8 million and 2 people per km^2		**Per-capita material use and material intensity (2005)** [4] 18.4 tonnes/ 31.5 kg per US$
	GDP (PPP, US$ 2010) [1] $11.0 bn		**Per-capita energy use and energy intensity (2005)** [4] 38.35 GJ/ 86.67 MJ per US$
	GDP per capita (PPP, US$), 2010 [1] $3,997		**Per-capita water use (2007)** [5] 194.7 m^3
	GDP per capita, constant 2000 US$ (2010) [1] $771		**Per-capita GHG emissions (2005)** [6] 11.8 tonnes
	Gini coefficient (2009) [2] 33.0		**GHG emissions intensity (2005)** [6] 3.32 kg per US$
HDI	**HDI Rank (2010)** [3] 100	CO_2	**Per-capita CO_2 footprint (2008)** [7] N/A
	Agricultural land per capita (2008) [1] 42.07 ha		**Number of middle class consumers (2010)** [8] 52%
	Forest cover (2010) [1] 7.0%		**Number of people with income <$2/day (PPP, US$) (2010)** [8] 48%

Sources: [1] World Bank (2011), [2] UNDP (2009), [3] UNDP (2010), [4] CSIRO and UNEP (2011), [5] FAO (2010); [6] World Bank (2011); [7] Peters *et al.* (2011); [8] ADB (2010).

Mongolia is a landlocked country bordered by China and Russia. It covers a large and sparsely populated area, but less than one percent of the land is arable. 62% of the population lives in urban areas, a figure that is growing by 1.9% per year. Over 40% of the population lives in the capital city, Ulaanbaatar. Much of the rural population lead fairly traditional lifestyles; many families are nomadic herders.

The country has rich endowments of mineral resources, including copper, gold, uranium and coal. Foreign direct investment is mainly directed towards the mining industry and this is also an important source of government revenues. Apart from natural resources Mongolia exports mainly apparel and animal products. The major trade partners are China, which receives over 80% of the exports, and Russia, which provides almost all of Mongolia's petroleum products and a large share of its electric power.

Until the early 1990s Mongolia had a close relationship with the Soviet Union and received substantial economic support from the USSR. Since the political and economic restructuring of the Soviet state, Mongolia has transformed into a multi-party parliamentary democracy with a market economy. The reforms undertaken have mostly been effective, but the legacy of the previous system is still noticeable.

After the breakup of the Soviet Union, the economy was sluggish for a number of years, a situation made worse by natural disasters. In the period 2004 to 2008 the economy grew at a rate of 9% annually, due partly to increasing resource prices. The country's economy was affected by the financial crisis in 2008, but has recovered and achieved a 6.1% growth rate in 2010 (CIA, 2012). The economy has more than doubled in real terms in the two decades since the start of democratization, but the fruits of economic development have not been equally shared.

Mongolia has made progress on human development, not only in terms of growth in average GDP per capita but also in life expectancy. Enrolment in primary education and literacy are considerably higher than for other countries at similar levels of economic development. However, poverty remains widespread with 20% of the population living on less than $1.25 (PPP) per day (ADB, 2011). Registered unemployment was around 3% in 2004–2008, but the real figure is likely to be considerably higher, especially in rural areas where employment opportunities are few. Undernourishment is a persistent challenge and for many years around 600,000 people have been reported to be affected (UNDP 2011). Poverty and related challenges are considerably more common in rural areas than in cities and towns.

Due to its geographic location Mongolia is vulnerable to climate change and the effects have already been felt in the form of changing rainfall patterns and increasing incidence of grass and forest fires. Water resources are generally scarce and infrastructure for seasonal storage and irrigation are far from sufficient. Other environmental challenges include air pollution, mainly due to coal burning and emissions from vehicles in Ulaanbaatar, deforestation and forest degradation, partly as a result of illegal logging, soil erosion and desertification, caused mostly by overgrazing in combination with natural factors.

2. REVIEW OF EXISTING POLICIES

2.1 National framework policies and overarching SCP and RE policies

At the overarching level, the development of Mongolia is guided by its 15-year plan, 2007-2021, entitled **Millennium Development Goals-based Comprehensive National Development Strategy of Mongolia** (NDS). The NDS presents a vision for Mongolia, establishes a set of principles and core values, and outlines the general policy directions for a number of policy domains. It provides fairly concrete policy directions with some detail also for the policy tools to be employed. The NDS labels the first nine years 'the period of intensive economic development' and the subsequent six years as 'the period of transition to a knowledge-based economy'.

In general terms, the strategy represents a fairly traditional development pathway based on strong economic growth. Mongolia plans to expand its economy by exploiting its mining resources for export while gradually moving up the value chains by building up capacity for industrial processing and manufacturing. At the same time the country also aims to lay the foundation for later developing a knowledge-based industry based on the ICT sector. The NDS strongly emphasizes human development, improvements in governance and institutions, and reduction of urban-rural disparities. Full achievement of the Millennium Development Goals is a key objective of the strategy.

One of the six priorities identified in the NDS deals with environmental protection. The strategy also contains a separate section on environmental policy, which lists five strategic objectives related to the following areas: pollution control, use of land and mineral resources, water resources, forests, and biodiversity. The NDS includes many elements relevant to SCP, including the promotion of renewable energy, waste recycling, and proper use of water resources, but gives little detail on policy tools and implementation arrangements. The strategy generally emphasizes environmental conservation, technology improvements, and changes in production systems; less attention is given to the role of consumption patterns and demand side management.

The Ministry for Nature, Environment and Tourism (MNET) is the key government body for environmental issues, including SCP. Mongolia also has a National Council for Sustainable Development, but this body does not seem to be directly involved in policy development.

2.2 Policies for activity domains of high significance to SCP and RE

This review is based mainly on a translation of the National Development Strategy (NDS) from 2007, Mongolia's submission to CSD18 in 2010, and recent publications from international organizations.[8]

2.2.1 Food and agriculture

Mongolia aims to become self-sufficient in food supply. However, under-nourishment is still widespread and the population is increasing by almost 1.5% annually adding pressure on food availability. Arable land is very limited and land resources are gradually being lost due to soil erosion and desertification. Water resources are also scarce and unevenly distributed, and the capacity for storage and irrigation is currently insufficient.

The NDS emphasizes the development of new, stronger breeds of animals and varieties of crops, partly through biotechnology. A general modernization and intensification, including adapted mechanization is envisaged for the food production sector. Tax-breaks and changes in land ownership are indicated as policies to support farming and husbandry. An expansion of irrigation capacity is also planned, including leasing services for irrigation equipment.

A modernization of the food processing industry is expected, as well as an improvement of the system for control of food safety and quality. The domestic system for food distribution will be enhanced and the country is hoping to expand its food export.

2.2.2 Buildings and construction

Mongolia has a shortage of adequate housing and one objective of the NDS is a significant increase in housing. The strategy also includes upgrading regulations and norms for building materials and housing to international standard, and the promotion of the use of local raw materials. However, there is no specific reference to improved energy efficiency or sustainable building in a broader sense. Existing construction codes and building norms do not reflect environmental aspects (MNET, 2010).

[8] Sector specific policy documents in Mongolia are not generally available in English and the study team has therefore not been able to review these.

2.2.3 Mobility and transport

As a landlocked country aiming to increase its exports Mongolia needs to improve road and rail connections to neighbouring countries. The Mongolian rail network includes the Trans Asian railway and connects the country's three largest cities. Further expansion of the railway system is underway, mainly for transport of mining products (MNET, 2010). Mongolia is also in the process of expanding its road network and is currently revising its legal framework in order to attract private sector investment.

The government is making efforts to promote cleaner vehicles, but these efforts are offset by the increasing number of cars. Imported used vehicles play an important role but often don't meet modern fuel standards. LPG and bioethanol are available in Ulaanbaatar and cost less than petroleum products. Most taxis use LPG for economic reasons. However, leaded petrol is still widely sold.

Urban infrastructure for public transportation is poorly developed (MNET, 2010) but the government is importing minibuses and other vehicles to improve the situation.

2.2.4 Manufacturing and consumer goods

Regulations on industrial wastewater emissions and some air pollutants are in effect for major industries. Regulations requiring restoration of mining sites are also in place (MNET, 2010). However, industry has weak incentives for investing in clean technologies and energy efficiency. High interest rates and insufficient access to information on improved technologies are additional obstacles.

An official government report summarizes the current capacity to promote resource efficiency in the following way: 'A system to develop standard and regulation on improving efficiency of natural resources use, reducing amount of raw materials used ... per product, and to ensure and monitor the implementation of these regulations and standards is not well developed' (MNET, 2010).

No independent audited or officially endorsed eco-label currently exists, and consumers' trust in existing labelling schemes is low (MNET, 2010).

2.2.5 Urban development and land use

Environmental concerns are currently not well integrated in Mongolia's urban development planning. However, government regulations require that 15% of construction areas should be covered by green structures (MNET, 2010). According to the NDS, the country will strengthen its urban planning capacity, increase the population in regional centres, and decrease the density of Ulaanbaatar by developing the surrounding satellite cities. The country is also planning to develop capacity to construct high-rise buildings, and to improve its urban public transportation, including low-emission and electric vehicles (MNET, 2010).

Land degradation and desertification are serious threats to the country's development. In addition, it is estimated that five percent of the forest area is degraded each year. Large areas have been

designated as protected areas, which can contribute to biodiversity conservation, but increased efforts are needed to ensure the appropriate use of productive land resources (pastures, arable land and forests). Mongolia is still in the process of establishing private ownership for land and is expecting to accelerate the privatization over the coming years.

One example of how the government intends to promote better governance of land resources is a planned expansion of community based forest management.

2.2.6 Energy, water, waste

Energy

Mongolia is almost entirely dependent on fossil fuels – domestic coal and imported petroleum – for its energy supply. The country plans to expand its electricity grid and to promote cooperation with neighbouring countries. Plans also include the expansion of hydropower and providing herder households with off-grid solar and wind energy sources. In order to reduce its dependence on energy imports the country plans to increase its capacity to produce liquid fuels from coal. It is also seeking to increase its export of coke.

The government is trying in various ways to facilitate the uptake of alternative energy technologies. For example, biogas equipment and spare parts are exempt from import tax and VAT (MNET, 2010). The government is also trying to influence consumption patterns, for example by using a time-differentiated charging system for electricity, which has been introduced in some places (MNET, 2010) to better utilize existing supply systems.

Water

Water is generally a scarce resource in Mongolia and the regional distribution is very uneven. Highly variable rainfall patterns are exaggerated by climate change have contributed to increased water insecurity in recent years. The proportion of population with access to improved water sources has increased significantly during the past two decades. However, many residents in cities still depend on tanker trucks for water supply and around 40% of rural households depend on unimproved water sources (UNDP, 2011). In response to these challenges, a national Water Programme is planned, including the construction of reservoirs and wells, as well as introducing rainwater harvesting. Connections to water supply and sewerage infrastructure are planned to be expanded in urban areas.

Over 100 facilities for waste water treatment exist but many of these are nonoperational due to technical or financial difficulties. There is a legal basis in place to charge industrial users of water, and water metering and incentives for water use efficiency are gradually being introduced for this sector (MNET, 2010).

Waste

Mongolia has been running a National Programme on Waste Reduction since 2000. For Ulaanbaatar the collection system has been upgraded in recent years, the old landfill site has been closed and restored, and a new improved disposal facility has been established. A national 3R strategy is to be developed from 2010. The import and use of thin plastic bags has been banned since 2010. Some

hazardous wastes that cannot safely be treated domestically, such as lead acid batteries, are exported in line with the rules of the Basel convention. Waste management is gradually opening up to private sector participation, but public authorities still carry the main responsibility for providing these services. Capacity for recycling is generally low; some projects on plastic recycling exist but the majority of the recyclable materials that are collected by the private/informal sector are exported.

3. STRENGTH OF EXISTING POLICIES AND POLICY CHALLENGES

Since Mongolia started the transition to a market economy in the early 1990s it has introduced a large number of laws and regulations aimed at protecting the natural environment. The general regulatory framework appears to be fairly strong and comprehensive, although there seem to be challenges with implementation in certain areas.

An interesting feature from an SCP perspective is that Mongolian law provides for pricing of natural resources and the country has a large number of resource related fees, including for example for hunting, forest use, water withdrawal, and mining (ADB, 2005). The law mentions the polluter-pays-principle as a basis for resource related fees. This openness to using economic instruments to shape consumption patterns and behaviour is a strength that can be further utilized. However, at present it seems that most resource fees are outdated and in need of a review. They were reportedly set in nominal terms and inflation has made most of them fairly ineffective as control measures.

Myanmar

1. NATIONAL CONTEXT

General Indicators		SCP Indicators	
	Population (2010) and population density [1] 48.0 million and 73 people per km^2		**Per capita material use and material intensity (2005)** [4] 2.6 tonnes/ N/A
	GDP (PPP, US$ 2010) [1] N/A		**Per capita energy use and energy intensity (2005)** [4] 12.18 GJ/ 40.57 MJ per US$
	GDP per capita (PPP, US$), 2010 [1] N/A		**Per capita water use (2002)** [5] 728.6 m^3
	GDP per capita, constant 2000 US$ (2010) [1] N/A		**Per capita GHG emissions (2005)** [6] 1.8 tonnes
	Gini coefficient (2009) [2] N/A		**GHG emissions intensity (2005)** [6] 1.27 kg per US$
HDI	**HDI Rank (2010)** [3] 132	CO_2	**Per capita CO_2 footprint (2008)** [7] 0.32 tonnes
	Agricultural land per capita (2008) [1] 0.25 ha		**Number of middle class consumers (2010)** [8] N/A
	Forest cover (2010) [1] 48.6%		**Number of people with income <$2/day (PPP, US$) (2010)** [8] N/A

Sources: [(1)] World Bank (2011), [(2)] UNDP (2009), [(3)] UNDP (2010), [(4)] CSIRO and UNEP (2011), [(5)] FAO (2010); [(6)] World Bank (2011); [(7)] Peters *et al.* (2011); [(8)] ADB (2010).

Myanmar is located in Southeast Asia, bordering the Andaman Sea and the Bay of Bengal, between Bangladesh and Thailand. It has a total area of 676,578 km^2 and 5,876 km of land boundaries with other countries. Myanmar is resource-rich but its economy suffers from inefficient economic policies and corruption. Myanmar's labour force works in agriculture (about 70%), industry (7%) and services (23%), and the unemployment rate is estimated at about 6%. Thirty-four per cent of the population live in urban areas. Key industries include agricultural processing; wood and wood products; copper, tin, tungsten, iron; cement, construction materials; pharmaceuticals; fertilizer; oil and natural gas; garments, jade and gems. Myanmar produces sufficient electricity and natural gas (it has significant offshore gas deposits) for its own use but is a net importer of oil. Current environmental problems in Myanmar include deforestation, erosion, and waste management. Air and water pollution from industry and agriculture are relatively low at present, but likely to become problematic as the country industrializes and agriculture intensifies. Myanmar is considered a least developed country (LDC) by the UN. During the political changes that occurred in 1962, Myanmar became a planned economy. Since 1988, the government of Myanmar has introduced new economic strategies that have increased flexibility for businesses and trade. This has opened the economy up somewhat but further improvements in human capacity and infrastructure will be required to

strengthen Myanmar's economy. Myanmar has been a member of ASEAN since 1997 and is scheduled to chair the ASEAN forum and host the summit in 2014.

2. REVIEW OF EXISTING POLICIES

2.1 National framework policies and overarching SCP and RE policies

The government department responsible for environmental affairs and sustainable development is the National Commission for Environmental Affairs (NCEA), formed in 1990. The sustainable development policy framework **Myanmar Agenda 21** was formulated and adopted in 1997 by NCEA in conjunction with UN agencies. Little information appears available on the degree to which Agenda 21 has been implemented. A UN document titled *Natural Resource Aspects of Sustainable Development in Myanmar* (UN, 1999) summarizes some of the guidelines on sustainable consumption and sustainable tourism, but does not reveal whether much progress has been made. James (2003) noted that there were considerable barriers to widespread implementation of the sustainable consumption and tourism guidelines.

Myanmar also has a **National Sustainable Development Strategy** (2009), which includes proposed strategic measures for making various sectors (e.g. agriculture, forestry, fisheries, mining, tourism, energy and waste management) more sustainable. The country's National Environmental Policy was established in 1994, and notes the importance of environmental protection in making development decision, and the need to preserve resources for current and future generations.

Myanmar implemented its **Fifth Five-Year Plan** (2011/12 to 2015/16) for economic development in 2011 – this document does not appear to be available online, but press releases relating to it suggest that it addresses both economic and environmental issues, including microcredit schemes, safer drinking water, production of biogas and solar energy, farm mechanization and environmental conservation (UNPAN, 2011).

2.2 Policies for activity domains of high significance to SCP and RE

Myanmar has several policies relating to environmental sustainability for particular sectors, though in general they do not refer specifically to sustainable consumption and production.

2.2.1 Food and agriculture

Myanmar has a range of policies, laws and rules relating to food and agriculture, including the Myanmar Forest Policy 1995, the Forest Law 1992 and Forest Rules 1995, the Territorial Sea and Maritime Zones Law 1977, the Freshwater Fisheries Law 1992, the Marine Fisheries Law 1990, the Fishing Rights of Foreign Vessels Law 1989, the National Food Law 1997, the Pesticide Law 1990 and the Law Relating to Aquaculture 1989 (UN, 1999). Because of weak governance and a lack of human capacity, especially at the local level, the implementation of national policies at all levels from sub-national to local appears to be difficult.

2.2.2 Buildings and construction

There is little information available on Myanmar's policy initiatives in the domain of buildings and construction. In general, Myanmar has a comparatively low rate of urbanization, is lacking substantial national infrastructure and will have to make large investments into urban and transport infrastructure in coming decades to avoid the large problems of urban air and water pollution, waste, and traffic many of its neighbours are struggling with as they modernize, incomes grow, and lifestyles change accordingly.

2.2.3 Mobility and transport

The UN country profile on Myanmar (2002) noted that the country had programmes planned to expand transport infrastructure, improve traffic and fuel efficiency, reduce emissions from transport and provide better support for the use of non-motorized forms of transport. The document also stated that CNG and LPG had been implemented as alternative fuels for vehicles (UN, 2002).

2.2.4 Manufacturing and consumer goods

Myanmar has a range of laws relating to manufacturing and consumer goods, including the Factories Act 1951, the Myanmar Tourism Law 1990, and the Promotion of Cottage Industries Law 1991. The manufacturing base in the country is still fairly small but may grow in the near future. There is also considerable growth occurring in the mining sector, which will require attention to avoid environmental and social impacts. The middle class in Myanmar is small and many people live in poverty, especially in rural areas, hence sustainability is not a topic on the agenda. Many of Myanmar's political strategies are aiming for economic growth and increasing the standard of living, which is a higher priority than environmental considerations for many.

2.2.5 Urban development and land use

Myanmar has several city development laws (e.g. City of Yangon Development Law 1990, City of Mandalay Development Law 2002), but no apparent nationwide policies on urban development and land use. Myanmar's agricultural land was nationalized in 1948 with the passing of the Land Nationalization Act, which was then amended in 1953 (Taylor, 2009). According to James (2003) 'The most important reform ... is that of security of land tenure, which research in developing countries has shown has a direct correlation with agricultural productivity. At present, all land is titularly owned by the state ... under a variety of leasing arrangements being granted to individuals and community groups' (James, 2003, page 8). She also asserts that 'the whole question of land and landlessness needs to be urgently addressed if the government's objectives of increasing agricultural production and export earnings, and improving rural livelihoods are to be realised' (page 8). The UN country profile for Myanmar (2002) stated that there was 'widespread land degradation as population increase demands frequent land uses which are not suited to the agro-ecological conditions and due to incorrect land husbandry practices' (UN, 2002, page 23) and that there was a low level of interaction between the various agencies involved with land use issues.

2.2.6 Energy, water, waste

Myanmar has several policies, laws and plans relating to energy, water and waste. These include the Myanmar Energy Policy (date unknown), the Public Health Law 1990, the Water Tax and

Embankment Law 1992, and the Air Pollution and Water Pollution Control Plan of the Ministry of Industry I (date unknown) (UN, 1999).

Energy

The Myanmar Ministry of Energy's web site lists the following components of the country's energy policy (Myanmar Ministry of Energy, 2001):

- To maintain the status of energy independence
- To employ hydroelectric power as one of the vital sources of energy sufficiency
- To generate and distribute more electricity for economic development
- To save non renewable energy for future energy sufficiency of the nation
- To promote efficient utilization of energy and impress on energy conservation
- To prevent deforestation caused by excess use of fuelwood and charcoal.

The web site notes that while the country has significant potential for harnessing hydropower, wind energy, solar energy and geothermal energy, use of these is generally at initial stages. At the time the web page was written (2001) wood fuel was said to be the main source of domestic energy in Myanmar, though it was noted that biogas generation was increasingly being encouraged to provide an alternative to fuelwood (Myanmar Ministry of Energy, 2001).

Water

According to the FAO's web site, no institution has overall responsibility for water management in Myanmar. Several agencies are involved, including the Ministry of Agriculture and Irrigation (MOAI), the Water Resources Utilization Department, the Irrigation Department and the Agricultural Planning Department (FAO, 2011). According to the FAO, a national level Myanmar Water Resources Committee is planned for the country.

Waste

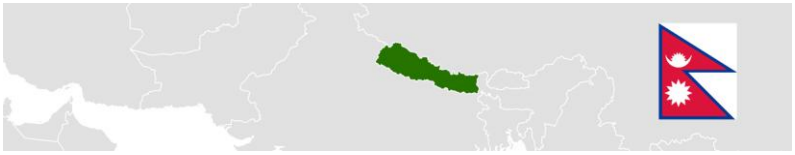
The Myanmar Agenda 21 document does not appear to list any national policies on waste or waste management (UN, 1999). UNEP (n.d.) shows the following:

- Pollution Control and Cleansing Rule
- The Protection of Environment Directive
- The Municipal Act
- The Union of Myanmar Public Heath Act.

3. STRENGTH OF EXISTING POLICIES AND POLICY CHALLENGES

We are, at this stage, not in a position to make an informed assessment on Myanmar's policies and challenges. Little information about the policy process in Myanmar appears to be publicly available. James (2003) noted that there were significant barriers to the implementation of the **Myanmar Agenda 21** framework, including a lack of political will, insufficient human and financial capital, and

the lack of secure land tenure arrangements. She notes however that the framework has many positive aspects, including plans for cooperation between government and civil society organizations, plans for community participation (including with the oft-sidelined minority ethnic peoples), and detailed plans for economic growth and poverty alleviation. Myanmar is perceived to suffer from a very high level of public sector corruption – it was rated second-equal most corrupt country in the world in a recent survey (Transparency International, 2011). As a least developed country (LDC) with some apparently solid policies but little current ability to implement them, it seems to be a good candidate for policy support under the SWITCH-Asia programme.



Nepal

1. NATIONAL CONTEXT

General Indicators		SCP Indicators	
	Population (2010) and population density [1] 26.6 million and 181 people per km^2		**Per capita material use and material intensity (2005)** [4] 2.6 tonnes/ 11.0 kg per US$
	GDP (PPP, US$ 2010) [1] $35.6 bn		**Per capita energy use and energy intensity (2005)** [4] 14.15 GJ/ 60.50 MJ per US$
	GDP per capita (PPP, US$), 2010 [1] $1,190		**Per capita water use (2007)** [5] 344.9 m^3
	GDP per capita, constant 2000 US$ (2010) [1] $268		**Per capita GHG emissions (2005)** [6] 0.16 tonnes
	Gini coefficient (2009) [2] 47.3		**GHG emissions intensity (2005)** [6] 0.13 kg per US$
HDI	**HDI Rank (2010)** [3] 138	CO_2	**Per capita CO_2 footprint (2008)** [7] N/A
	Agricultural land per capita (2008) [1] 0.14 ha		**Number of middle class consumers (2010)** [8] 23%
	Forest cover (2010) [1] 25.4%		**Number of people with income <$2/day (PPP, US$) (2010)** [8] 77%

Sources: [1] CBS (2011), [2] UNDP (2009), [3] UNDP (2010), [4] CSIRO and UNEP (2011), [5] FAO (2010); [6] World Bank (2011); [7] Peters *et al.* (2011); [8] ADB (2010).

Nepal is a landlocked Himalayan country with an area of 147,181 sq. km. It is situated in the central part of the Himalayas and bordered to the north by China and to the south, east, and west by India. Forest covers 55,180 sq. km., approximately 39% of the total area, and 16% of the country has been delineated as national park and conservation areas (DoFRS, 1999; Tamrakar, 2003, page 1).

Nepal is divided into five major ecological zones, known as High Himal, High Mountains, Middle Hills, Siwaliks, and Terai respectively from North to South.

Table: Physiographic zones

Physiographic zone	Elevation	Area in %
Terai	Less than 500 metres	14.3
Siwaliks	500-1000 metres	12.8
Midhills	1000-3000 metres	30.1
High Mountain	3000-5000 metres	20.1
High Himal	Above 5000 metres	22.7

Source: United Nations, 2002

The southern plains are the country's breadbasket, and also the most densely populated areas in Nepal, with 42 per cent of the population living on 23 per cent of the land area (US DOS, 2011). Eight of the world's ten highest mountain peaks are in Nepal. Its climate varies, ranging from subtropical in the south to temperate in the hills to arctic at high altitudes. The monsoon season in Nepal is from June to September, bringing 750 to 1,500 millimetres of rainfall annually.

The population of Nepal is 26.6 million, with a current annual growth rate of 1.4 per cent. The rate of urbanization is still very low at 19 per cent (CIA, 2012) but the urban share of the population is increasing. Nepal is well known for its diversity of ethnic groups, religions and languages. The population of Nepal comprises people from more than 100 ethnic groups, who speak over 90 different languages and dialects.

Nepal has limited natural resources; its main endowments are water, hydropower, limited but fertile agricultural land, and timber. Recent surveys have found small deposits of limestone, magnetite, zinc, copper, iron, mica, lead, and cobalt but owing to Nepal’s terrain, mineral exploitation is very difficult. Oil and natural gas are not found in any significant quantities.

Modern Nepal was formed from a number of independent hill states in the latter half of the 18th century. Nepal was a monarchy until 1990 when a royal parliamentary system was adopted. Since then, the country has undergone rapid changes. At the end of 2007, the Nepalese parliament declared Nepal a federal democratic republic and thereby abolished the monarchy. Under its 2007 interim constitution, Nepal adopted representative democracy with a unicameral Parliament, President as head of state, and Prime Minister as head of government. The whole country was divided into five development regions, 14 zones, and 75 districts.

Nepal ranks among the world's low income countries (WB, 2011). Over the past three years, GDP has grown at an annual rate of four to six per cent (CIA, 2012). Agriculture remains Nepal's principal economic sector, employing over 70 per cent of the population and providing over 30 per cent of GDP (US DOS, 2011). Rice, maize and wheat are the main food crops. Because of its dependence on agriculture, the magnitude of the annual monsoon rain strongly influences economic growth. Nepal’s industry is mainly based on processing of agricultural products, including pulses, jute, sugarcane, tobacco and grains. Nepal has considerable potential in hydropower, but substantial foreign investment is needed for further hydropower construction. With eight of the world's ten highest mountain peaks, Nepal is a famous tourist destination. It is estimated that visits to Nepal will increase very quickly because of the current stability of its political environment. Total exports and imports amounted to around 5.9 billion US dollars in 2009. India is Nepal’s biggest trading partner

with a share of over 50 per cent; other important trading partners are China and the EU (CIA, 2012). Nepal mainly exports clothing, pulses, carpets, textiles, juice, pashmina and jute goods; main imports include petroleum products, machinery and equipment, electrical goods and medicine.

Pressure on natural resources is increasing. Overpopulation and unsustainable use of natural resources has resulted in depletion of forest cover for crops, fuel and fodder, and has contributed to erosion, flooding and degradation of ecosystems. Nepal is often affected by severe thunderstorms, flooding, and landslides. The lack of education infrastructure is a big challenge for Nepal in pursuing growth and development. The general literacy level is below 50 per cent and almost two thirds of female adults are illiterate (CIA, 2012). Additionally, water supplies in some parts of Nepal are not considered safe for consumption, and disease outbreaks are not uncommon. The contaminated water mainly results from unmanaged human and animal wastes, agricultural runoff, and industrial effluents.

Although consumption levels in Nepal are generally low compared to most developing countries in Asia, certain areas of consumption and production are already having negative impacts on the environment and deserve attention. However, lifestyles and consumption patterns differ enormously between urban and rural areas, and the related environmental problems are therefore also different. In rural areas these problems include overharvesting of fuel wood for cooking, indoor air pollution from cooking stoves, land degradation and erosion due to unsuitable farming practices, water pollution from agricultural runoff, and illegal logging and poaching. In urban areas (mainly in the Kathmandu valley) the main problems include air emissions from vehicles and industries, water emissions from industries, untreated sewage and inappropriately managed solid waste, and increasing dependency on fossil fuels for heating, cooking and mobility. Dealing with these diverse environmental issues, which are already having a negative impact on social development and human wellbeing is a huge challenge for the government and requires significant strengthening of capacities and institutions.

2. REVIEW OF EXISTING POLICIES

The government of Nepal consists of 26 line ministries and the National Planning Commission (NPC), which is the apex body for overarching planning and policy coordination. At the overarching policy level, the government has for a long time been developing and implementing plans with a five-year cycle, and more recently with a three-year cycle.

2.1 National framework policies and overarching SCP and RE policies

National Development Plans

The three-year plans are prepared by the NPC based on input from other ministries. The most recent plan is the Three-Year Plan Approach Paper (2010/11 – 2012/13) (TYPAP). It focuses on macroeconomic and social development, infrastructure development, human rights and good governance. It addresses many issues relevant to SCP an RE but not as a priority. However, in its review of general policy progress it recognizes that environmental sustainability is directly linked with people's living standards and it concludes that this has not been adequately addressed so far

and that more efforts and resources are required. The TYPAP includes also a separate section on Environment and Climate, which specifically identifies a need to strengthen the Ministry of Environment (MoE) so that it can play the role of coordinating body more effectively.

Climate resilient planning: a tool for long-term climate adaptation

This recently adopted national strategy focuses mostly on climate adaptation, but it also includes a section on mitigation. It points out that Nepal is currently making only an insignificant contribution to climate change but states that the country is determined to develop in a climate friendly manner. It stresses the need for low carbon infrastructure and transportation, expansion of renewable energy sources, and efforts to protect forests.

2.2 Policies for activity domains of high significance to SCP and RE

2.2.1 Food and agriculture

Food security is challenge and a key priority for Nepal. The country is more or less self sufficient in average years, but food scarcity and malnutrition are persistent problems, especially in many remote regions. Over 80 per cent of the population lives in rural areas and depend mainly on subsistence agriculture. For the country as a whole, over 38 per cent of children under the age of five are underweight, but that figure is higher in many regions. The use of agrochemicals is still much lower than in neighbouring countries and most production is low input or fully organic. However, average yields are low and improvements are needed in order to meet social development objectives.

Challenges for the agricultural sector and for the country's ability to ensure food safety include: a growing population, consumption patterns shifting from traditional diets based mainly on tubers to rice, unsuitable farming practices on hillsides combined with increased frequency of extreme rainfall events leading to soil erosion, extreme diversity in terms of climatic conditions, lack of transportation infrastructure for sending products to market and for distributing food to remote areas, changing rainfall patterns and glacier melt off due to climate change, a shortage of electricity and equipment for irrigation (currently 60 per cent of agriculture is rain-fed), fragmentation in land ownership, weak access to agricultural credits, high costs of fertilizers (current use only around 15kg N/ha), low knowledge and awareness on nutrition and hygiene among the general public, high use of pesticides in some regions and weak enforcement of related regulations, widespread poverty and limited buying power (food subsidies are needed), depopulation in rural areas resulting in a lack of labour, and insufficient capacity for quality control (no accredited laboratories).

The challenges facing the sector are quite daunting and the Ministry of Agriculture has insufficient resources for research and extension, meaning that their services can only cover some of the regions where improvements are needed. However, a number of important activities have been conducted, including for example: development of improved technologies for rice and wheat, establishment of a seed bank system, quality determination of productive local cows, buffalos and goats, identification of resource saving technologies for feed production, and commercial cultivation of high value fish species.

The plans and strategies for the sector are well worked out, but successful implementation will require increasing resources and effective coordination. A number of actors at different levels will need to be involved, including Nepalese government organizations as well as domestic and international NGOs, bilateral donor organizations, private sector organizations, farmers and their cooperatives, intergovernmental organizations, and others. The capacity of the Nepalese government to align and coordinate the actions of various other players will be crucial to effective implementation.

2.2.2 Buildings and construction

As a result of Nepal's rapid urbanization the construction sector is expanding quickly. However, there is significant potential for sustainability improvements in the sector, in terms both of improvements in energy efficiency and better supply chain management. Current building codes focus on technical aspects, such as earthquake resistance, and do not include environmental criteria. There is generally a low level of awareness on environmental issues in the construction sector and a lack of knowledge on how to build more sustainably. Environmentally damaging activities, including illegal extraction of natural resources such as sand and timber, seem to be fairly common.

2.2.3 Mobility and transport

The transportation infrastructure in Nepal is insufficient for meeting the needs for mobility. Many communities in remote areas do not have road access, the existing road system is poorly maintained, and accidents are common. It is estimated that only around 62 per cent of the population has road access within four hours travel. Some regions can only be reached by air transport or on foot and transportation costs are consequently very high. The country has only one railway line, which is currently not in operation. The traffic volume is increasing (currently vehicle ownership is increasing by 12 per cent annually), with air pollution and congestion becoming serious issues in urban areas. The growth in transportation is also identified as a main driver in increasing greenhouse gas emissions: since the mid-1990s GHG emissions from the sector have quadrupled. Emission standards for vehicles are in place but enforcement is weak. Public transport in the form of buses and minibuses exists in the larger cities and Kathmandu has a system of electric three-wheelers.

The government intends to strengthen management of the sector by establishing a Transportation Authority. This institutional development is expected to strengthen the capacity for strategic planning and coordination. It is also expected to encourage a stronger involvement of the private sector. One area in particular where the government is seeking private sector involvement is public transport.

Future plans also involve an expansion of railways, both domestic and across borders. Due to it geography Nepal has a large potential to build ropeways on hillsides, and the government envisages an expansion of such installations.

2.2.4 Manufacturing and consumer goods

Nepal is at a very early stage of industrial development and the vast majority of its companies are SMEs or microenterprises. The capacity for developing and adapting cleaner technologies is very limited and many companies are reluctant to invest in new technologies even when payback times are very short. The Ministry of Industry has promoted cleaner production and energy efficiency in the past, promoting research on adapted cleaner technologies in targeted industries and offering generous subsidies of up to 90% of investment costs, but these activities were discontinued for financial reasons. Similarly, an institute for environmental management existed but was terminated.

Hence, for a number of years there have been few government environmental programmes targeting industry but recently there seems to be an interest in reviving some activities to promote cleaner production. A new industry policy adopted in 2010 includes environmental sustainability as one of the four key objectives. A new type of industrial estates is being established where common facilities for treatment of waste and wastewater will be provided. A centre for energy efficiency in industry is also starting up in collaboration between GIZ and the Federation of Nepalese Chambers of Commerce and Industry (FNCCI). This centre will train energy auditors and offer subsidized audits, mainly to larger industries, develop showcases and build awareness.

2.2.5 Urban development and land use

Only around 17 per cent of the population currently lives in urban areas but this share is increasing rapidly. Cities and towns are growing rapidly but their development is mostly unplanned (CBS, 2011). There have been attempts to develop master plans for Kathmandu, but implementation has mostly failed. As a result streets and alleys are very narrow, and due to increasing traffic, air pollution and congestion are major sources of nuisance for residents. Municipal authorities have insufficient resources and inadequate capacity to provide urban services and to reduce the negative environmental impacts of urban expansion. Waste collection services and treatment capacity are insufficient. Disposal sites are unsafe and pose a threat to the local environment. Sewage treatment is not well established, and where it exists it is usually of insufficient capacity and poorly maintained. Two cities have been designated as ‘green’ cities by the government, but what this means in practice is not known.

Urban development involves also a number of other governmental bodies and the need for improved coordination is clearly identified in the latest three-year plan.

In order to ensure food security the government recognizes the need to use more land for agriculture. However, land productivity is slowly declining as a result of inappropriate soil management, erosion, and expansion into less fertile areas. In addition, land ownership is highly fragmented in many regions, creating an obstacle to coherent production. The government also intends to increase the area of forest land to 40 per cent of the country’s area, and this objective could be in conflict with the ambition to increase agricultural land.

In order to protect biodiversity, Nepal has established a number of protected areas covering more than 23 per cent of the country’s area. However, the enforcement capacity is weak and illegal

logging and poaching remain challenges. There is currently no national land policy, but the government is reportedly developing such an integrated approach to land use.

2.2.6 Energy, water, waste

Water

Nepal is endowed with abundant water resources but has insufficient infrastructure, especially capacity for seasonal storage, for providing safe and secure water supply services to all its citizens. Even the capital city Kathmandu regularly experiences severe water shortages. The country has been successful in increasing the share of the population with access to improved water sources to 80 per cent, but challenges remain especially during the dry season and with water quality.

The expansion of sanitation is lagging behind, with only 43 per cent of the population provided with such services.

Energy

Nepal has one of the lowest levels of per capita energy consumption in the world and consumption is very much characterized by traditional practices; over two thirds of the population uses wood as their main fuel. Only around 40 per cent of the population has access to the power grid. Electricity is generated almost entirely from hydropower, where the country has a great potential. Urban and rural areas differ enormously in energy sources and consumption patterns; many remote rural areas cannot feasibly be connected to the national grid but require alternative solutions based on local power generation capacity. Urban households rely generally on fossil fuels for heating and cooking, and electricity from hydropower for lighting.

The main challenges for the sector include: improving access to energy services for poor communities in remote areas, managing and meeting the needs of the urban population, avoiding developing a large dependency on imported fossil fuels, limiting the harvesting of firewood to sustainable levels (to avoid deforestation), and reducing indoor air pollution from use of traditional fuels (wood, straw and dung).

The government is very active in the field of energy and working in partnership with a large number of international organizations. The Alternative Energy Promotion Centre (AEPC) was established in 1996 on an initiative by UNDP. It works with off-grid rural energy and focuses on microhydro (<1MW capacity), biogas, and solar energy. The AEPC is promoting the adoption of these technologies by providing subsidies, 85% of which are covered by donors and the remaining part by the government. So far, 300,000 solar home systems have been delivered and 15MW capacity of hydro power has been installed. The projects on biogas are also reported to have also been fairly successful in rural areas with livestock production. Despite these efforts, alternative sources still only provide less than 1% of the country's energy supply (Surendra *et al.*, 2011).

In 2008 the government declared that the country is in an energy crisis situation. The capacity for electricity generation and distribution is insufficient and blackouts are common. An action programme was developed, but so far the implementation appears to be weak, especially on energy

efficiency. To strengthen the country in terms of energy efficiency, the government requested GIZ to establish the Nepal Energy Efficiency Programme (NEEP). This programme is active in several areas: awareness raising and policy advice, household energy efficiency (standards for appliances in urban areas and improved cooking stoves in rural areas), and energy efficiency in industry.

Waste

Like all rapid urbanizing developing countries Nepal is facing a growing challenge of waste management. Emerging consumption patterns lead not only to increasing waste volumes but also to new types of waste that can be difficult to manage properly. Current collection systems and treatment facilities are clearly insufficient. The waste collection and street cleaning system only works properly in a few urban areas of high importance for tourism. Awareness amongst citizens on the significance of waste treatment is generally low and inappropriate disposal practices are common. Existing disposal sites lack appropriate equipment for environmental protection. Facilities for hazardous waste are largely lacking.

3. STRENGTH OF EXISTING POLICIES AND POLICY CHALLENGES

In recent years, Nepal has made significant progress towards meeting the Millennium Development Goals. However, despite efforts to stimulate economic and social development, poverty remains widespread, especially in rural and remote areas. Around one quarter of the population is below the poverty line, but there are large regional differences in development patterns and poverty. It is clear that the government needs to continue pursuing human development with a pro-poor focus.

In general, the Nepalese government seems to have a good capacity to analyse the needs of the country and to devise strategies and plans. However, there is certain disconnect between the capital and the regions and the central government seems to have inadequate resources and capacities for effectively implementing its plans. The country's great diversity and the weak infrastructure for transportation and communication certainly contribute to this gap and related implementation challenges.

The country is receiving technical and financial assistance from a large number of foreign and intergovernmental organizations. This provides the country with valuable additional resources for development. However, it is a challenge for the government to get the most out of this assistance and to coordinate the many actors involved.

4. CAPACITY BUILDING NEEDS ASSESSMENT

This section tries to identify some of the areas in need of capacity strengthening towards sustainable consumption and production, and resource efficiency. It is based mainly on consultations conducted during a one week mission to Nepal in August 2011, but also on the sectoral review of key policies and challenges presented above.

4.1 Information and knowledge

As can be expected in a developing country with widespread illiteracy, the general knowledge and awareness of environmental issues and linkages to development and consumption is low. Many rural communities have led environmentally sustainable lifestyles for centuries but a growing population and emerging demand for modern amenities result in the overuse of traditional natural resources and the need to exploit new ones. In these processes of modernization, traditional knowledge gives little guidance on what options are available and likely to be beneficial. There is a huge and urgent need to equip rural communities with the intellectual resources needed for developing in sustainable ways. This includes technical knowledge for sound resource use, such as for example on improved cooking stoves, biogas generation from manure and kitchen waste, and health benefits of improved sanitation and food hygiene. But it also involves knowledge of social innovations, such as community-based use of common resources, such as forests and rivers, where local users need to establish and enforce practical rules that ensure fair distribution and long-term sustainable access. The government has a key role to play but it needs to involve NGOs, including international organizations as well as grass-roots organizations and rural cooperatives, and donors and intergovernmental organizations. The consultations also stressed the importance of effective partnerships with media.

Urban residents are leading lifestyles that are vastly different from the rural majority; their resource consumption and impacts on the environment are also very different. However, the need for basic awareness raising on environmental issues and long-term sustainability seems to be as large in urban areas as in rural ones. Here, campaigns including both consumer rights and sustainable consumption may be effective.

The need for improved knowledge can be found also amongst professionals. One example mentioned during the consultations was sustainable and energy efficient building, where there seems to be limited knowledge in the country at present. It was pointed out that training of architects and engineers and general awareness raising in the sector could be beneficial, but would need to be complemented by demand creation efforts and possibly also by changes in regulations, such as building codes. Local government officials, who are in charge of inspections and enforcement, would also need to be involved in capacity strengthening efforts.

4.2 Innovation and R&D

Nepal is obviously in need of acquiring and developing many technologies needed for sustainable development. Imported technologies often need to be adapted to the national context and therefore require technical expertise and capacity in the country.

There is a pressing need to improve agricultural practices and also to upgrade the system for food processing, distribution, storage and marketing. This is partly a need for research and development. Existing agricultural research seems to be strongly focused on adapting conventional agriculture to the conditions in Nepal. The Ministry of Agriculture currently seems to pay little attention to organic and low-input production since they are not regarded as viable options for meeting the country's needs.

Consumption of fossil fuels is increasing in urban areas and this trend is in conflict with Nepal's ambition to achieve low carbon development. Heating of buildings is one of the drivers behind this growing demand for fossil fuels and the consultations identified this as an area with considerable potential for improvement. More energy efficient building designs, which can offer also good earthquake resistance, use locally available building materials and are compatible with traditional Nepalese architectural styles, are needed. However, this seems to be an area where existing capacities are insufficient.

4.3 Institutions and Governance

The Ministry of Environment (MoE) is a key organization for safeguarding the environment and natural resources of Nepal, but it has very limited funding and employs less than 70 staff. It therefore has limited technical capacity and manpower for engaging effectively with the various stakeholders and coordinating activities with other line ministries. The MoE's main policy tool appears to be Environmental Impact Assessment (EIA), where it is in charge of the approval process but lacks capacity for monitoring and enforcement. Some monitoring is reportedly carried out by the civil society sector, and there have been cases where NGOs have brought private companies to court for environmental violations.

There is no dedicated implementation agency for environmental policies. Implementation and compliance monitoring are therefore the responsibilities of other line ministries, such as the Ministry of Industry and the Ministry of Agriculture, which have more resources and offices at the regional level. However, these ministries have other main objectives than environmental protection and resource conservation, and there is no system for ensuring that they properly carry out monitoring of regulations issued by the MoE. In addition, the performance evaluation systems for ministries and departments are complicated and lack transparency.

In general, implementation, enforcement and monitoring of environmental regulations are challenging. Consequences of non-compliance with environmental standards and guidelines, such as fines, are generally too weak to be effective. A revision aimed at making penalties more effective is reportedly underway, but the timeline is unclear. In some areas, such as illegal logging, enforcement is challenging partly due to the involvement of organized crime groups. Corruption is also fairly widespread. Low salaries among public employees add to this problem.

Many positions within the government are politically appointed and officials shift frequently. This creates a lack of continuity, sudden shifts in priorities and repeated need for awareness raising and capacity development. Institutionalization of knowledge and skills is a challenge.

Despite its limited capacity, the government has strong will and ambition to oversee the current situation in the country. In many sectors and for certain issues, such as rural energy provision and climate change adaptation, IGOs, donor agencies and NGOs try to fill the gap between the government and Nepalese society. The central government develops many plans and strategies, often in collaboration with donor agencies or IGOs, but the implantation modalities are generally weak and follow-up insufficient.

The central government is particularly limited in its ability and capacity to reach out to regions and to influence activities in local areas. This apparent disconnect between the capital city and the regions results both in policies that are inadequately tuned to local conditions, and in weak implementation.

The mechanisms for inter-ministerial coordination seem to be weak and environmental safeguards insufficient. The National Planning Commission is the key coordination body of the Nepalese government. Based on input from other ministries, it develops the country's five-year plans and interim plans. It reviews and approves programmes proposed by other ministries. The guidelines for these processes, based on the constitution, state that environmental protection should be considered, but it remains unclear how this is actually done.

4.4 Funding (Investment and Finance for SCP)

A large number of multilateral organizations and agencies are actively supporting Nepal's development through technical and financial assistance. It is clearly a challenge for the country to ensure effective coordination of all the organizations involved. In certain areas, such as climate change adaptation and alternative energy promotion, dedicated coordination centres that are independent of the government have been formed. Special funds for donor contributions have also been established, attached to these centres. This seems to be a good model since it gives visibility to an issue that the government wants to focus on and it provides an easy access point for donors. Similar models could very well be applied also in other areas, such as research and extension for sustainable agriculture, energy efficient building, and energy efficiency in industry.

The consultations indicated that industry is reluctant to invest in improved production technologies, including more energy efficient equipment. Insufficient access to funding was identified as one of the main obstacles to such investments, although it was pointed out that the incentives for efficiency improvements are also weak and need to be strengthened. Partnerships with banks on targeted soft loan programmes could be one way to improve access to finance and thereby reducing the hurdles to investments in resource efficient production technology.

One way to provide incentives for cleaner production and product improvements is through public procurement. The government of Nepal does not appear to currently utilize its buying power as a driver for sustainability. The consultations identified a need to examine the potential for greening public procurement and for identifying what capacities would have to be strengthened.

4.5 Supply chain management

The issue of supply chain management was discussed mainly in relation to agriculture, where farmers have difficulties in finding and exploiting potential markets, and the construction sector, where inappropriate and illegal activities seem to be common in the supply chain.

Market access for the agriculture sector is a particular problem for remote areas where high transportation costs tend to make products such as fruits prohibitively expensive and unable to compete with imported products. This is a major disadvantage for domestic, mostly organic or low-input, agriculture in some parts of the country. The result is lost incomes, wasted food products and

increased reliance on imports. The consultations found that strengthening the capacity to make food products with higher value, such as organic jams and preserves, in combination with improved branding and certification could have major benefits including enhanced export opportunities.

The consultations found that the growing construction industry is associated with polluting and environmentally damaging activities. Sand, gravel and stone are commonly extracted without permission, often in sensitive areas and in ways that damage ecosystems and hydrological systems. This is partly a problem of weak capacity to monitor and enforce environmental regulations, but it is also a matter of insufficient supply chain management in the construction industry. Increased restrictions could be placed on construction companies to ensure that building materials are produced in accordance with existing regulations, especially for projects funded by public resources or donor money. However, such demands would have to be introduced in parallel with efforts to strengthen the industry's capacity to monitor supply chains and provide evidence of compliance.

5. RECOMMENDATIONS FOR CAPACITY STRENGTHENING

SCP in Nepal is still mostly an issue of improving the access to basic necessities for the majority of the population, securing livelihoods, and eradicating malnourishment and poverty. The country contributes insignificantly to global environmental problems at the moment and it is a fairly sustainable society from an environmental perspective. However, a number of basic human needs remain unmet and require urgent and collective action. At the same time, urbanization is progressing rapidly, bringing new lifestyles and demands. The challenge is to meet the widely different requirements of both rural and urban residents in ways that utilize the country's resources efficiently and do not undermine its long-term production capacity and prosperity. Meeting that challenge successfully will require strengthening a range of capacities, both within the government and in civil society and the private sector.

Better SCP policies are urgently needed, both to better meet the needs of the poor and to address negative impacts of consumption. Sustainable consumption and production is not a luxury that stands in conflict with poverty eradication; on the contrary – it is an approach that aims to make the best possible use of available resources for meeting human needs, both today and in the future. It is clear that Nepal needs capacity strengthening in many areas related with SCP policy development and implementation.

Specific areas that could be considered for future capacity strengthening include:

- Expansion of the energy efficiency centre for industry to include broader sustainability aspects. This could later evolve into something similar to a national cleaner production centre. There seems to be interest in establishing a body of this kind, both in the Ministry of Industry and in the Federation of Nepalese Chambers of Commerce and Industry, but further consultation with key stakeholders is needed.
- Strengthening of the existing organizations working on alternative energy and energy efficiency. Existing activities have good structure, clear agendas, and strong networks. Additional resources, especially on the demand side (efficient use of cooking fuel in rural areas and energy efficient housing in cities), are likely to increase their contribution to sustainable development.

- Establishment of a basic system for green public procurement, limited to a few strategically selected products and services. This could provide incentives for producers and increase the availability of more sustainable products on the market.
- Intensified agricultural research on organic and low-input production practices suitable to the diverse geography of Nepal. Increased capacity for extension services would also need to be considered, as well as capacities for testing and certification.
- Strengthening of the capacity of rural communities to make value-added goods from local materials and products, and improved capacity of these communities to access domestic and foreign markets.
- Awareness campaigns on consumer rights, also including sustainable consumption.

This list is not exhaustive and reflects only the study team's ideas on where capacity strengthening may have potential to bring about tangible improvements within a relatively short time frame, e.g. two to three years.

In general, in order to be effective, capacity strengthening efforts need to involve more than one single group of actors. For example, just targeting government officers may have limited effects since the capacities of other actors typically have to be strengthened as well. This calls for broad capacity strengthening activities addressing whole sectors or provision systems.

Within the government itself the study team sees a need for awareness raising targeting officials in key line ministries, including the National Planning Commission, revision of mandates and objectives of key line ministries to incorporate long-term environmental sustainability, and strengthening of the Ministry of Environment so that it can become more effective.

Pakistan

1. NATIONAL CONTEXT

General Indicators		SCP Indicators	
	Population (2010) and population density [1] 173.6 million and 225 people per km^2		**Per capita material use and material intensity (2005)** [4] 4.4 tonnes/ 7.3 kg per US$
	GDP (PPP, US$ 2010) [1] $464.2 bn		**Per capita energy use and energy intensity (2005)** [4] 20.51 GJ/ 34.46 MJ per US$
	GDP per capita (PPP, US$), 2010 [1] $2,674		**Per capita water use (2009)** [5] 1076.0 m^3
	GDP per capita, constant 2000 US$ (2010) [1] $670		**Per capita GHG emissions (2005)** [6] 1.7 tonnes
	Gini coefficient (2009) [2] 31.2		**GHG emissions intensity (2005)** [6] 0.70 kg per US$
HDI	**HDI Rank (2010)** [3] 125	CO_2	**Per capita CO_2 footprint (2008)** [7] 1.15 tonnes
	Agricultural land per capita (2008) [1] 0.15 ha		**Number of middle class consumers (2010)** [8] 40%
	Forest cover (2010) [1] 2.2%		**Number of people with income <$2/day (PPP, US$) (2010)** [8] 60%

Sources: [(1)] World Bank (2011), [(2)] UNDP (2009), [(3)] UNDP (2010), [(4)] CSIRO and UNEP (2011), [(5)] FAO (2010); [(6)] World Bank (2011); [(7)] Peters *et al.* (2011); [(8)] ADB (2010).

Pakistan is located in South Asia, with a land area of about 0.8 million square kilometres. It has common boundary with India, Iran, Afghanistan and China. The Arabian Sea marks its southern boundary. Strategically, Pakistan lies close to South Asia, Central Asia and the Middle East. The main waterway of Pakistan is the Indus River, which runs through almost the entire country. Along the Indus and its tributaries are found most of Pakistan's population, its chief agricultural areas, and its major hydroelectric power stations. The country can be divided into three major geographic areas: the northern highlands; the Indus River plain; and the Balochistan Plateau. Geologically, north western Pakistan is on the edge of the Indian plate and is hence prone to violent earthquakes. Most of Pakistan has a generally dry climate and receives less than 250 millimetres of rainfall per year.

Pakistan is the world's sixth most populous country, with a population of about 174 million in 2010 (World Bank, 2011). With a high growth rate, 1.8% in 2010, the population in Pakistan has increased rapidly over the past 20 years. It is expected that Pakistan will overtake Indonesia as the largest Muslim country in the world in the near future. Despite rapid urbanization over the past two decades, 63% of Pakistan's population currently still lives in rural areas (World Bank, 2011).

The important natural resources of Pakistan include chromite, coal (poor quality), copper, fireclay, gypsum, iron ore, limestone, natural gas, rock salt and silica sand.

Pakistan gained its independence from British India in 1947. According to its 1973 constitution, Pakistan is an Islamic Republic adopting a federal parliamentary system, with a president as head of state and a prime minister as head of government (Islamic Republic of Pakistan, 2011). The parliament consists of the National Assembly (Lower House) and the Senate (Upper House). Although both Houses may initiate and pass legislation, only the National Assembly can approve federal budgets and finance bills. As an Islamic country, religion has played an important role in politics. The government has made many efforts to synthesize Islamic principles into an essentially secular and Western form of government. Pakistan is an active participant in international organizations, and it is a member of the British Commonwealth of Nations, the Group of 77, the International Atomic Energy Agency and the Non-Aligned Movement, as well as the South Asian Association for Regional Cooperation (SAARC).

Pakistan is a lower middle income country (WB, 2011), with its GDP comprising 21.2% from agriculture, 25.4% from industry, and 53.4% from services. Although the agricultural sector employs 43% of the working population of Pakistan, it only contributes a small proportion of GDP, about one fifth (WB, 2011). Since the early 1980s, the government has shifted from state ownership of many industries and heavy regulation of the private economy to privatization of some state industries, deregulation, and facilitation of capital flows. These measures have resulted in Pakistan's economy growing at a fast pace in recent decades. However, because industry in Pakistan is heavily focused on textiles, its economy is vulnerable to shifts in world demand. In addition, fluctuations in international aid and foreign direct investment also bring uncertainty to the country's economy. The main exports of Pakistan are textiles (garments, bed linen, cotton cloth, and yarn), cotton, rice, leather goods, carpets and rugs; the main imports are machinery, chemicals, vehicles, iron and steel, and tea. China, the USA and the UAE are Pakistan's main trading partners. The total exports and imports of the country were over 54 billion US dollars in 2010 (WB, 2011).

Pakistan's population has limited access to education. The estimated literacy rate in 2008 was 56 per cent for those over 15 years old, and was higher for males than for females. The country also has a poor life expectancy at birth, around 65 years (World Bank, 2011). The main reasons are the lack of funding for education and public health, and health and sanitation infrastructure, particularly in rural areas. Much of the population currently does not have access to potable water.

Besides the challenges of social development, Pakistan also faces some urgent environmental issues. These include limited natural freshwater resources; water pollution from raw sewage, industrial wastes and agricultural runoff; deforestation; soil erosion; and desertification (ADB, 2008; World Bank, 2006).

2. REVIEW OF EXISTING POLICIES

Pakistan has a large number of Policies, Acts, Action Plans and National Strategies of relevance to SCP and resource conservation. In addition to these policy documents at the federal level, plans and strategies are also being developed at the provincial level. A large share of the responsibility for policy implementation, monitoring and enforcement falls on provincial and local governments. For practical reasons, this review has concentrated on the overarching and most recent documents at the federal level.

2.1 National framework policies and overarching SCP and RE policies

The Planning Commission is the main coordinating body in the Government of Pakistan, responsible for overarching planning, monitoring and evaluation. The Commission is responsible for developing annual plans as well as medium-term plans and long-term visions.

Framework for Economic Growth 2011

The Framework for Economic Growth (FEG) of 2011 (Planning Commission of Pakistan, 2011a) appears to have replaced the earlier five year medium-term development plans. The document was developed by the Planning Commission through a consultative process involving many other parts of the government as well as other stakeholders. It places a strong emphasis on economic growth and envisages strengthened markets with limited government interventions. It discusses how to improve labour productivity but in general pays little attention to the role of natural resources and pollution. One significant exception is the section on agriculture, which emphasizes that environmental deterioration is an important constraint on the country's GDP growth. It cites a World Bank study which notes that the relationship between environmental conservation and economic prosperity is currently not recognized in Pakistan.

Annual Plan 2011–12

In addition to its long-term and medium-term plans, the Planning Commission of Pakistan also develops annual plans that review the current situation and progress towards the objectives of the longer term plans, and lists major government activities in key sectors. The sector chapters are mainly output-oriented, focused on how to increase production. However, at the same time, many of the sector chapters reflect an understanding of the need to shift to a more sustainable use of natural resources. This is especially evident in the chapters on energy, water and agriculture where the need for conservation and large improvements in efficiency is clearly identified (Planning Commission of Pakistan, 2011b). However, the Annual Plan provides little information on what policies are in place in the various sectors, and what the priorities are.

Pakistan Environmental Protection Act 1997

This fundamental piece of legislation provides the legal basis for environmental governance in Pakistan. It outlines the roles, mandates and responsibilities of the key institutions at federal and provincial levels, including environmental protection councils and environmental protection agencies (ADB, 2008; World Bank, 2006).

National Environmental Policy 2005

This policy document provides a brief but comprehensive list of actions to be taken on the most important environmental challenges. It points out a general direction for policy development but provides little detail on implementation arrangements and includes no timeline (World Bank, 2006).

2.2 Policies for activity domains of high significance to SCP and RE

2.2.1 Food and agriculture

Agriculture is a very important economic sector in Pakistan, employing 45% of the labour force and contributing 21% of the GDP. The sector is also important because of the export income it generates; cotton textiles and rice are Pakistan's top export commodities. In addition to crop production, Pakistan has a large livestock and dairy industry; the country is the world's fourth largest producer of milk.

Due to the arid climate in Pakistan, most agricultural production relies on irrigation. The widespread use of inefficient irrigation techniques has resulted in a number of environmental problems, including over-extraction of groundwater, and declining soil quality due to waterlogging and salinity. The decreased soil quality already has a significant negative impact on crop production. By 2004, it was estimated that production losses due to salinity were in the order of 0.9% of national GDP (World Bank, 2006). Fertilizer use is high in certain areas and for certain crops, leading to water pollution and negative health impacts. Increasing livestock grazing has led to extensive degradation of rangelands. The losses in food supply chains appear to be high, not least for products that require constant cooling such as meat and dairy products.

The many challenges facing the sector are well recognized by the government. In 2009, the Prime Minister's Task Force on Food Security presented a report with a number of important recommendations, some of them directly addressing the sector's current inefficient use of natural resources (Planning Commission of Pakistan, 2009). For example, the report recommended land levelling, drip irrigation and promotion of crop varieties that consume less water in order to reduce water extraction and other problems caused by excessive irrigation. Increased storage capacity and development of cool chains were recommended for reducing losses in the distribution systems. In general, the report also suggested increasing the capacity for research and development, both at federal and provincial levels.

2.2.2 Buildings and construction

The increasing urban population has led to a shortage of housing in cities, especially for low-income households. In response to this shortage the Prime Minister has launched a programme aiming to provide one million housing units every year (National Housing Authority, 2012).

2.2.3 Mobility and transport

Road transport is growing rapidly in Pakistan. In cities, where weak planning and zoning in combination with insufficient public transportation are leading to increasing reliance on cars, air pollution has become a serious health concern. Government efforts to promote cleaner diesel fuel and vehicles running on compressed natural gas (CNG) have been successful. As a result, Pakistan

has become the third largest user of CNG in the world, in terms of number of CNG fuelled vehicles (ADB, 2008). However, these efforts have not been able to keep pace with the overall increase in vehicles and transport volume, and as a result urban air quality remains a major challenge. The need for public mass transit systems is recognized but investments made to date are far from sufficient.

2.2.4 Manufacturing and consumer goods

Pakistan's industrial development has had a strong focus on textiles, but the country also has a significant mining industry, as well as gas extraction and chemical production. Efforts to regulate industrial discharge of process water and hazardous waste have not been strong enough, leading to extensive pollution. The country has legislation requiring Environmental Impact Assessment (EIA), but only in certain sectors has this requirement been institutionalized. The EIA procedure still seems to suffer from weaknesses in terms of transparency and inclusiveness (World Bank, 2006).

2.2.5 Urban development and land use

The majority of Pakistanis live in rural areas; only 37% reside in cities. However, the proportion of people living in towns and cities is increasing rapidly.

The majority of Pakistan's population lives along the Indus River and its tributaries. This is also where the country's most productive agricultural soils can be found and where most urban areas and industries are located. The high density of human activities leads to strong competition over land use and severe pressure on natural ecosystems. Due to the high competition over land, resettlement and compensation related with land appropriation have been major issues for a long time.

Current policies and city planning practices favour single-family houses and low-density urban development. This has lead to a city structure with high transportation needs and high dependence on cars. Urban sprawl has also been at the expense of scarce arable land and natural eco-systems. However, the new national growth strategy intends to increase urban density by stimulating the construction of high-rise buildings in city centres. It also aims to promote mixed use by requiring commercial and office complexes to reserve at least 30 per cent of the floor area for residential and recreational use (Planning Commission of Pakistan, 2011a).

2.2.6 Energy, water, waste

Energy

Pakistan has abundant resources of natural gas, which contributes almost half of the country's energy. Other significant components of the energy mix are oil (32%), hydropower (11%), and coal (7%). Around 80% of the oil is imported while coal is available domestically. Despite that fact that domestic energy resources are at hand energy poverty is widespread and 30% of the population does not have access to electricity. Only around half of the population is connected to the national grid (ADB, 2008).

Although Pakistan relies heavily on fossil fuels its per capita emissions of greenhouse gases are very low. In 2008 it was estimated that Pakistan emits around 0.7 tonnes of carbon dioxide per capita per year, which is only one third of the average for developing countries. The national policies aim to stimulate an increased extraction of natural gas and coal, with a view both to increasing supply and reducing the country's dependence on imported oil.

Pakistan's energy supply system suffers from large inefficiencies and losses at all stages: generation, distribution, and use. Technical and commercial losses have been estimated to account for 30% of electricity generated. Compared to other South Asian countries, Pakistan uses significantly more energy per unit of economic output. For example, compared to India, it is 33% less efficient in converting primary energy into useful energy services (ADB, 2008).

Traditional biomass fuels are still commonly used, especially in rural areas. The indoor air pollution from these traditional fuels is having a serious impact on human health, especially on women and children (World Bank, 2006).

The need for energy conservation and efficiency improvement is enormous. This need is recognized in national policies, and governmental plans include many constructive suggestions on possible actions. For example, it has been suggested that an Apex institution on energy efficiency be established (Planning Commission of Pakistan, 2011b). Other suggestions include a separate energy efficiency framework law, new building standards including energy efficiency requirements, standards and labels for other products and processes, and awareness raising campaigns. Many of these actions are mentioned in the Annual Plan 2011–12, but the current implementation status is not known.

Water

Pakistan has very limited renewable freshwater resources and most of the country is classified as arid or semi-arid. Only 8% of the country receives more than 500mm of annual precipitation; in consequence only 18% of the cultivated area can rely mainly on rainfall and the remaining 82% is irrigated. Given this scarcity and the great significance of freshwater for irrigation, sustainable water management and water use efficiency should be top priorities. However, the pursuit of economic development has in many cases led to pollution and overexploitation of water resources. Equipment for rainwater harvesting and groundwater discharge is largely lacking, seasonal water storage is insufficient, water use productivity is low, and almost 35% of the population lack sustainable access to a safe improved water source (ADB, 2008).

Given that most of the water is used for irrigation, agricultural policies have a strong influence on water use efficiency. However, linkages between the water sector, agriculture, rural development, and related research seem to be poor.

Waste

Pakistan generates an estimated 48,000 tonnes of solid waste every day. Collection systems in cities are not well developed so a significant amount remains uncollected. Treatment methods are mostly open dumping and burning, resulting in widespread pollution of air and water. The amounts of industrial waste are also very significant and some of this waste is highly toxic, containing heavy metals and persistent organic pollutants. Safe treatment and disposal facilities are lacking or their capacity is insufficient. There are many locations where groundwater sources have become polluted due to leakage from dumping sites for industrial waste (ADB, 2008).

Only around half of the urban wastewater is led off through sewers and only a fraction of this water is treated before it is released to water bodies. In rural areas few people have access to sanitation, and open defecation is commonplace. One of Pakistan's targets for the Millennium Development

Goals was to ensure that 90 per cent of its population has access to sanitation by 2015, but despite significant progress in the early 2000s this target will not be met (UNSD, 2010).

3. STRENGTH OF EXISTING POLICIES AND POLICY CHALLENGES

Pakistan is equipped with a number of federal policy frameworks on environmental protection. These documents clearly reflect the understanding that environmental concerns cannot be effectively dealt with through add-on environmental policies but that the environment needs to be integrated into overarching development planning as well as into sectoral policies and plans. It is clear that 'grow now – clean up later' is not an option for Pakistan; the country is far too dependent on its fragile environment, which provides livelihoods to millions of low-income households. Environmental degradation and resource depletion is already having a negative impact on millions of people's lives as well as on the country's economy, and is undermining its prospects for future development. However, the policies enacted have not been able to reverse these trends and ensure sustainable utilization of the country's limited resources. Although the need for integration of sustainability concerns into sector policies is recognized, this integration appears still to be shallow and patchy for most sectors.

Earlier assessments have noted that Pakistan's structure for environmental governance, with authorities and responsibilities often shared between federal and provincial levels, is confusing and non-inclusive resulting in ineffective policy formulation and weak implementation. This lack of clarity and coordination between government levels is a serious obstacle for traditional environmental policy making focusing on end-of-pipe pollution issues. However, it is an even more significant obstacle for the development of effective policies on sustainable consumption and production; these policies, which are of a more preventive nature, need to be more holistic and fully integrated into sector policies. Efforts to strengthen Pakistan's policy capacity on SCP need to look closely at the relationship between different levels of government and consider what capacities need to be enhanced at each level.

From the perspective of sustainable consumption and production, there are some challenges for Pakistan that appear particularly prominent. Water and energy are crucial natural resources, for the survival and livelihoods of low-income groups as well as for the economic development of the country's cities and industries. There is thus a very strong case for improving the way these scarce resources are managed, even from a narrow economic perspective, and there is significant potential to do so. While this need is fully recognized in some of the government's policy documents, the significance of sound natural resource management appears not to have been sufficiently mainstreamed into the overarching planning and budgeting process. The overall impression is that some parts of the government are highly aware of the significance of sustainable consumption and production, and there are many good suggestions on practical measures that could be taken, but this awareness seems not to have reached all relevant ministries and other government departments.

4. RECOMMENDATIONS FOR CAPACITY STRENGTHENING

The following list represents a number of activities that could support the strengthening of Pakistan's work on SCP and for which UNEP could provide some technical and financial

support for implementation (it should be noted that financial support will be provided under the EU funded SWITCH-Asia Regional Policy Support Component and the funding should be considered as seed funding that could be complimented from other sources).

- Main activity: Establishing an "SCP Center". The SCP Center could act as a central coordinating unit for planning and implementation of SCP activities and also as a Centre to facilitate policy making on SCP. The Centre could be hosted by the Government of Pakistan and could in a first phase employ one full time expert to run the Centre. All activities that are presented below could then be facilitated by the Pakistan SCP Centre.
- Capacity Building for the Public Sector: Organizing a national capacity building workshop for government officials on SCP (central and provincial governments)
- Waste Management:
    - Training of a group of government staff on "Integrated Solid Waste Management"
    - Drafting of an ISWM Plan for a municipality in Pakistan

On top of these activities, that can be considered as priority for implementation, there are a number of other opportunities for SCP support in Pakistan as follows:

- A study on the potential of nature-based tourism and ecotourism development at the local level
- A study on the potential of organic and/or sustainable agriculture that could later result on a pilot project on best practices for organic agriculture in Pakistan (e.g in the rice sector)
- A pilot project on the "water footprint" approach in industry. The project could include capacity building and assessment of water use in SMEs
- A development of a national framework for Awareness and Preparedness for Disasters on the basis of the UNEP "APELL" methodology.

Support on developing a national framework for the management of chemicals

Philippines

1. NATIONAL CONTEXT

General Indicators		SCP Indicators	
	Population (2010) and population density [1] 93.3 million and 313 people per km^2		**Per capita material use and material intensity (2005)** [4] 4.1 tonnes/ 3.7 kg per US$
	GDP (PPP, US$ 2010) [1] $367.4 bn		**Per capita energy use and energy intensity (2005)** [4] 22.52 GJ/ 19.97 MJ per US$
	GDP per capita (PPP, US$), 2010 [1] $3,940		**Per capita water use (2009)** [5] 889.4 m^3
	GDP per capita, constant 2000 US$ (2010) [1] $1,383		**Per capita GHG emissions (2005)** [6] 1.4 tonnes
	Gini coefficient (2009) [2] 44.0		**GHG emissions intensity (2005)** [6] 0.40 kg per US$
HDI	**HDI Rank (2010)** [3] 97	CO_2	**Per capita CO_2 footprint (2008)** [7] 1.04 tonnes
	Agricultural land per capita (2008) [1] 0.13 ha		**Number of middle class consumers (2010)** [8] 55%
	Forest cover (2010) [1] 25.7%		**Number of people with income <$2/day (PPP, US$) (2010)** [8] 44%

Sources: [(1)] World Bank (2011), [(2)] UNDP (2009), [(3)] UNDP (2010), [(4)] CSIRO and UNEP (2011), [(5)] FAO (2010); [(6)] World Bank (2011); [(7)] Peters *et al.* (2011); [(8)] ADB (2010).

The Philippine economy achieved lower middle-income status at the end of 2009 (UNDP, 2011). However, the country's long-term economic performance has been disappointing and growth is lagging behind in comparison to its neighbours. In the past, major challenges to the Philippine economy have been high unemployment, slow poverty reduction, and stagnant investment, reflecting a slow industrialization process (ADB, 2011; Usui, 2011). Yet, on a positive note, the Philippine economy recovered well from the recent global financial crisis and achieved an economic growth rate of 7.3 per cent in 2010, the country's fastest rate of expansion in over 30 years (WB, 2011).

Since the 1970s, the Philippine economy has transformed from a predominantly agricultural country to an economy driven by its services sector. By 2007, the industry and service sectors together accounted for almost 86% of GDP. The contribution of the service sector significantly exceeds that of

the industry sector, accounting for nearly 55% of GDP in 2007 (Carino and Corpuz, 2009). In contrast to neighbouring Asian economies, the Philippines' industry sector performance is fairly stagnant and the manufacturing sector accounted for only 22% of GDP and less than 10% of employment in 2007 (ADB, 2011).

The Philippines is experiencing one of the highest population growth rates in Asia. Between 2000 and 2007, the annual growth rate averaged just over 2 per cent (Carino and Corpuz, 2009). The Philippines is also one of the most urbanized countries in the region. Massive and continuing rural-urban migration flows can mainly be attributed to the hope for better job opportunities in urban areas for the rural poor.

Despite progress in recent years, the incidence of poverty remains very high in the Philippines. Significant sub-national disparities in both incomes and human development outcomes continue to exist (UNDP, 2011). According to most development indicators, the southern Philippines lag behind the rest of the country. From 2006 to 2009, the national poverty rate rose to nearly 27%, with even higher levels of poverty in rural areas (ADB, 2011).

The Philippines' progress in achieving the Millennium Development Goal (MDG) targets is mixed. The latest MDG progress reports indicate that targets relating to extreme hunger and poverty, universal primary education, and maternal and neonatal health are unlikely to be met by 2015 (UNDP, 2011). Targets addressing the environmental dimensions of poverty, such as forest cover and slum upgrading, also appear to be off track (ADB, 2011).

The Philippines contains a significant amount of natural resources and is one of 17 mega-diverse countries in terms of biodiversity resources in the world. However, population growth, economic activities and the over-exploitation of resources have led to significant environmental degradation over recent decades. Due to continuing deforestation, only 45 per cent of classified forests remain (NEDA, 2011). The Philippines is also particularly vulnerable to climate change impacts due to its geography and the large share of the population that is poor and dependent on natural resources (ADB, 2011). All the evidence suggests that the development challenges for the Philippines are very large and that well-designed policies will be required to guide the Philippines to greater prosperity at lower environmental costs.

2. REVIEW OF EXISTING POLICIES

2.1 National framework policies and overarching SCP and RE policies

National Economic and Social Development Plans

The ***National Economic and Development Authority*** (NEDA) is responsible for the creation of the ***Philippines Development Plan*** (PDP). NEDA is also the contact point for sustainable development activities in the Philippines. The current PDP covers the period 2011-2016 and focuses on achieving inclusive growth, good governance and reduced corruption. It intends to create adequate employment opportunities and rising incomes to significantly lower poverty and inequities. These goals are to be achieved according to the PDP through a growth in real GDP averaging 7-8 per cent annually during the planning period (NEDA, 2011).

The current PDP also provides greater attention to climate change, environmental protection and natural resource conservation, although without referring to SCP. Chapter 10 of the PDP addresses environmental issues. The PDP's overarching environmental vision is to have '*an environment that is healthy, ecologically balanced, sustainably productive, climate change resilient, and one that provides for present and future generations of Filipinos*' (NEDA, 2011, page 304). Specific SCP-related goals and objectives include:

- Improving the conservation, protection and rehabilitation of natural resources;
- Improving environmental quality for a cleaner and healthier environment;
- Enhancing the resilience of natural systems;
- Enhancing the adaptive capacities of human communities to cope with environmental hazards including climate change; and
- Achieving more effective environmental governance.

2.2 Policies for activity domains of high significance to SCP and RE

2.2.1 Food and agriculture

Although the share of agriculture to GDP had declined to around 18% of GDP by 2009, the sector continues to play an important role in the Philippine economy, employing nearly 36% of the total workforce. However, environmental degradation, including soil erosion, deforestation, increasing drylands and the loss of biodiversity, is causing a decline in agricultural productivity (ADB, 2011). Recent estimates stress that approximately 21% of agricultural land is moderately or severely eroded (ADB, 2011).

Sustaining and accelerating agricultural growth remains a development imperative in view of persistent rural poverty and emerging threats to food security (Briones, 2010). The agricultural sector is experiencing a real productivity slowdown, which needs to be turned around to combat poverty and ensure food security. Improvements in productivity growth are hampered due to high production costs, inefficient supply chain and logistics systems, inadequate provision of irrigation infrastructure, and low adoption rates of value-adding technologies.

The latest ***PDP (2011-2016)*** seeks to develop a '*competitive, sustainable and technology-based agriculture and fisheries sector*' (NEDA, 2011, page 113). Specific sector goals include (i) ensured food security and increased income, (ii) increased sector resilience to climate change risks, and (iii) enhanced policy environment and governance. There are several objectives for the agricultural sector that have relevance to SCP outcomes. For instance, the ***PDP (2011-2016)*** promotes sustainable and organic agriculture and the development of more efficient and environmentally friendly technologies throughout the value chain (NEDA, 2011). In summary, the Philippines' agricultural sector will require a large effort towards modernization but this needs to be harmonized with environmental goals and will also need to build on and make best use of existing knowledge and skills in farming communities.

2.2.2 Buildings and construction

The lack of housing in urban areas is a serious problem in the Philippines. While the total housing need stood at around 3.7 million units in 2010, it is estimated that it will reach about 5.8 million housing units by 2016 (NEDA, 2011). The seriousness of the housing shortage is evident in the ever-increasing numbers of slums and informal settlements in urban areas. In Manila alone, around 43% of inhabitants live in informal settlements. Due to rapid population growth and the lack of government and private resources for buildings and construction, the gap between housing needs and newly constructed houses is increasing every year.

The Philippine government recognizes that innovative and high-density housing strategies are required if the housing deficit is to be effectively addressed. The latest ***PDP (2011-2016)*** targets the provision of around 1.5 million new housing units by 2016. In 2011, the Philippine government also launched the ***National Slum Upgrading Strategy*** (NSUS) to improve the living conditions of informal settlers in cities. The plan is to also provide more secure tenure to urban informal settlers.

The latest ***PDP (2011-2016)*** also includes a number of environmental objectives in relation to buildings and construction. These include (i) the use of indigenous and recyclable building materials, (ii) the promotion of green technologies during the construction process, (iii) the adoption of green architecture with rooftop gardens in central business districts, (iv) the promotion of climate change resilient building design in new urban centres, and (v) the establishment of urban parks to minimize heat island effects in towns and cities (NEDA, 2011).

The Philippine government has increased efforts to improve the energy efficiency of buildings. In 2007, the Department of Energy published the ***Guidelines on Energy Conserving Design of Buildings***. These guidelines seek to encourage and promote energy conservation in the design and construction of buildings in the Philippines. The ***Philippine Energy Efficiency Project*** promotes the efficient utilization of energy in the building sector. Its main focus, however, is on the implementation of energy efficient lighting through retrofitting lights in government buildings and installing compact fluorescent lights in residential buildings (PHILGBC, 2011) but of course energy use related to heating and cooling will also need to be addressed.

2.2.3 Mobility and transport

Transport infrastructure in the Philippines is considered to be of low quality and capacity (NEDA, 2011). In urban areas, the development of transport infrastructure has not kept pace with population growth. Efforts to improve public transport services have been insufficient and sporadic. Traffic congestion and air pollution have become a chronic problem in most of the Philippines' major cities. Indeed, the transport sector has become the major contributor to air pollution in the Philippines.

In an effort to improve air quality and reduce greenhouse gas emissions, the ***National Environmentally Sustainable Transport Strategy*** was launched in 2011. The Strategy promotes sustainable transport goals such as the development of a bus rapid transit system, the expansion of urban rail networks and the deployment of hybrid vehicles in the public transport fleet (TTPI, 2010).

It also includes specific targets, incorporates multi-sector commitments and recommends measures for the promotion of environmentally sustainable transport in the Philippines.

The latest ***PDP (2011-2016)*** envisions a transport sector that is '*safe, secure, efficient, viable, competitive, dependable, integrated, environmentally sustainable and people-oriented*' (NEDA, 2011, page 130). The promotion of environmentally sustainable transport is a major objective of the plan. For instance, the Philippine government aims to shift from fossil fuel vehicles to vehicles that run on renewable energy sources. Non-motorized transport facilities, including sidewalks, footbridges and bicycle ways, are also being promoted. (NEDA, 2011).

Biofuels are regarded as sustainable transport fuel options by the Philippine government since they are renewable and offer the additional advantage of increasing agricultural productivity and rural employment (USAID, 2007). The ***Biofuels Act*** (2006) promotes the use of alternative transport fuels and seeks to reduce greenhouse gas emissions. It mandates that gasoline has to be blended with 10% ethanol and 5% biodiesel by 2011 (TTPI, 2010). Also, the ***Fueling Sustainable Transport Program*** seeks to achieve greater fuel diversification. It encourages a reduction in the carbon footprint by shifting from petroleum and diesel vehicles to low and zero emission vehicles (ADB, 2011). The programme will also accelerate the promotion and use of alternative fuels and new technologies for public transport. The trade-off between the use of crops for biofuels and food security will need to be managed carefully.

2.2.4 Manufacturing and consumer goods

The Philippines has a number of programmes that favour cleaner production and sustainable purchasing choices in the public sector and by households.

- The ***Green Choice Philippines*** is a national eco-labelling programme which seeks to change the country's consumption and production patterns. It is voluntary in nature.
- Green public procurement was established through ***Executive Order 301*** in 2004. All government departments, bureaus, offices and agencies are expected to make 'environmentally-informed' purchasing decisions.
- The latest ***PDP (2011-2016)*** also promotes green supply chains, cleaner production and extended producer responsibility through the provision of tax incentives. It further suggests that an ***Extended Producer Responsibility Bill*** should be developed as priority legislation. This new legislation will oblige manufacturers to take back their wastes and end-of-life products and goods (NEDA, 2011).
- These programmes will become increasingly important as the country invests into its manufacturing sector, and as some households are gaining in wealth and lifestyle decisions start changing accordingly.

2.2.5 Urban development and land use

Urban areas in the Philippines have experienced explosive and unabated growth in recent decades. In 2005, nearly 63 per cent of the country's population resided in urban areas. This figure is projected to increase to around 85 per cent by 2050 (Carino and Corpuz, 2009). A lack of

comprehensive land use and human settlement plans has translated into unplanned urban development. As a result, urban areas are experiencing numerous challenges including rising numbers of informal settlements, overcrowding and congestion, disease outbreaks due to poor sanitation conditions, and inadequate infrastructure provision. Another consequence of the rapid urbanization process has been the extensive conversion of prime agricultural land to urban uses. The encroachment of urban areas into agricultural lands is accelerating. By 2006, more than 46,000 hectares of agricultural land had been approved for conversion into non-agricultural uses (HUDCC, 2009).

The ***National Urban Development and Housing Framework*** (NUDHF) was initially formulated in 2001 to guide the management and development of the urban sector. The overall vision of the updated ***NUDHF (2009-2016)*** focuses on achieving urban sustainability, housing affordability, poverty alleviation and performance-oriented governance. Key objectives with SCP-relevance include (i) encouraging energy efficiency and water conservation and reuse, (ii) removing zone and code obstacles to the application of green technology and sustainable design, and (iii) supporting green planning and building standards (HUDCC, 2009).

According to the latest ***PDP (2011-2016)*** local governments have to develop land inventory systems through their Comprehensive Land Use Plans in order to identify areas for urban growth and new areas for planned human settlements (NEDA, 2011). In addition, a ***National Land Use Act*** (NALUA) is currently being drafted that will define the indicative priorities for land utilization and allocation. NALUA will also mandate the formulation of national planning and zoning guidelines and standards (NEDA, 2011).

2.2.6 Energy, water, waste

Energy

The Philippines is one of only few countries in the world where renewable energy accounts for the largest share of total primary energy supply (35% renewable energy and 2% hydro) which is related to the large scale use of traditional energy sources. However, recent years have seen an increasing use of natural gas for power generation. The Philippines also has the highest cost for producing electricity of all countries in Southeast Asia, mainly due to low investment in the sector and inefficient transmission and distribution systems (ADB, 2011).

The ***Philippine Energy Plan (2009-2030)*** defines the overall energy sector policy framework for the country. It provides a three-point policy agenda; (i) ensuring energy security, (ii) pursuing effective implementation of energy sector reforms, and (iii) implementing social mobilization and cross-sector monitoring mechanisms. Of particular relevance to SCP are two objectives of the Plan that promote the use of clean and green energy as well as the responsible use of energy resources. The Plan aims to achieve ten per cent energy savings on the total annual demand of all economic sectors (DOE, 2009).

There are no laws or regulations that directly mandate the implementation of energy efficiency in the Philippines. However, the latest ***PDP (2011-2016)*** proposes the development of new legislation on energy efficiency and conservation. Also, the Department of Energy introduced the ***National***

Energy Efficiency and Conservation Program (NEECP) in2004 to promote the conservation and efficient use of energy resources. The NEECP targets to achieve an average annual energy saving of 23 million barrels of fuel oil equivalent for the period 2005-2014. Several strategies are being used to achieve this energy saving target, including (i) the provision of information, education and communication campaigns, (ii) the development of voluntary agreements with the private sector to implement energy efficiency programmes, (iii) the expansion of energy efficiency labelling, and (iv) the integration of energy efficiency in the procurement practices of government (DOE, 2005).

The ***Renewable Energy Act*** (2008) seeks to catalyse investment in renewable energy sources such as biomass, solar, wind, hydro and hybrid systems. It mandates a universal charge on all customers to finance proposed incentives for renewable energy, such as feed-in tariffs. Finally, the ***Climate Change Act*** was adopted in 2009. It is a comprehensive law addressing climate change adaptation and mitigation initiatives. The Act also provides for the creation of the ***Climate Change Commission*** headed by the President, and the formulation of the ***National Climate Change Framework Strategy*** (2010-2020), which outlines national policy priorities to mitigate and adapt to the effects of climate change trends. Local governments are given primary responsibility for planning and implementing local climate change action plans, which are to be consistent with national frameworks.

Water

Although water remains abundant in many areas of the Philippines, the country is facing the prospect of water scarcity and incomplete replenishment of groundwater levels (ADB, 2011) in some regions. Increasing water demand has resulted in several regions and urban centres, including Metro Manila, to experience water stress (NEDA, 2011). Water pollution is another serious problem in many parts of the Philippines. For example, in Metro Manila, all major surface water bodies are severely polluted and considered biologically dead (Carino and Corpuz, 2009). Also, nearly 60 per cent of the groundwater has been found to be contaminated with coliform bacteria (NEDA, 2011).

The Philippine government recognizes the importance of efficiently and effectively managing water resources to ensure a sustainable environment. The ***Clean Water Act*** was adopted in 2004 to protect the country's water resources from pollution from land-based sources***.*** It designates specific water management areas and also provides for a system of water pollution permits and charges.

The latest ***PDP (2011-2016)*** promotes integrated water resources management (IWRM) as the overall strategy for effectively protecting and regulating water resources in the Philippines. It also seeks to develop a volume-based pricing mechanism for irrigation water, which currently accounts for the largest single water use in the country (NEDA, 2011).

Waste

Waste management poses a significant challenge in the Philippines. About 30,000 tons of waste is generated daily, only about half of which is collected (ADB, 2011). Uncollected waste ends up in rivers and other water bodies, clogging the drainage system and leading to floods and serious water pollution. At present, the country also has no large-scale treatment and disposal facilities for hazardous wastes (NEDA, 2011).

The ***Ecological Solid Waste Management Act*** of 2000 promotes recycling, waste segregation and composting. Under the Act, local governments are to formulate and implement solid waste management plans and recycle, reuse or compost at least 25% of waste from landfills.

3. STRENGTH OF EXISTING POLICIES AND POLICY CHALLENGES

The Philippines has embarked on a development path that aims to achieve a delicate balance between pursuing economic growth and responding to mounting concerns over the environment (TTPI, 2010). While the country has improved in mainstreaming environmental concerns into government planning and policies, additional resources are needed, and the framework for enabling environmental sustainability requires improvement (ADB, 2011).

Overall, legal frameworks in the Philippines are quite well developed but implementation is the key issue. The latest PDP (2011-2016) identifies a number of institutional issues to be addressed in order to achieve more effective implementation of environmental policies. These include (i) existing policies are overlapping and conflicting, which is hindering implementation efforts, (ii) government capacity for resource management requires greater technical expertise and improved information systems, (iii) enforcement of environmental laws and policies is inadequate, (iv) inadequate financial resources for environmental and natural resource programmes (NEDA, 2011).

There are numerous barriers for implementation of effective environmental regulation in the Philippines. The most important one is the very low degree of law enforcement. Weak public institutions and inadequate accountability mechanisms are persistent challenges that have reduced the quality of governance and pose risks to effective development (ADB, 2011).

Infrastructure development is also lacking with current infrastructure being outdated but no new projects in the pipeline. There is also a low level of governance and corruption is reportedly an issue.

Sri Lanka

1. NATIONAL CONTEXT

General Indicators		SCP Indicators	
	Population (2010) and population density [1] 20.1 million and 333 people per km^2		**Per capita material use and material intensity (2005)** [4] 2.6 tonnes/ 2.6 kg per US$
	GDP (PPP, US$ 2010) [1] $105.1 bn		**Per capita energy use and energy intensity (2005)** [4] 20.01 GJ/ 19.97 MJ per US$
	GDP per capita (PPP, US$), 2010 [1] $5,040		**Per capita water use (2007)** [5] 638.8 m^3
	GDP per capita, constant 2000 US$ (2010) [1] $1,296		**Per capita GHG emissions (2005)** [6] 1.2 tonnes
	Gini coefficient (2009) [2] 41.1		**GHG emissions intensity (2005)** [6] 0.23 kg per US$
HDI	**HDI Rank (2010)** [3] 91	CO_2	**Per capita CO_2 footprint (2008)** [7] 1.07 tonnes
	Agricultural land per capita (2008) [1] 0.13 ha		**Number of middle class consumers (2010)** [8] 59%
	Forest cover (2010) [1] 29.7%		**Number of people with income <$2/day (PPP, US$) (2010)** [8] 40%

Sources: [1] World Bank (2011), [2] UNDP (2009), [3] UNDP (2010), [4] CSIRO and UNEP (2011), [5] FAO (2010); [6] World Bank (2011); [7] Peters *et al.* (2011); [8] ADB (2010).

The island nation of Sri Lanka, after a civil conflict that lasted for almost three decades until 2009, is now engaged in large-scale reconstruction projects to restore infrastructure, both to facilitate economic development for the wellbeing of the people and to rehabilitate areas damaged in the conflict. Projects include road and rail network expansion, increasing access to electricity and seeking to reduce poverty through a combination of government policy and investment promotion throughout the country. The civil conflict and the global financial crisis threatened the country's economic development. An IMF loan in 2009 helped restore investor confidence (CIA, 2012). Sri Lanka's labour force works in agriculture (about 33%), industry (26%) and services (41%), and the unemployment rate has been estimated at 5.4%. Fourteen per cent of the population live in urban areas, and 40% of people live on less than $2 per day. Key industries include agricultural production; processing of rubber, tea, coconuts, tobacco and other agricultural commodities; telecommunications, insurance, banking; tourism, shipping; clothing, textiles; cement, petroleum refining, information technology services, and construction. Sri Lanka produces sufficient electricity for its own use but is a net importer of oil and commodities. Current environmental issues include deforestation, soil erosion, coastal degradation and pollution, waste disposal, and air pollution in Colombo.

2. REVIEW OF EXISTING POLICIES

2.1 National framework policies and overarching SCP and RE policies

Sri Lankan policy is currently guided by three strategically overarching policy documents: the 30-year **National Sustainable Development Strategy**, the **Mahinda Chinthana** which presents an immediate vision, and the **Haritha Lanka** programme (National Council for Sustainable Development, 2009) with an action-oriented 7-year plan. These strategic documents are briefly introduced and then further analysed under activity domains, with a focus on clauses relevant to SCP.

National Sustainable Development Strategy 2007 – 2037

The National Sustainable Development Strategy (NSDS) was produced when Sri Lanka was still caught in a civil conflict, and just three years after the 2004 tsunami that caused severe destruction in the country. In that respect, amidst similar issues faced by other developing countries, Sri Lanka was in addition concerned about 'achieving permanent peace and rehabilitating and reconstructing' disaster hit areas. Incorporating these elements to its development aspirations, the NSDS prioritized five goals for the country:

- Eradication of poverty, a strategy of which hinges on: provision and extension of infrastructure to poor areas, and improvements in agriculture
- Ensuring economic competitiveness through strengthening SMEs, provision of renewable energy, and incorporation of minimum sustainability standards into industry and public operations
- Improving social development through access to health care, community empowerment, and disaster management
- Improving national governance
- Ensuring a clean and healthy environment by adapting sustainable resource management and mainstreaming environmental dimensions into development planning.

National development framework 2010 - 2016

The national development policy frameworks 'Mahinda Chinthana' and 'Mahinda Chinthana: Vision for Future' (two documents) are the current development manifestos of the present Government and cover national development processes for the whole island including the North and East. The documents put special emphasis on economic development. The two major challenges identified are (1) ensuring economic prosperity in the country and ensuring that the benefits of the development will filter down to all Sri Lankan people and (2) laying the foundation for long term sustainable development. An MDG assessment (Institute of Policy Studies, 2010) gave a positive evaluation of the country's achievements. The Mahinda Chinthana (Government of Sri Lanka, 2010) provides a six-year direction 'to reposition Sri Lanka in the global arena as a knowledge based strong middle income country with better and improved living standards which continues to preserve cultural values and traditions' (Government of Sri Lanka, 2010). Although SCP is not expressly mentioned, there is strong recognition therein. Resource issues (like energy, water, agriculture, fisheries) are prioritized; so is the need for sustainable infrastructure (communications, housing, transportation).

There is also recognition of need to build strong communities, improve rural livelihoods, and preserve the natural and cultural heritage of the country.

National Action Plan for Haritha Lanka Programme 2009 - 2016

The Haritha Lanka programme, released in 2009, serves as an action plan for the NSDS. It falls under the National Council for Sustainable Development. It identifies ten broad environmental objectives within a seven-year timeframe (2009 – 2016); for each one it outlines strategies, performance indicators, achievement targets and agencies responsible for implementation. The ten objectives are: reducing air pollution, conserving biodiversity, climate change adaptation and mitigation, sustainable marine resource use, sustainable land use, integrated waste management, sustainable water resources, sustainable cities, greening industry, and improving education.

National Cleaner Production Policy 2005

The National Environmental Policy developed in 2003 recognized and incorporated many SCP oriented principles and policy statements. The Cleaner Production (CP) policy (2005) was developed to better emphasize the need for action on preventive environmental strategies, resource efficiencies and waste minimization. The CP policy has as major objectives: to reduce pressure on natural resources through efficient use of raw materials, energy and water; and to improve environmental performance of products and services through a life cycle perspective thus reducing waste and pollution. The national CP policy is complemented by sectoral CP policies to be developed as collaboration between the respective sector ministry and the Ministry of Environment. There CP policies for the tourism, fisheries and health sectors.

2.2 Policies for activity domains of high significance to SCP and RE

Most policies shown below are linked to the national framework policies described above, or specifically highlighted during consultations with policy makers in Sri Lanka. As a starting point, the publication by the national SWITCH-Asia project partners, *Policy Options for the Promotion of SCP in the F&B Sector in Sri Lanka*, provides a hands-on rundown of policies relevant to SCP.

2.2.1 Food and agriculture

By 2010 estimates, agriculture contributes 13% of the GDP and employs 33% of the population (Government of Sri Lanka 2010). Sri Lanka views agriculture as a cornerstone of its economy and central to efforts to improve rural livelihoods and reduce poverty rates. The National Agricultural Policy (Government of Sri Lanka, 2007) aims to promote sustainable agriculture through practices such as integrated pest management including reduction of use of synthetic pesticides while increasing use of bio-pesticides; and reducing use of chemical fertilizers while promoting production and utilization of bio-fertilizers. To strengthen the position of small farmers the agricultural strategy aims to strengthen rural credit institutions, introduce simple procedures for accessing loans, and provide concessionary loan rates. It would then establish a monitoring process for the effects of agriculture on environment and health, and to prevent pollution of water from agricultural and industrial practices. It also aims to improve efficiency, for example, of rain-fed agriculture through

water harvesting; the Haritha Lanka programme aims to introduce better irrigation and reduce soil erosion by 50% by 2016.

2.2.2 Buildings and construction

The government's ambition, as per the Mahinda Chinthana, is to ensure that each Sri Lankan family has its own house by 2020. To achieve that, it will provide land plots to low income families to construct their own houses in rural and estate sectors, while also promoting low cost housing technologies. It would also, by 2016, introduce specialized housing financing products to meet the housing requirements of middle income families.

2.2.3 Mobility and transport

Transportation in Sri Lanka is almost entirely dependent on roads – 90% of passengers and 98% of freight. In order to minimize effects of further road construction on the environment, the Mahinda Chinthana commits to carry out environmental impact assessments and implement a code of practice for environmental protection. It also aims to upgrade existing railway tracks and build new ones to connect commercial hubs. The government plans to develop new pedestrian and bicycle paths, introduce more stringent vehicle emissions standards, and to introduce congestion charges to dissuade traffic jams and reduce pollution. The Haritha Lanka programme aims to reduce atmospheric pollution by improving the railway infrastructure and implementing mass transit systems, with a 2016 target of at least 50% of car owners opting to use public transportation. It also plans to enforce restrictions on import of used vehicles and promote alternative transportation fuels, with a target of reducing fossil fuel use by 10% by 2015.

2.2.4 Manufacturing and consumer goods

The National Cleaner Production Strategy (Government of Sri Lanka 2005) has policy objectives to reduce use of raw materials in production processes, to improve environmental performance throughout the life cycles of goods and services, and to create disincentives for production of environmentally and socially harmful products. The Haritha Lanka programme targets the establishment of eco-industrial parks; the Mahinda Chinthana aims to have relocated at least 80% of all factories to industrial parks by 2016. The government plans to promote ISO 14001 certification standards to industries, encourage resource efficiency and set up green credit schemes to facilitate uptake of environmentally sustainable technologies. By 2016 the government hopes that at least half of the industries in the country will be practising cleaner production and thus reducing GHG emissions by 50%, and 75% of industries should have switched to renewable energy use.

2.2.5 Urban development and land use

In Sri Lanka, urban development strategy is mainly contained in the National Physical Planning Policy and Plan 2006 – 2030 (Government of Sri Lanka, 2006). Three of the objectives of this policy are to:

- Ensure that the people of Sri Lanka live in areas that are safe from natural disasters and the effects of global warming including rising sea level

- Create a strong network of cities, towns and villages that provide a high quality of life, an appropriate range of services, diverse employment opportunities and community integration
- Provide infrastructure facilities that will support cities, towns and villages and economic activities.

2.2.6 Energy, water, waste

The Mahinda Chinthana highlights energy, water and waste among areas that need careful attention. One of its cleaner production targets by 2016 is for industry to have reduced raw material, water and energy consumption by 10 to 25 %. It further requires that by 2016 at least 80% of industrial hazardous waste and municipal solid waste are being collected and treated, and that pollution load from industry should have fallen by 10% from 2010 levels.

The Ministry of Power and Energy has set a goal of achieving 10% of electricity supply from non-conventional renewable sources by 2016. The Sustainable Energy Authority has been created and charged with the above objective. Sri Lanka has a 2016 target of developing over 1700 mini/micro hydropower projects, as highlighted in the Haritha Lanka programme. It also aims to promote other renewable energy sources such as wind, waves, solar, ocean thermal electric conversion, waste to energy, and biogas from sewage.

According to the Haritha Lanka programme, rainwater harvesting should be mandatory; the target is to have 45% of houses, especially in dry zones, with quality rainwater harvesting systems installed by 2016. It would also raise by 70% the number of schemes for water quality surveillance and monitoring, and promote central wastewater treatment plants for polluting industries.

For waste, the Haritha Lanka program has an objective to rehabilitate 60% of existing solid waste dumping sites and prevent further contamination by 2013. It would also promote life cycle management of waste, based on SCP principles, for all waste streams; establish necessary infrastructure for solid waste management in all local authorities; introduce a load-based scheme to prevent release of untreated sewage into the environment; introduce sanitary composting technology and promote organic fertilizer use, with a target of 60% of waste being processed as fertilizer by 2016.

3. STRENGTH OF EXISTING POLICIES AND POLICY CHALLENGES

Implementation Gaps

Sri Lanka has many existing policies covering a broad range of SCP activities. However, as many respondents stressed, there are difficulties in policy implementation due to various problems. Prudent investment/facilitation is necessary aiming at long-term sustainability with technical and financial facilitation coupled with strong enforcement. The EPL and EIA are typical examples, where, in this case, the CEA's capacity gets overwhelmed, leading to low levels of compliance.

Conflicting Policy Objectives

This occurs most often between economic and environmental policies. The import of secondhand cars and electronics, for example, sometimes conflicts with the policy objectives of (e-waste) reduction. Conflicts are also observed between development and environmental policy objectives. An example is subsidies on fossil fuels, while at the other end of the pipe needing resources to fight pollution effects from the use of these fuels. A large proportion of the costs of certain chemical fertilizers are subsidized, the motivation being to promote agricultural output that can feed the considerable population of poor people and agriculturally unproductive areas of the country. Sri Lanka does not use POP pesticides and there is a pesticide registry office that controls registration in a systematic manner. However, past use of chemical fertilizers has had polluting effects on long term soil fertility in some areas; it further conflicts with the government's policy of promoting organic fertilizer use. At the same time one should not forget the social (i.e. agricultural outputs) issues.

Untangling Complexity

Complexity can be experienced at several levels, starting with the concept of SCP itself – the complex ecology of consumption and production systems and their effects on the environment. Following more traditional administrative structures, Sri Lanka has over 50 ministries, a difficult map to navigate, many of which have some policy relevance to consumption, production or both. The administrative system and inter-agency coordination mechanism is thus hard to follow – sometimes even for personnel within the government – and planning divisions within ministries are daunted by the possibility of requisite broad inter-ministerial collaboration. Senior officials at the Ministry of Finance and Planning expressed the view that although benefits could be perceived in integrating sustainability criteria in planning and project financing, the capacity required for such a challenge was too high. Some standards are too complicated and technical or academic for stakeholders to follow. Such is the case expressed by stakeholders in the hotel sector, where too much complexity in reporting standards may lead to incorrect reporting or avoidance of reporting altogether.

Diseconomies of scale

Small to medium enterprises (SMEs) employ the majority of people but have little capacity to undertake SCP and RE practices. Although the sector employs a significant proportion of the total population, SMEs have little collateral and so cannot access bank loans. Many operations remain informal (e.g. unregistered hotels), especially cottage industries operating in rural areas, where over 70% of the population lives. In some instances, the government has set up programmes targeting SMEs and micro-enterprises, but even so the response rate has been low. Limited resource allocation for the sector combined with challenges in communication mean a majority of active business operations in the country do not yet benefit from the advantages of adopting SCP.

4. CAPACITY BUILDING NEEDS ASSESSMENT

4.1 Information and knowledge

The following were identified, where capacity for information and knowledge on SCP needs to be strengthened.

Communication/raising awareness

One of the challenges often mentioned during consultations was the difficulty of measuring or communicating intangible benefits of SCP. More conscious efforts need to be made in communicating not only the immediate benefits (which often appear limited) but also the medium- and long-term benefits of SCP to stakeholders.

One target is rural areas, given that over 80% (CIA, 2012) of the population still lives in rural areas, where sustainable traditional practices are under threat from urbanization. One sector that might especially benefit from more awareness is agriculture. Farmers and farmers associations need to be targeted, for example, on benefits of organic fertilizers, and the consequences of misuse of chemical fertilizers.

Government also needs support to better communicate its own existing SCP-related programmes. There were examples given of soft loans (e.g. by the EU and World Bank, for sustainable tourism) that were not being taken up, and government subsidies available for small farmers but farmers were not applying for such subsidies.

Skills training for targeted personnel, and also general institutional capacity development

A common situation is one where particular persons are trained and a while later they leave the institution, leaving a vacuum in technical competence. A few examples for such training are:

- Agrochemicals sales staff. An amendment, made in July 2011, to the 1980 Control of Pesticides Act, now requires agrochemicals sales staff to have undertaken training in this area, to understand the substances and be able to provide technical advice to customers. Over 7000 trained personnel are required; the Ministry of Agriculture needs technical assistance to meet the demands of such training. Training is also needed for extension officers, especially to help reduce overuse of pesticides and chemical fertilizers
- Legislative sector. It was suggested that there is a need to provide more information on the conflicting issues related to economic, social and environmental development to better understand long-term sustainability implications of laws, and how decisions by courts and legal practitioners affect stakeholder adherence to sustainable practices at various levels in the legislative framework
- SME tourism operators need to be better aware of and responsible for effects of their practices on, for example, biodiversity, pollution, etc. The scale of this cannot be underestimated when over 400,000 tourists arrive per year, of whom 10% or less are considered to be eco-tourists

- Re-organize school syllabi (at A and O level) to integrate SCP, ensuring integration of theory and practice
- Integrate SCP/RE into educational courses
    - E.g. green building in architecture
- Need for better data to implement producer pays principle
- One-stop shop/manuals/guidelines
- Use of media to educate the public on SCP issues.

4.2 Innovation and R&D

There are few research centres which focus on SCP. The few that exist are limited either financially or by technical expertise. Since R&D is usually considered costly, a suggested approach was to support research for adaptation of already existing technologies to the Sri Lankan context. Research on agriculture and technologies for cleaner production take priority.

Research is also needed to promote new designs that incorporate sustainability elements. Energy efficient building design is a target area.

The lack of service laboratories was raised as an issue. To this end, upgrading the capacities of government service labs would be helpful; as well as facilitating development of service agreements between companies and universities to share research labs. To foster innovation, the technical education system needs to be strengthened, syllabi updated and equipment updated.

As discussed earlier, Sri Lanka boasts a host of institutions and policies with SCP-related objectives, yet implementation remains a challenge. The following immediate areas were identified as needed to facilitate broad scale transition to SCP:

- Implementation of the recently developed National Green Reporting System. The system is designed to target industry and service sectors in general, however there are special provisions to stimulate SMEs to participate in the process through the supply chain management. SMEs are quite crucial but often lack capacity to monitor their environmental impacts or appreciate the benefits of benchmarking and reporting. Over 85% of Sri Lanka businesses are SMEs; more than 50 organizations, including public and private ones, had already registered to use the system within the first two months of its adoption. Capacity support would provide information and support for participating SMEs, training on how to use the reporting system, monitoring and evaluation.
- Collaboration between the Ministry of Environment and the National Planning Department to develop guidelines for SCP to be incorporated into national project financing. This should include specific guides to resource efficiency and pollution. Furthermore the government needs support to develop mechanisms and guidelines for sustainable public procurement. This would ensure that the substantial amounts of goods and services purchased by government were sustainable, and would also give a boost to the market for a shift to sustainable production
- Enforcement of monitoring mechanisms for existing policies. This includes strengthening the role and capacity of the Central Environmental Authority (CEA) in its enforcement of

Environmental Protection Licenses and Environmental Impact Assessment. There is also need to develop expertise in wastewater/pollution control. An example is with levies placed on concentration of pollutants in effluent; since the price of water is low, a recurring issue is companies diluting their discharge to mask pollution load

- Collaboration between CEA and sector leaders to upscale successful methods
- Transfer of appropriate technology, and prudent investment, are also crucial issues to be considered.

4.3 Institutions and Governance

Sri Lanka has placed sustainability as a priority concept. It has a National Council for Sustainable Development (NCSD) established in 2009; to ensure political integration of SD across different ministries it is placed at highest level, under the President (as Chair). It also has a Parliament Consultative Committee on Environment. The National Environmental Action Plan is coordinated by a Committee on Environmental Policy and Management (CEPOM). CEPOM in turn brings together nine inter-ministerial committees (urban and built environment, industry, energy, environmental health, land and minerals, water, forestry and bio-diversity, coastal and marine, and a steering committee) for purposes of integration, with Ministry of Environment as Secretariat. CEPOMs are not currently functioning. However the implementation of the Haritha Lanka Programme follows principles based on the CEPOM structure. There are ten steering committees for the ten missions, co-chaired by two secretaries – one from the Ministry of Environment and the other on a rotational basis from the other Ministries representing the steering committee. The implementation framework has been developed, however actual implementation has not occurred due to various barriers. Responsibility for SCP policies is spread between a range of ministries, including the Ministry of Environment, the Ministry of Finance and Planning, Ministry of Economic Development, and Ministry of Agriculture. For implementation, there is the Central Environmental Authority, with oversight of tools such as Environmental Protection Licensing (EPL) and Environmental Impact Assessment (EIA). The Industrial Technology Institute performs research, development and technical services. A National Cleaner Production Centre was established by UNIDO in 1997 and promotes cleaner production and resource efficiency in various industrial and non-industrial sectors. An Environmental Police Force was recently established.

Like many countries in the region, Sri Lanka has many existing policies, strategies and plans relating to sustainable consumption and production and resource efficiency. The main ones (as reviewed above) include the National Sustainable Development Strategy and the National Environmental Action Plan. The recent National Action Plan for Haritha (Green) Lanka Programme was produced by the NCSD. The recently developed National Green Reporting System has good potential to enable the implementation of SCP policies and strategies in a collaborative manner. The implementation mechanism proposed has been designed to stimulate demand and supply driven approaches with a consultative process including all major stakeholders. This is one of the areas where capacity building is necessary to ensure long term viability of the sustainable development process.

The main regulatory instruments are Environmental Protection Licensing and Environmental Impact assessment (both under CEA). As a voluntary and information-based instrument, the Environmental Charter was launched by the Ministry of Environment and Natural Resources on World Environment

Day 2008, with a shared national vision, five principles and seven habits for all citizens. The following year the Ministry of Environment and Natural Resources also started a 'Green Jobs' award to recognize contributions towards greening the economy. The NCPC organizes 'Cleaner Production' awards annually. More recently, in June 2011, a broad-based representation of multiple stakeholders worked with the national SWITCH-Asia projects and the Ministry of Environment and Natural Resources to launch a national Green Reporting System for both private and public organizations. Preparations for implementation are ongoing.

4.4 Funding (Investment and Finance for SCP)

Financing for SCP activities was probably the most expressed need, particularly by industry representatives. Although this tended to be skewed towards investments in newer and more efficient technologies, other areas of capacity needs also emerged.

- Set up green credit schemes for SMEs. This would include seed grants for starting up sustainable operations, and serving as collateral for bank loans
- Giving subsidies or tax incentives; for example, for purchase of or investment in cleaner technology
- Developing progressive pricing/taxation schemes could limit, for example, excessive use of energy – energy security is a problem in the country – and deters heavily polluting activities
- Supply chain/life cycle management for SCP
- Set up industrial parks for green businesses
- Adopt the polluter pays approach in SCP policy. An example is by using load-based pollution charges (e.g. for wastewater). Also recommended was the development of extended producer responsibility (EPR) programs for e-waste and hazardous waste
- Policy interventions at design phase. A suggestion was to conduct a comparative analysis of transportation options for the country – including roads, railways, airports and water ports. It was noted that over 90% of the population uses public transportation, but the 10% using private vehicles are allocated disproportional amounts of (road) infrastructure.

4.5 Supply chain management

At this stage there is limited available technology, especially that needed to tackle new, non-traditional industries (e.g. disposal, chemical management). Suggestions received included:

- Providing mechanisms for technology transfer between developed and developing countries
- Developing eco-labels, e.g. green leaf for hotels
- Promoting public private partnerships.

5. RECOMMENDATIONS FOR CAPACITY STRENGTHENING

Conversations with policy makers and stakeholders during the Sri Lanka SWITCH-Asia mission indicated that the country has no shortage of policies and strategies for sustainable consumption and production, but that often there were barriers to the implementation and/or evaluation of such policies. Accordingly, some possible recommendations for policy support include:

- Strengthening the role and capacity of the Central Environmental Authority (CEA) in its enforcement of Environmental Protection Licenses and Environmental Impact Assessment
- Providing support for collaboration between the Ministry of Environment and the Department of National Planning to enable the development of guidelines for SCP to be incorporated into national project financing, including providing guides to resource efficiency and pollution prevention
- Providing information and support centres for SMEs participating in the new National Green Reporting System, including training on how to use the reporting system, monitoring and evaluation
- Providing assistance to the Ministry of Agriculture to train personnel in the appropriate use of agricultural chemicals
- Translating SCP information and training programmes into Sinhala and Tamil languages (as required) and tailoring material to the recipient communities
- Upgrading the capacities of government service laboratories, and facilitating development of service agreements between companies and universities to share research laboratories
- Assisting government to develop mechanisms and guidelines for sustainable public procurement.

Thailand

1. NATIONAL CONTEXT

General Indicators		SCP Indicators	
	Population (2010) and population density [1] 69.1 million and 135 people per km^2		**Per capita material use and material intensity (2005)** [4] 11.9 tonnes/ 4.8 kg per US$
	GDP (PPP, US$ 2010) [1] $586.8 bn		**Per capita energy use and energy intensity (2005)** [4] 65.19 GJ/ 26.67 MJ per US$
	GDP per capita (PPP, US$), 2010 [1] $8,490		**Per capita water use (2007)** [5] 845.3 m^3
	GDP per capita, constant 2000 US$ (2010) [1] $2,712		**Per capita GHG emissions (2005)** [6] 0.6 tonnes
	Gini coefficient (2009) [2] 42.5		**GHG emissions intensity (2005)** [6] 0.65 kg per US$
HDI	**HDI Rank (2010)** [3] 92	CO_2	**Per capita CO_2 footprint (2008)** [7] 3.65 tonnes
	Agricultural land per capita (2008) [1] 0.28 ha		**Number of middle class consumers (2010)** [8] 86%
	Forest cover (2010) [1] 37.1%		**Number of people with income <$2/day (PPP, US$) (2010)** [8] 11%

Sources: [1] World Bank (2011), [2] UNDP (2009), [3] UNDP (2010), [4] CSIRO and UNEP (2011), [5] FAO (2010); [6] World Bank (2011); [7] Peters *et al.* (2011); [8] ADB (2010).

Thailand is one of the foremost development success stories in Asia, with decades of sustained growth and impressive poverty reduction. Since the mid-1980s, the average real per capita income has roughly tripled (UNDP, 2009). Yet, the financial crisis in the late 1990s and political instability in 2006 caused an economic slowdown, severely affecting several sectors of the economy.

Thailand's economic structure has undergone major changes in the past four decades. Thailand's economy, once largely agricultural, has been transformed by the development of the industrial and services sectors. The services sector is currently the largest contributor to GDP, with a near constant share in the range of 45-50% in recent years (Tangkitvanich and Onodera, 2008). Annual tourist arrivals had increased to over 14 million by 2007, and the tourism industry contributes around seven per cent of GDP (UNDP, 2009). Industrial growth was initially driven by labour intensive manufacturing activities such as textiles and clothing. However, more recently it has increasingly been supported by capital intensive industries such as automobiles, electronics and chemicals. Thailand's export sector has played an important part in driving economic growth over the past three decades.

In 2006, around 43% of the Thai population lived in urban areas. The urbanization rate is estimated to increase to 50% by 2015 (ADB, 2006).Thailand's rating on the UNDP's Human Development Index

has improved steadily over the past three decades. The country has also achieved most of its Millennium Development Goals, nearly all of them well ahead of deadline (UNDP, 2009). The incidence of poverty has fallen from 42% in 1988 to 8.5% in 2007. However, the benefits of Thailand's success have not been shared equally by all and there are still over five million people living below the poverty line (UNDP, 2009). Some regions, particularly in the rural south and northeast, are lagging behind the rest of the country. A high proportion of the workforce is in informal employment, mostly working in the agriculture, transport, trade and construction sectors (UNDP, 2009).

Growth in industrialization, urbanization and intensified agricultural production has relied extensively on the country's natural resources. For instance, forest cover fell dramatically from 53 per cent in 1961 to 25 per cent in 1998. In the fisheries sector, over-harvesting of marine fisheries has reduced fishing yields by 90 per cent. Rapid industrial expansion and population growth have also degraded land and water quality, caused the loss of natural habitats, and generated increasing levels of air and water pollution (WB, 2011c).

2. REVIEW OF EXISTING POLICIES

2.1 National framework policies and overarching SCP and RE policies

National Economic and Social Development Plans

The *National Economic and Social Development Plan* (NESDP) is Thailand's strategic framework for addressing its medium term development challenges. NESDPs are developed, implemented and evaluated by the Office of National Economic and Social Development Board (NESDB). The NESDB is responsible for drafting national SCP policies, indicators and evaluation criteria in Thailand. It also acts as a coordinator for SCP-related initiatives between the cabinet and implementing agencies. Other key ministries involved in SCP work include the Ministry of Natural Resources and the Environment (MONRE) and the Ministry of Industry (MOI).

SCP-related objectives have been incorporated into Thailand's *10th NESDP* (2007-2011), which strives for sustainable development via a 'sufficiency economy'. The *10th NESDP* contains five major strategic directions. One of these addresses development based on the sustainable utilization of diversified biological resources. The plan highlights that current production systems have been using natural resources in a wasteful manner. The plan suggests that current patterns of production and consumption behaviours need to be adjusted to reduce the impacts on the natural resource base. The *10th NESDP* therefore seeks to develop policies which promote sustainable production and consumption within society. This includes the creation of economic instruments, such as subsidies and environmental taxes, to encourage clean technologies and the economic utilization of resources in production activities (NESDB, 2007). Specific SCP-related targets in the *10th NESDP* include:

- Maintain forests at no less than 33% of the total land area;
- The proportion of river basins and natural water sources with a water quality rating of fair or good to be at least 85%;

- Reduce the rate of CO_2 emissions per person by 5% from 2003 levels – CO_2 emissions to be no higher than 3.5 tonnes per person annually;
- Limit waste production in urban areas to no higher than 1 kg per person daily; and
- Ensure proper disposal of at least 80% of all hazardous waste from communities and industries.

SCP has gained even more prominence in the upcoming *11th NESDP* (2012-2016). The overarching vision of this plan is to build a 'happy society with equity, fairness and resilience' (NESDB, 2010, page 8). The improvement of natural resources and environmental quality is one of seven key targets of the *11th NESDP*. Some broad SCP-related principles are outlined in the plan as follows:

- Conserve, restore and secure natural resources and the environment
- Shift the development paradigm and consumption behaviours towards an environmentally friendly society
- Improve ecological efficiency of the production and service sectors.

2.2 Policies for activity domains of high significance to SCP and RE

2.2.1 Food and agriculture

Despite the declining ratio of agriculture to the gross national product, the agricultural sector still employs more than half of Thailand's population. Thailand produces sufficient food for its own consumption and is a major exporter of rice, oils, fish and seafood, fruit and vegetables. The agricultural sector is highly diverse. Recent years have seen a growth in contract farming and large-scale plantations for energy crops (UNDP, 2009).

The Thai government is encouraging sustainable agriculture. Initiatives commenced during the *8th NESDP (1997-2001)* when a target was set to convert at least one fifth of the total agricultural area to sustainable practices. However, only a small fraction of this target was achieved (UNDP, 2009). Thailand's *Master Plan for Agricultural Development* calls for continued improvements in the management of natural resources and the environment as the base for agricultural production. It encourages farmers to use less chemical fertilizers and also promotes natural alternatives and organic production (UNDP, 2010). Another fairly recent development is organic agriculture. For instance, Thailand has a *National Strategic Plan for Organic Agriculture Development*. The *10th NESDP* (2007-2011) promotes organic farming to reduce the amount of chemical use in the agricultural sector.

Thailand's agricultural productivity has increased steadily in recent decades. It has received renewed attention through provisions in the *11th NESDP* (2012-2016), which call for the enhancement of agricultural productivity and value creation. This objective is to be achieved by supporting research and development in more efficient flora and fauna species, and by utilizing eco-friendly technologies and processes. Other agricultural objectives in this plan include (i) the promotion of sustainable agricultural practices, (ii) the improvement of agricultural management, (iii) the promotion of job and income security for farmers, and (iv) the balancing of food and energy security at the household and community level (NESDB, 2010).

Food safety is a growing concern because of contamination risks during preparation, chemical residues, low-quality manufacturing and new diseases. Food safety monitoring is inadequate and controls are poorly enforced. To address this issue, the Thai government developed the *Good Agricultural Practices* (GAP) Scheme in 2004. This scheme labels food products which meet quality and safety standards (Amekawa, 2010).

2.2.2 Buildings and construction

Thailand does not have an explicit long-term national housing policy. The National Housing Authority (NHA) is responsible for housing provision and the construction of new settlements. Informal settlements and self-constructed dwellings are common in urban areas. For example, in Bangkok alone around one million people live in slums and squatter settlements (Yap and de Wandeler, 2010). In 2003, the Thai government launched two programs that together were meant to provide secure housing for one million low-income urban households. The *Baan Mankong* ('secure housing') programme provides government funds in the form of infrastructure subsidies and housing loans directly to urban poor community organizations. So far, this programme has benefitted over 90,000 households in more than 1,500 communities (Archer, 2012). The Baan Ua Arthorn ('we care') programme consists of the design, construction and sale of flats and houses at subsidized rates to lower-income households (Boonyabancha, 2008).

The Thai government has attempted to curb the rising energy intensity of buildings through several measures. These include the implementation and enforcement of mandatory building codes, as well as energy conservation efforts for designated commercial and industrial buildings (Kofiworola and Gheewala, 2008).The *Building Energy Code* (BEC) includes requirements that address the performance of the building envelope, air-conditioning systems and lighting systems. However, so far building codes have achieved only limited success due to (i) weak enforcement, resulting in low participation and implementation rates, and (ii) a lack of differentiated standards for various types of buildings (Chirarattananon *et al*., 2010; WB, 2011b*).* In 2010, the Thai government therefore introduced new building codes with energy efficiency being integrated as a cornerstone during building design, construction and operation.

2.2.3 Mobility and transport

Thailand's transport sector is a major consumer of imported fossil fuels. Thailand's transport energy intensity has remained at a high level, while other comparable countries have been able to reduce theirs (WB, 2009). Thailand's transport sector is dominated by road transport. Urban and rural motorization rates have been growing. National car ownership grew ten per cent annually, on average, between 1999 and 2007 (WB, 2009). Rail plays a small role in both freight and passenger transport and receives less funding than is made available for the construction of roads and highways. In 2009, land transport accounted for around 79% of modal shares of freight transport, with rail contributing only 0.4% (WB, 2011b)

Bangkok has seen significant improvement in urban transport and mobility since the late 1990s, but road traffic congestion remains a daily challenge for most commuters. Car ownership in Bangkok is three times higher than the national rate, at about 380 cars per 1,000 persons. A mass transit

development plan is currently being implemented in Bangkok and other provincial capital cities. This includes the construction of three lines of light rail services. However, despite considerable efforts, the development of transport infrastructure and service delivery is lagging behind increasing demand.

In 2007, the Ministry of Transport issued the white paper *Transport for Thailand's Sustainable Development*. It seeks to develop a more efficient and higher quality multi-modal transport system for the country. The *10th NESDP* also promotes the development of mass transportation systems. In addition, it contains objectives relating to the development of electric cars and clean engines (NESDB, 2007).

2.2.4 Manufacturing and consumer goods

Thailand has put in place some of the most extensive energy efficiency appliance standards and labelling programs in the region. For instance, mandatory *Minimum Energy Performance Standards* (MEPS) cover six types of products (air conditioners, refrigerators, motors, ballasts, fluorescent lamps and compact fluorescent lamps) and another 16 are currently under development. Furthermore, a voluntary labelling programme exists for electric and non-electric appliances, based on a five-star ranking (WB, 2011b).

Since the Thai government is the largest national consumer, contributing an estimated 11-17% of GDP, it has assumed a lead role in promoting and advancing green purchasing. The *Green Public Procurement Policy* (2008) encourages public agencies to purchase green products. All government agencies must adopt and have implemented a green products purchase programme by 2011 (Ho *et al*., 2010).

Thailand's *10th NESDP* includes several SCP-related provisions that affect the manufacturing sector and consumer goods. These include (i) the promotion of cleaner production for small and medium-sized enterprises, (ii) the creation of markets for environmentally friendly products through green public procurement, eco-labels and green supply chains, and (iii) the development of public awareness raising campaigns about sustainable lifestyles so that consumers have sufficient knowledge for decision making when purchasing goods and services (NESDB, 2007). The upcoming *11th NESDP* also contains SCP-related objectives targeting Thailand's manufacturing sector. For instance, the competitiveness of manufacturing is to be strengthened by supporting low-carbon innovation and by developing eco-industrial towns in strategic economic areas (NESDB, 2010).

2.2.5 Urban development and land use

Although Thailand is experiencing a slower rural-urban transition than other countries in the region, urban growth still occurs at the expense of adjacent arable lands being transformed into peri-urban zones (ADB, 2006). In addition, ongoing environmental degradation and increasing pollution worsen the quality of life of urban dwellers. Problems associated with air quality, wastewater and solid waste are worsening. For instance, 39% of Bangkok residents suffer from respiratory diseases, a rate that is seven times higher than in rural areas (ADB, 2006).

Urban planning is a policy area where the Thai government performs fairly poorly. One reason for this is that two separate levels of government largely undertake land development and spatial planning processes. Urban development planning is conducted at the local level while spatial planning is carried out by a national-based agency through its provincial offices (ADB, 2006).

The Thai government has sought to maintain a balance between the development of rural and urban areas. Attempts to disperse activities away from Bangkok have focused on the promotion of special economic zones, and the development of regional cities and border towns (ADB, 2006). The *11th NESDP* contains only a handful of objectives that address urban development and land use. One provision seeks to reinforce the urban environment by designing cities and urban plans which take into account social, cultural and ecological aspects. Investments into sustainable infrastructure are also highlighted. The plan also identifies that the economy needs to be strengthened in regional and rural areas to avoid rural-urban migration (NESDB, 2010).

2.2.6 Energy, water, waste

Energy

Thailand relies heavily on fossil fuels for all its energy needs. In 2008, 92% of total electricity generation came from fossil fuel sources, mostly from natural gas and coal. The share of electricity generated from renewable energy sources is small, at 1.7 per cent in 2007 (WB, 2009). Thailand is largely dependent on imported energy resources, spending more than 10 per cent of its GDP on energy imports, at least half of which are diesel fuel (UNDP, 2010). Thailand is also one of the most energy intensive countries in East Asia. Over the past 25 years, the growth of Thailand's total final energy consumption has followed a similar trend to GDP growth, indicating that total energy intensity has remained relatively constant (WB, 2009).

The Thai government has implemented several policy measures to reduce energy consumption and to promote energy efficiency and the use of alternative energy. Thailand's Ministry of Energy (MOEN) has been promoting energy conservation since the introduction of the *Energy Conservation Promotion Act* in 1992. This Act sets targets for energy savings in different sectors, including transport, agriculture and industries. Implementation of energy conservation has been divided into three phases: Phase I (1995-1999), Phase II (2000-2004) and Phase III (2005-2011). In the first two phases, electricity consumption was somewhat reduced. Under the third phase it is planned that energy intensity will be reduced from 1.4:1 to 1:1 by 2017 (MONRE, 2011). Energy efficiency enhancements are targeted to reduce energy consumption by 12.7% by 2011.

In 2009, MOEN announced the *Fifteen-Year Alternative Energy Development Plan*, which aims to increase the share of alternative energy from 6.4% in 2008 to 20% in 2022. Implementation is to be achieved by providing investment grants, research subsidies and special tariffs (UNDP, 2009). The 10th *NESDP* (2007-2011) contains low-carbon as well as energy efficiency objectives. It clearly identifies that 'Thailand needs to improve energy efficiency and develop renewable energy, taking into account environmental impacts and national energy security'. Thailand's *National Strategy on Climate Change Management* (2008-2012) seeks to prepare the country to cope with the impacts of

climate change. Priority is given to climate change impacts, vulnerability and adaptation (MONRE, 2011).

Water

Existing water resource management programs have not been able to cope effectively with increasing water demand. A large part of Thailand remains vulnerable to the limited availability of surface water. Projections highlight that water demand will reach 120 billion cubic metres by 2021, posing a serious threat to social and economic development (MONRE, 2011). The quality of water available for household consumption is increasingly at risk because of pollution.

Integrated Water Resources Management (IWRM) has been recognized as a means to achieve sustainable water resources management in Thailand and the concept has been incorporated into national policy for more than 15 years. However, legislation to implement IWRM programs remains inadequate. A draft national *Water Act* was developed in 2007, but promulgation of the Act has been a long process and it still awaits submission to the parliament (WB, 2011). The Thai government also developed a *Water Resource Development Strategy* (2003-2007) that emphasized improvements in water conservation and the utilization of water resources.

Waste

Population growth and rising affluence have led to increasing amounts of waste. Total municipal waste has increased steadily at a rate of around 10 per cent annually, and reached almost 15 million tons in 2007 (UNDP, 2009). Only around 60% of solid waste generated in urban areas is disposed of to a high standard, with an even smaller proportion being handled properly in urban fringe and rural areas (ADB, 2006).

The Thai government is promoting waste sorting and recycling. The *10th NESDP* (2007-2011) contains specific targets for waste treatment. These include (i) reusing at least 30% of national waste, (ii) appropriately managing 80% of all toxic waste from communities and industries, and (iii) creating a toxic waste returning system for used products by suppliers and importers (NESDB, 2007).

3. STRENGTH OF EXISTING POLICIES AND POLICY CHALLENGES

The Thai government has developed good foundations for incorporating SCP principles into all levels of legislation, planning and administration in the country. SCP-related objectives have successfully been mainstreamed into Thailand's national development plans. Several policy instruments, such as eco-labels, green procurement and organic farming practices, are in place to promote more sustainable consumption.

However, although there is a strong commitment for the development of SCP policies at the national level, implementation remains difficult. Overall, the link between SCP planning and implementation is unclear. Several existing laws and regulations need to be revised and updated to ensure the successful implementation of SCP-related objectives. Where policies have been implemented they are often not being properly evaluated and monitored due to a lack of technical, financial and human resources.

In addition, the coordination for SCP implementation needs to be strengthened. SCP is a broad policy area and it currently lacks a common approach by all line ministries. To increase its uptake at the national level will thus require coordinated multi-sector action. Given the fragmented nature of SCP policy measures, a national institutional champion is essential.

Finally, the public lacks adequate knowledge on how to pursue sustainable lifestyles and does not give much importance to SCP. There is not enough information for the public to make sustainable lifestyle choices. Therefore, increasing SCP awareness levels of the general public is vitally important to achieving a change in consumption patterns and lifestyles.

Thailand has been selected as one of four target countries of the EU Switch-Asia Programme. Activities are currently being carried out to strengthen policy support and to raise the government's capacity for implementing SCP policies. This work is being undertaken in collaboration between the Thai government and the EU.

Viet Nam

1. NATIONAL CONTEXT

General Indicators		SCP Indicators	
	Population (2010) and population density [1, 2] 86.9 million and 263 people per km^2		**Per-capita material use and material intensity (2005)** [5] 7.0 tonnes/ 12.9 kg per US$
	GDP (PPP, US$ 2010) [1] $276.5 bn		**Per-capita energy use and energy intensity (2005)** [5] 25.83 GJ/ 47.98 MJ per US$
	GDP per capita (PPP, US$), 2010 [1] $3,181		**Per-capita water use (2007)** [6] 965 m^3
	GDP per capita, constant 2000 US$ (2010) [1] $723		**Per-capita GHG emissions (2005)** [7] 2.4 tonnes
	Gini coefficient (2009) [3] 37.8		**GHG emissions intensity (2005)** [7] 0.77 kg per US$
HDI	**HDI Rank (2010)** [4] 113	CO_2	**Per-capita CO_2 footprint (2008)** [8] 1.42 tonnes
	Agricultural land per capita (2008) [1] 0.12 ha		**Number of middle class consumers (2010)** [9] 17%
	Forest cover (2010) [1] 44.5%		**Number of people with income <$2/day (PPP, US$) (2010)** [9] 83%

Sources: [1] World Bank (2011), [2] GSO (2012), [3] UNDP (2009), [4] UNDP (2010), [5] CSIRO and UNEP (2011), [6] FAO (2010); [7] World Bank (2011); [8] Peters *et al.* (2011); [9] ADB (2010).

Following successful economic policy reform (*doi moi*) in the 1980s, Viet Nam has developed rapidly over the last two decades. GDP growth averaged 7.2% between 2001 and 2010 (Hai *et al*., 2011). These consistently high rates of economic growth meant that Viet Nam officially graduated to middle-income country status in 2010 (UN, 2010). Government policy provides for a transition from a centrally planned economy toward one that is increasingly market-oriented, with a socialist orientation.

Viet Nam is undergoing a fundamental structural shift in its economy, away from the agricultural, forestry and fisheries sector towards industry and services (Dore *et al*., 2008). A policy of rapid industrialization is pursued by the government as a means of achieving socio-economic objectives. The services sector is currently the largest sector in the economy and the biggest contributor to the overall growth rate (real GDP grew at 6.8% in 2010). Increasing tourist numbers have led to significant foreign investment into real estate and hospitality.

Interestingly, there are signs of increased resource use efficiency. The intensity of natural resources use showed a downward trend during 1990-2007 (World Bank, 2011a; UNEP, 2011). In other words, the country tended to use fewer resources to generate each dollar of GDP. This is partially explained by the structural shift from agriculture towards industry and services.

Poverty has reduced significantly, from over 60% in 1993 to about 14% in 2008 (World Bank, 2011a). Much progress has also been made in achieving the Millennium Development Goals (MDGs), particularly in the domains of health and education. However, some significant development challenges remain, including targets for sanitation, eradication of HIV and AIDS, and the prevalence of poverty in particular regions and for ethnic minority groups (ADB, 2009). Urbanization is progressing rapidly in Viet Nam, from 30% in 2010 to a projected 50% by 2025 (World Bank, 2011a).

Rapid economic and population growth and urbanization, combined with weak policy implementation for environmental management, have contributed to a gradual decline in environmental quality (ADB, 2009). Climate change is a real threat for Viet Nam, due to its very long coastline, high dependence on agriculture, and relatively low levels of development in rural areas (McElwee, 2010; Schwartze *et al*., 2011). According to estimates by the Ministry of Natural Resources and Environment (MONRE) sea level rise along the Vietnamese coast may average 75cm by 2100 and coastal areas containing big cities (such as Ho Chi Minh City) will be seriously affected.

2. REVIEW OF EXISTING POLICIES

2.1 National framework policies and overarching SCP and RE policies

SCP is still a relatively new concept in Viet Nam. The government is currently in the process of developing a National Action Plan on SCP. In addition, SCP-related objectives are integrated into several national policies and regulations, including the Socio-Economic Development Strategy and Plan and the National Strategy on Cleaner Production.

2.1.1. Viet Nam National Action Plan on SCP (2011-2020) (draft)

Viet Nam is currently developing a **National Action Plan on SCP** for the period 2011-2020. The official plan was expected to be released in 2011, once approved by the government (UNEP, 2011). The plan is being developed by MONRE with the support of the UNEP. The overarching objectives of the plan are to (i) reduce material and energy intensity within the system of production and consumption and (ii) optimize production and consumption systems for continuous improvement in the quality of life. The plan includes ambitious goals and targets in four focus areas (UNEP, 2011):

1) Developing environmentally sound products, services and technologies
2) Providing consumers with product information
3) Developing green procurement
4) Information, education and awareness raising.

The plan is being developed in the context of many already existing national strategies, policies and programs. A key priority is therefore to mainstream SCP objectives into related policies and into the next Five-Year Socio-Economic Development Plan in order to integrate SCP as a key component of the overall development agenda of the country.

Viet Nam has also taken part in several SCP-specific initiatives over the past few years. For instance, Vietnamese participants received training on sustainability and resource management of hotels and

resorts at two capacity building seminars developed by the Marrakech Taskforce on Sustainable Tourism. Viet Nam also participated in the Global Survey on Sustainable Lifestyles (GSSL).

Some challenges to the implementation of SCP in Viet Nam were recently identified by the Ministry of Planning and Investment (Thuy, 2010). These range from a lack of finance, information, basic infrastructure and technical skills, to limited awareness levels in businesses and the community.

2.1.2. National Development Plans and Strategies

The Vietnamese Government's main strategy for development comprises the 10-year Socio-Economic Development Strategy (SEDS) and the 5-year Socio-Economic Development Plan (SEDP). The actions that are needed to translate the 10-year SEDS into reality are described in the 5-year SEDPs.

Ten-Year Socio-Economic Development Strategy (SEDS) 2011-2020

Viet Nam's latest SEDS places greater emphasis on sustainable development and includes more determined steps toward the establishment of a low-carbon economy. Macroeconomic stability, economic restructuring and environmental protection are the key priorities of the 2011-2020 SEDS (Hai *et al*., 2011). The strategy reaffirms that sustainable development should be integrated into all socio-economic planning and policies. Green growth is seen as a key solution towards achieving a sustainable future of Viet Nam (Chung, 2011). All major sectors of the economy, including industry, agriculture and services, are meant to orient towards high-value, modern, efficient and sustainable processes. The Vietnamese government has set a target of reducing energy intensity by 2.5-3% annually for the duration *of this SEDS (Hai et al., 2011)*

Five-Year Socio-Economic Development Plan (SEDP) 2006-2010[9]

The focus of Viet Nam's *5-Year Socio-Economic Development Plan (SEDP) 2005-2010* is to achieve high economic growth and generate employment opportunities for a growing population. A key priority was aimed at moving Viet Nam from low-income status to the rank of a middle-income country, which it achieved in 2010. SEDP does not explicitly mention SCP, green growth or resource efficiency. However, an important SCP-related objective included in SEDP states that 'harmony between population growth, urbanization, socio-economic development and environmental protection' is sought to be achieved. SEDP also contains several environmental development goals and targets, such as (MPI, 2006):

- Increase forest coverage to 42-43% by 2010
- By 2010, all newly built production establishments to apply clean technology or be equipped with pollution control facilities
- Ensure waste treatment

[9] The Five-Year Socio-Economic Development Plan 2011-2015 is expected to be approved in September 2011. It focuses on turning Viet Nam into an industrialized country by 2020. According to early predictions, more efforts will be made to address climate change and strengthen environmental protection.

- 50% of production and business establishment satisfy environmental standards and be awarded ISO 14001 certificates
- By 2010, all industrial and export processing zones are equipped with centralized wastewater treatment systems, 90% of solid waste collected and treated, 80% of hazardous waste and 100% of medical waste treated.

Despite the inclusion of environmental goals and targets into Viet Nam's SEDP and SEDS, several challenges for successful implementation still persist. For instance, environmental legislation is considered to be ineffective and inconsistent in some instances. Furthermore, implementation is slow and enforcement is difficult. For example, unlawful conversion of land use to purposes that conflict with approved planning policies is still common. In addition, institutional structures for sustainable development are only beginning to emerge and are often still incomplete. Finally, community awareness of environmental issues is still limited.

2.1.3. National Strategy on Cleaner Production until 2020 (2009)

The Vietnamese government began to implement cleaner production (CP) in the late 1990s through the establishment of the National Cleaner Production Centre (VNCPC). It was given the task of providing CP training and assistance to businesses throughout Viet Nam (Mitchell, 2006). Today, the VNCPC still plays an important role in the promotion of CP, resource efficiency and SCP in the country.

The **National Strategy on Cleaner Production** was adopted in 2009. It seeks to achieve the wide application of CP in industrial enterprises to improve the efficient use of natural resources while reducing waste and pollution, improving environmental quality and human health, and ensuring sustainable development. The strategy outlines a number of specific targets to be achieved by 2020:

- 90% of industries are aware of the benefits of CP application
- 50% of industries apply CP
- 90% of provincial government departments in the field of industry and trade have staff capable of giving CP advice to industries.

The most commonly cited barriers to the successful implementation of CP in industry are lack of awareness and capital, limited CP information, few trained technical experts and poor enforcement of environmental regulations (Mitchell, 2006).

2.2 Policies for activity domains of high significance to SCP and RE

2.2.1 Food and agriculture

The Vietnamese Ministry of Agriculture and Rural Development (MARD) is responsible for the development of the agricultural sector, which employs about 70% of the country's labour force (Ty *et al*., 2009). Agriculture's share of GDP is declining, but agricultural output is expanding and the sector remains one of the most important contributors to employment and the economy. Viet Nam's agricultural productivity has remained relatively low, mainly due to its outdated infrastructure and overreliance on foreign development assistance (World Bank, 2011a).

According to Viet Nam's **SEDP 2006-2010**, the main development objective for the agricultural sector is to 'create quality change in agricultural production and strongly develop the rural economy while satisfying domestic demand and increasing export turnover' (MPI, 2006, page 64). Agricultural production is to be increased at a reasonable rate to ensure national food security. The development of clean and sustainable agricultural commodities is also highlighted. In addition, rice cultivating areas with low productivity are meant to shift to other crop cultivation with higher efficiency without increasing the area used for cultivation.

Viet Nam's **Five-Year Plan for Agricultural and Rural Development 2011-2015** seeks to achieve sustainable economic growth, improve the living standards of rural populations and protect and effectively utilize natural resources and the environment. It includes provisions for the protection of forest and aquatic resources and also seeks to develop climate adaptation strategies (MARD, 2009).

2.2.2 Buildings and construction

The buildings and construction sector has grown considerably in recent years, reflecting a significant increase in urbanization. The Ministry of Construction is pursuing several policy initiatives to improve the energy efficiency of the buildings and construction sector. In 2005, the Ministry of Construction developed a comprehensive **Building Energy Code** covering building thermal envelope performance, improved lighting conditions and minimum electrical equipment performance requirements.

Viet Nam's **SEDP 2006-2010** includes several objectives that address the modernization of the country's construction sector. The construction of new housing is to be accelerated to accommodate the rapidly rising demands of people in urban and rural areas. Cement production is to be accelerated in order to satisfy domestic demand, and is meant to reach 50 million tonnes by 2010. At the same time, steel production is targeted to reach 6.5 million tonnes by 2010 (MPI, 2006).

2.2.3 Mobility and transport

Viet Nam's transport infrastructure is considered to be far from adequate to meet the needs of a rapidly growing economy. The annual growth rate in passenger demand for transport was 10% between 1999 and 2005 and 12% for freight demand in the same time period (Perkins and Anh, 2010). The Vietnamese government is committed to modernizing the transport system to support economic growth. The major focus of Viet Nam's **Transport Sector Development Strategy to 2020** is the construction and upgrading of major highways. However, it also endorses the development of public transport services. For instance, a key element is the development of mass transit systems in urban areas. In 2010, the Vietnamese government signed the **Bangkok 2020 Declaration - Sustainable Transport Goals for 2010-2020**, which sets forth quantifiable sustainable transport targets. Also in 2010, the **Prime Ministerial Decision (PMD) 909/2010** was published. It seeks to monitor emissions from motorcycles, which are the most common forms of transportation in urban areas. Finally, the Vietnamese government is currently developing the **National Strategy on Environmentally Sustainable Transport**. It contains a number of specific environmental targets to be achieved by 2020, including (Tien, 2008):

- reducing CO_2 emissions from vehicles by 30% compared with 2005 emission levels
- 10% of total fuels used by vehicles from clean fuels

- 50% of journeys made in big cities to use public transport.

2.2.4 Manufacturing and consumer goods

Viet Nam is still at the early stages of industrial development. Currently, industrial production is characterized by low productivity, low and outdated technological standards, and high production costs (Dore *et al*., 2008). The manufacturing sector is dominated by food processing, textiles and garments, footwear, and a variety of other labour intensive industries. It grew at a rate of 16.7% annually from 2000 to 2005 (ICEM, 2007).

Viet Nam's **SEDP 2006-2010** includes several objectives that address the modernization of the country's manufacturing sector. Most importantly, the manufacturing sector is targeted to achieve a sustained annual growth of 15%. Other targets address the management of industrial pollution. For instance, all newly-established production units must apply clean technology or be equipped with pollution-reducing and waste-treating facilities to meet environmental standards. In addition, 50% of production units should obtain ISO 14001 certification (Dore *et al*., 2008).

The amended **Law on Environmental Protection** came into force in 2006 to improve the incidence of industrial pollution. It prohibits the discharging of wastes untreated to environmental standards, discharging toxic or hazardous substances into land or water resources, and emitting smoke, dust or gases with toxic substances or odour into the air (Dore *et al*., 2008).

Viet Nam still lacks a comprehensive eco-label system to help consumers identify environmentally-preferable products and services (Ty *et al*., 2009). The government recently issued the **Regulation of Eco-Labels** which seeks to encourage enterprises to design products that reduce the harmful impacts to natural resources during the use, manufacturing, packaging, transportation, consumption and disposal of products. So far, eco-labelling criteria only exist for three product groups; packaging, fluorescent light bulbs and laundry detergents.

2.2.5 Urban development and land use

Urbanization has progressed very rapidly since the early 1990s. Viet Nam's urban population as a percentage of total population was 19.5% in 1990 and had risen to 29.6% by 2009 (Zhu, 2011). It is expected to increase to about 35% by 2020. Unsustainable forms of urban development present many challenges for the Vietnamese government. Due to the incapacity of the government to provide housing in urban areas, disorganized forms of self-built housing are common and scarce land resources are not utilized productively. Illegal construction is rampant in most urban areas (Zhu, 2011). In 2010, the Ministry of Construction developed the draft **National Housing Strategy to 2020**. It set a target of increasing the number of apartments available for lease in urban areas by 25% by 2020.

Viet Nam's **SEDP 2006-2010** contains a number of urban development objectives. New residential quarters are to be developed in suburban areas to increase the availability of accommodation. At the same time, urban slums are to be eliminated, while unsafe houses are to be repaired or removed. The size of accommodation for each city resident is to be increased by 2 square metres (MPI, 2006).

Barriers to more sustainable forms of urban development include (i) inadequate institutional capacity for the implementation of urban master plans, (ii) the existence of an uncoordinated and ambiguous administrative system, and (iii) ineffective development control and enforcement mechanisms (Zhu, 2011).

2.2.6 Energy, water, waste

Energy

Viet Nam's energy consumption tripled from 10.8 million toe in 1998 to 30.1 million toe in 2007 (World Bank, 2010). The Vietnamese government has launched a series of policy efforts to support the promotion of energy efficiency during the last decade (World Bank, 2011b). In 2003, the government issued the *Decree on Efficient Utilization of Energy and Energy Conservation.* This decree sets out the roles and responsibilities for government and society with respect to energy efficiency and conservation. It provides incentives for companies that improve their energy efficiency and sets penalties for failure to comply with the requirements of the decree (US AID, 2007).

In 2006, the **Viet Nam National Energy Efficiency Program** (VNEEP) was approved. VNEEP seeks to coordinate efforts to improve energy efficiency, reduce energy losses and implement extensive measures for conservation of energy. It includes targets to reduce total energy consumption by 3-5% (2006-2010) and then by 5-8% (2011-2015) (World Bank, 2011b).

In 2011, the **Law on Energy Efficiency and Conservation** was approved by the National Assembly. It stipulates that the government will provide financial assistance to scientific research, development and application of advanced energy efficiency and renewable energy technologies.

Furthermore, the **National Electricity Development Plan 2011-2020** requires significant increases in available energy supply. Priority will be given to developing renewable energy sources including solar and wind power as well as energy production from biomass. The plan envisages electricity production from renewable sources will increase from 3.5% in 2010 to 4.5% in 2020 and 6% in 2030. Also, by 2020 Viet Nam's first nuclear power plant will be put into operation (IE, 2011).

Finally, the government has approved a new **Environmental Tax Law**, which will come into effect in January 2012. This new law is based on the polluter pays principle (UN, 2010). It is primarily an energy tax as it will levy a tax on fossil fuel products, including oil, petrol and coal (Coxhead and Chan, 2011). The law will also cover other product groups, such as HCFC solutions, plastic bags and certain herbicides, pesticides, disinfectants and preservatives. The new law is expected to encourage businesses to produce more environmentally friendly products.

In addition to these policy efforts, the Vietnamese government has also strengthened the institutions for energy efficiency improvement by creating a special agency, the **Energy Efficiency and Conservation Office** (EE&CO) under the Ministry of Industry and Trade. This agency has the task of formulating, developing and implementing energy efficiency and conservation policies and programs.

According to the World Bank (2011b) significant barriers remain despite this program and many energy-saving opportunities remain unexploited. For instance, many industrial enterprises do not consider energy efficiency a priority, due to lack of awareness of the potential savings as well as available technologies. There is an absence of well-defined participation incentives (e.g. supporting programs and policies) and disincentives (e.g. penalties for non-compliance).

Water

Viet Nam is a country with rich water resources. However, the long dry season and the uneven distribution of river networks and rainfall across the country result in water supply problems in some areas (Jolk *et al*., 2010). At present, around 82% of total surface water is used for irrigation, 11% for aquaculture, 5% for industry and only 3% for urban uses (ADB). By 2020, water use is expected to increase by 48%, placing a heavy strain on Viet Nam's water resources. Concerns have also increased about the rising level of water pollution in Viet Nam. Water quality has been seriously affected by poor urban drainage, untreated domestic and industrial wastewater, and the use of rivers and lakes as dumping grounds for most solid waste (World Bank, 2011a).

There are three key water policies that contain SCP-related objectives. The **National Strategy on Water Resources to 2020** (2006) seeks to strengthen the protection, exploitation, use and development of water resources. The **Law on Water Resources** is currently being revised by the government to strengthen water rights and water sharing frameworks. It will also include a stricter water licensing system. Finally, once finalized, the **National Target Program on Improvement of Efficiency for Water Resource Protection, Management and Multipurpose Use** (currently in draft only) will include many measures to deal with water scarcity.

Waste

The management of solid waste is becoming extremely urgent in Viet Nam due to ever increasing waste volumes. In 2009, the country generated nearly 28 million tonnes of solid waste (MONRE, 2010). The government has adopted several policies to address Viet Nam's waste problems. Most importantly, the **National Strategy of Integrated Solid Waste Management** (2009) includes specific targets for reuse and recycling up until the year 2025. For example, 60% of solid wastes from households in urban areas will be recycled by 2015; 90% will be recycled by 2025. The use of plastic bags at supermarkets and commercial centres will be reduced by 40% by 2015 in comparison to 2010 levels. Another 3R initiative currently being adopted focuses on the expansion of 3R pilot projects in major cities (MONRE, 2010).

3. STRENGTH OF EXISTING POLICIES AND POLICY CHALLENGES

Although Viet Nam has developed a range of policies relating to SCP in recent years, conflicts exist between the intent of different ministries' policies and plans, and there is need for greater cooperation between ministries, and for a framework to link the various initiatives relating to SCP. Commonly cited barriers to the successful implementation of SCP include the lack of awareness and capital, limited information, few trained technical experts and poor enforcement of environmental

regulations. There is also a lack of awareness of potential savings as well as of available technologies, and an absence of well-defined incentives to participate.

4. CAPACITY BUILING NEEDS ASSESSMENT

4.1. Information and knowledge

The information and knowledge base for SCP is probably the most important area of capacity building, mentioned by both the interviewees and during the workshop, in Viet Nam. **Raising awareness of SCP** was mentioned in numerous contexts, including consumer awareness about lifestyle choices, raising awareness of SCP for small enterprises and also raising awareness of SCP in government. There is a need for a report **describing the current SCP activities and the role of various ministries** in relation to SCP. Of similar importance is the area of **technical expertise** available to government and business. Included in this issue is the **need for SCP technical guidelines and manuals** for consumers and for certain sectors. There are **gaps in the available data**, including mapping, energy efficiency, toxic substances and best SCP practice. These gaps combine with a lack of technical expertise in many policy domains and the need to both access technical expertise and improve knowledge exchange with the larger Asia/Pacific region. Aligned with these two issues is the need to **establish a training program on SCP**, which could strengthen the capabilities of local authorities in addressing sustainability issues. To ensure such capabilities are expanded across the country, it is important that a **Train the Trainers** initiative be developed.

The first priority is to get information to consumers before they make a final decision to buy. Dissemination of better product information would enable them to compare products. Supporting this would be better information on SCP for decision makers and producers, including better information on product design and complementing better information on best practice, waste management and training programs aimed at improving SCP implementation.

The main issues raised during the workshop in Viet Nam were:

- Raising awareness on the nature and value of resources
- Knowledge and information dissemination about SCP and lifestyles for people
- A database on ‘best practice’ with toxic substances
- Awareness and understanding of the use of products and waste in the supply chain
- A national campaign on SCP targeted at decision makers, producers and consumers.

Other issues discussed during the workshop included preparing a study of success stories and case studies on SCP, a list of environmentally friendly products and developing a centre for SCP information.

The key issues, as prioritized during the workshop, are presented below.

These issues related to information and knowledge were raised by a large number of ministries contacted during the interview stage including the Institute of Strategy and Policy on Natural Resources and Environment (ISPONRE), the Institute of Science for Environmental Management (ISEM), the Association for Conservation of Nature and Environment in Viet Nam (VACNE), the Viet

Nam Cleaner Production Centre (VNCPC), the Ministry of Planning and Investment (MPI), the Ministry of Construction (MOC), the Ministry of Industry and Trade (MOIT), the Ministry of Agriculture and Rural Development (MARD), Viet Nam National Administration of Tourism (VNAT) and Viet Nam Environment Administration (VEA). Many of the issues mentioned in this area were also strongly related to potential policy initiatives and tools in the area of SCP expertise and education.

4.2 Innovation and R&D

Four key issues were identified in this area. Firstly, the need to be able to **evaluate and compare SCP compatible innovations and technology** but also to be able to assess their potential impacts on the economy and environment. Such information is not only central to consumer choice but also to investment decisions being made by business and government. A number of interviewees mentioned the **need for SCP demonstration projects** and studies that demonstrated the cost and benefits of innovative approaches to SCP. Other issues noted included the **need for funding to support research in SCP** and to assist business in implementing new technologies which support SCP, and the importance of making sure that SCP technical expertise and the results from **R&D were transferred into best practice and implementation**. Translating innovative R&D in the area of SCP into practice sends a clear signal to potential R&D funding sources, including government. In this respect, there are lessons to be learnt from other countries on how to ensure innovative research is funded but also how the results are translated into best practice.

The workshop identified the following main issues:

- R&D for better product design and commercialization of technology innovations
- Mobilizing funding for R&D
- Support for technology transfer.

Apart from funding and policy support for technology transfer, most of these issues were about capacity building rather than policy tools and support. Ministries most concerned about these issues were MPI, MOC and MOIT.

The key issues, as prioritized during the workshop, are presented below.

4.3 Institutions and Governance

Frameworks

The importance of cooperation between ministries and the need to link the various initiatives relating to SCP were one of the main areas where capacity building and policy support tools are most closely linked. Interviewees mentioned that there is a **need for a framework for coordinating ministry SCP initiatives** and the preparation of **SCP guidelines and best SCP practice** for different sectors of the economy. **Creating a better partnership between ministries, researchers and industry** in relation to SCP can not only ensure the widespread availability of technical expertise to

ministries and industry, but can also ensure that 'best practice' and innovative technologies are thoroughly researched before being adopted.

The workshop also identified these issues as important:

- Policy support for SCP R&D technology transfer
- Tax reform
- Partnerships between producers, consumers and research
- Need to improve policy making processes and involve the public
- Need to mobilize funding for R&D.

These issues are essentially areas where policy support, rather than capacity building, is required. They are strongly linked to SCP policy support initiatives in the areas of cooperation between ministries and partnerships between government, researchers and industry. These issues were most mentioned by non-ministry interviewees and during the workshop.

Policies and Institutions

The majority of the issues raised in relation to this area are best addressed in the section relating to policy support. The issues noted included the requirement to **make cleaner production central to business activities**, the need for laws and regulations relating to **green procurement**, and the need **for SCP priorities for different sectors of the government and business**. The need for **tax incentives for new SCP investment** and the **options for recycling construction materials** and **energy audits** were also noted.

The workshop also reiterated the need to learn from international experiences and capacity building for policy makers.

ISPONRE, MOC, VEA and VACNE, in particular, were concerned about these issues.

4.4 Funding (Investment and Finance for SCP)

This issue was focused on investment and finance instruments to support SCP and the need to commercialize research and development. These issues relate to the policy support area of investment and finance.

The workshop identified also the need to:

- improve knowledge of available funding sources
- mobilize funding for R&D
- simplify the process of accessing financial support for SCP initiatives and also the transparency of funding sources

4.5 Supply chain management

In this area the issue raised was focused on integrating life cycle thinking into resource management and also raising awareness of the impacts of the entire supply chain from production to consumer of SCP opportunities and initiatives.

These issues were noted during the workshop especially including the need to encourage waste recovery, increase awareness of the use of raw materials in the supply chain and support for technology investment.

5. RECOMMENDATIONS FOR CAPACITY STRENGTHENING

Investment and Finance

In terms of policy support issues in relation to finance and investment, a main focus should be on **instruments to support implementation** of SCP and CP initiatives and whether or not this would require access to special **low interest loans** or special **green investment** criteria. A second important issue for **making SCP and CP central to business** is **enhancing the capacity of business to invest in greener and cleaner technologies**. A range of instruments were noted including tax and pricing policies, and incentives for green investment.

The workshop noted other issues including the need to increase funding for SCP R&D activities and the need to simplify funding application processes. The latter appears especially important for mobilizing local funding and implementation of SCP.

These issues were raised in several ministries including ISPONRE, MOIT and MPI.

Inter-ministerial work on SCP

Issues concerned with coordination, of often complex SCP initiatives, between ministries are not unusual in most countries. While this issue was raised by several Ministries, it was also given priority by non-ministry interviewees. **Coordination of SCP activities** was seen as a high priority. **Better integration of the various ministry initiatives** is needed and a stocktake of the current status of SCP activities would not only help in this context but would also help clarify the respective roles of these ministries. Similarly, **linking SCP policy tools to other initiatives** would start to move towards an umbrella framework for SCP activity within government ministries.

The workshop also raised the need for a framework and standards for resource consumption.

Education and Training

In this area, there were some significant and important issues raised both during the workshop and during the interviews. Raising awareness of SCP (a major capacity gap), among consumers, business and ministries will require and significant **national campaign on SCP**. For instance, this may require guidelines for consumers to help them in their buying decisions, but also guidelines covering investments by business and government. While this issues was raised in many of the interviews conducted, its importance was further raised when during the workshop, issues relating to a

National Action Plan on SCP education to promote SCP principles and practice, at all levels from consumer, business to Government, across the country were advocated. The **need for increased SCP technical expertise** to assist in SCP implementation and to demonstrate the benefits of SCP were noted. Policy initiative could not only establish such a national campaign, but could also **strengthen SCP training and the exchange of SCP information** within the Asia/Pacific region. **Policy support to assist implementation of SCP guidelines and best practice** was also mentioned during the interviews.

These issues were especially noted by VEA, VNAT, ISPONRE, MOC and VACNE.

The workshop raised issues such as:

- Enhancing the capacity of enterprises in funding new SCP technology
- building a regional SCP-support network
- HR training
- the need to build capacity for writing proposals for SCP implementation.

Regulations and Laws on SCP

A variety of laws and regulations were mentioned during the interviews and the workshop. **Green public procurement** and **environmental tax reform** were often mentioned. The impending implementation of an environmental tax law in 2012 (UN, 2010) could address some of these concerns. More broadly, issues raised included **preparing guidelines for different sectors of the economy on SCP skills and best practice** and **setting policy priorities to support green investment**. Other specific issues raised included implementing energy audits, recycling construction materials and promoting new technologies for processing waste.

These issues were raised by many ministries including MOC, ISPONRE, MOIT, and ISEM.

The workshop raised many of the same issues including

- Tax reform to prevent unsustainable consumption
- Programs and schemes for recalling used products and materials
- Controls, standards and regulations that industry needs to comply with

Partnerships between Government, Research and Industry

The main policy support required in this area was the need to create better partnerships between government, research and development and the market. The aim was not only to mobilize funding for research and implementation, but also to ensure greater implementation of new SCP designs and SCP technologies. Mobilizing funding in a partnership with business would also increase the possibility of commercialization of SCP innovations.

This issue was raised by several interviewees, including those at VNCPC and ISEM, but also significantly during the workshop.

Recommendations

While the interviews provide many ideas for capacity building and policy support, the workshop was the only time when attendees were able to prioritize possible actions. In the Workshop, four groups were established on:

- Resource management
- Consumption and lifestyles
- Production
- Implementation support.

Each group identified a range of actions in relation to capacity building and policy support and then identified the top five priorities. These 20 (5 priorities for each of 4 groups) were then presented to all attendees who then allocated their priorities to these. The table below presents the six key priorities (in decreasing order) identified during this process.

Table: Priorities identified during workshop

Priority	Description
1	National campaign on SCP targeted to decision makers, producers and consumers (22% of all votes).
2	Raising awareness on the nature and value of resources (15% of all votes). Often there is poor knowledge about the value of resources and raising awareness of SCP options, for instance of turning waste into fuel, could have a major impact.
3	R&D for product design and commercialization of SCP technology (15% of all votes). There needs to be a pathway for design expertise to be implemented and this could be part of a R&D strategy. The conversion of good ideas and innovative technology into common best practice needs some policy support mechanism.
4	National action plan for SCP (11% of all votes). The pattern of consumption is not sustainable and there is need for a clear action plan on private consumption.
5	Completing tax and pricing policies (9% of all votes). Resource prices need to be changed to ensure sustainability.
6	Capacity building and innovative design in product development (7% of all votes). The issue focused around the need for greater innovation capacity and the need for incentives for business to implement SCP in some areas.

Nine of the remaining issues individually accounted for less than 4% of all votes and five issues did not attract any priority votes.

Based on the workshop and the interviews conducted in Viet Nam, four main areas of policy support have been identified.

Policy support to raise awareness of SCP in Viet Nam

This issue was the given the highest priority during the workshop. Priority 1 National campaign on SCP (22%), Priority 2 Raising awareness on the nature and value of resources (15%) and Priority 4 National Action Plan for education on SCP (11%) all relate to this area needing policy support.

Included under this heading are the needs to:

- Create a coordinated awareness campaign or action plan for SCP education, aiming at students, consumers, business and Government
- Identify options for building SCP support networks both in Universities and in Local Communities as a means of raising awareness of SCP and increasing the success of local SCP projects
- Establish a program to support training in SCP as part of a wider education programme.

Specific capacity building that could assist this policy support activity would be the preparation of a set of SCP guidelines for consumers, plus one for each of the key business sectors, as a way of enhancing knowledge on SCP.

Policy Support for Investment in SCP/Green Technology

The workshop identified three priorities related to this area – namely Priority 3 R&D for product design and commercialization of SCP technology (15%), Priority 5 Completing tax and pricing policies to ensure sustainability (9%) and Priority 6 Capacity building for innovative design in product development (11%).

Policy support would be required to:

- Identify a set of policy instruments (including tax reform, incentives, low interest loans and pricing policies) which would facilitate new investment in green technology
- Identify a set of SCP criteria for business investment that would attract support from government (for instance via low interest loans, subsidies, etc.)
- Prepare a set of guidelines to support green investment and provide incentives for businesses that adhere to the guidelines.

One specific area where capacity support could contribute to this policy support area is to undertake and/or document case studies which show the costs and benefits of SCP implementation and ensure they are widely disseminated.

Policy support to coordinate SCP activities

Examples of policy support in this area are:

- Creation of a working party, incorporating members of diverse ministries, to investigate how best to ensure that SCP activities in different ministries are aligned to each other and support common SCP objectives
- Identification of policy mechanisms that would link SCP policy tools to other initiatives.

One specific capacity building option which could contribute to this policy support area would be the preparation of a report on the current activities and current role for various ministries as a starting point for improved collaboration on SCP initiatives. VEA is currently developing a draft of the National Action Plan on SCP. One purpose of this action plan is to identify responsibilities of each ministry.

Policy support to create SCP R&D partnerships

Included in this policy support is the need to:

- Establish a collaborative research framework in which research agencies, ministries and industry share the costs and benefits of investment in SCP R&D. This framework would also assist researchers and business in mobilising funding for SCP projects and support research into innovative SCP techniques. It would also have at its core, the need to translate innovative SCP research into best practice
- Identify multi-lateral programs which would support increased international SCP technical expertise knowledge exchange and sharing of SCP knowledge on a regular basis.

Specific capacity building that could reinforce this policy support includes:

- Undertake and/or collate research which compares and evaluates SCP compatible innovations and technologies
- Undertake and/or document case studies which show the costs and benefits of SCP implementation and ensure they are widely disseminated
- Undertake research to provide key SCP information that is currently lacking or inadequate – including for instance resource mapping data, data on energy efficiencies, data on toxic substances, descriptions of best SCP practice
- Examine models from other countries of the partnership between government, research and business as a way of mobilizing funding for SCP R&D and ensuring that R&D is translated into best practice.

Summary Table – Overall policy context and SCP policy tools

	National Development	*Overall SCP Policy design*	*Coordination*	*Sectoral policies*	*Economic Instruments*	*Regulatory Instruments*	*Informational Instruments*	*Collaboration*
Bangladesh	10 year **Social Economic Development Strategy** (SEDS) and **6th Five Year Plan** have some environmental targets	Covered in five year plans	Environmental policy responsibility spread over several ministries	Contradictory incentives for waste and energy efficiency decision making	Tax breaks for waste recycling and certain equipment	**Environmental Clearance Certificates** issued for planned projects	No consolidated knowledge base	
Bhutan	**Bhutan Vision 2020** strategy incorporates sustainability goals; **Gross National Happiness** policy also has sustainability, conservation goals	10th five year plan addresses various sustainability issues from **Bhutan Vision 2020**	**Gross National Happiness** policy pervades all sectors, and is relevant and consistent with SCP	Bhutan is struggling to balance immediate needs (i.e. poverty reduction) with longer-term sustainability issues	Tax incentives under consideration in **10th five year plan**	Both water and waste covered by specific legislation		
Cambodia	**National Strategic Development Plan** incorporates environmental protection and conservation issues	**National Green Growth Roadmap** recently developed, with short-, medium- and long-term goals	Several different ministries have responsibility for SCP issues	Contradictory views and goals between ministries with environmental and economic focuses		**Law on Environmental Protection and Natural Resources Management** in place since 1996	Currently limited	**National Green Growth Roadmap** developed with assistance from UN ESCAP and KOICA

	National Development	*Overall SCP Policy design*	*Coordination*	*Sectoral policies*	*Economic Instruments*	*Regulatory Instruments*	*Informational Instruments*	*Collaboration*
China	**National Five-Year Plans for Social and Economic Development** include SCP-related targets	**Circular Economy Promotion Law** and **Cleaner Production Promotion Law** aim to improve resource efficiency	Challenging, as laws made centrally but expected to be enforced locally, where resources may be lacking	Contradicting development and SCP goals	Incentives for development and use of high-efficiency vehicles	Many building energy efficiency regulations in place; many environmental regulations and standards and too little knowledge about them	Lacking, especially for general public and private sector	
India	**National Five-Year Plans** produced by **Planning Commission**, include some sustainability measures	**National Action Plan on Climate Change** (2008) lists a range of sustainability goals	No strong coordinating body for SCP in the Indian government	Contradictions, e.g. fertilizer subsidy system not currently supportive of agricultural sustainability	**11th FYP** aims to provide economic incentives and affordable credit	Some regulations relating to water and waste in place	More required	
Indonesia	**Medium-Term Development Plan** (RPJMN) addresses environmental issues amongst other priorities	**National Action Plan on SCP** currently being developed	Ministry of Environment is coordinating ministry so has no role in implementation; lack of coordination between different ministries	Gaps between policy and practice at local government level; some current plans (e.g. coal, roads) will have negative environmental consequences	Fossil fuels currently subsidized with negative outcomes for environment. Agricultural subsidies also exist, to increase production	Various laws in place to affect environmental outcomes, including for water and waste	Most Indonesians have no understanding of SCP; public needs more information on sustainable lifestyles	Target country in EU Switch-Asia Programme

	National Development	*Overall SCP Policy design*	*Coordination*	*Sectoral policies*	*Economic Instruments*	*Regulatory Instruments*	*Informational Instruments*	*Collaboration*
Lao PDR	**Seventh National Plan** (NSEDP VII, for 2011-2015) concentrates on economic growth and poverty reduction, not environment	No national plans on SCP exist, but the NSEDP supports mechanisms to conserve environment	Where frameworks exist, they are not necessarily translated into action	Current policy aims for people to cease subsistence farming altogether, which may not be socially or environmentally appropriate	Low electricity tariff an obstacle to greater emphasis on energy efficiency	Environment Law and Land Law in place, Minerals law being developed	Little information on SCP currently available	ADB loans for road funding; UNIDO Cleaner Production assistance
Malaysia	**10th Malaysia Plan** 2011-2015 does not specifically address SCP but does mention environment	**New Economic Model** (NEM) (2010) seeks to use economic instruments to improve sustainability	Interagency coordination and communication needs to be strengthened	Relatively low energy prices due to fuel subsidies, which does not promote the conservative use of resources	**New Economic Model** seeks to use pricing, regulatory and strategic policies to improve RE; **Green Technology Financing Scheme** (GTFS) introduced to support green technology development	Various laws and regulations in place	Awareness and understanding of SCP is very low, both in the private and public sectors	Target country in EU Switch-Asia Programme
Maldives	**National Strategy on Sustainable Development** (2009); **Third National Environmental Action Plan** (2009-2013)	**National Strategy on Sustainable Development** (2009) contains elements of SCP and RE	Institutional confusion about which bodies have responsibility; little capacity to implement or enforce	Target to become carbon neutral by 2020				Government working in partnership with a number of intergovernmental organizations and bilateral donor agencies

	National Development	*Overall SCP Policy design*	*Coordination*	*Sectoral policies*	*Economic Instruments*	*Regulatory Instruments*	*Informational Instruments*	*Collaboration*
Mongolia	**National Development Strategy of Mongolia** (NDS) – includes section on environmental protection	NDS includes many elements relevant to SCP, including renewable energy, waste recycling, water resources, but gives little detail on policy tools, implementation	Ministry for Nature, Environment and Tourism (MNET) is key government body for environmental issues, including SCP	Efforts to promote cleaner vehicles, offset by increasing number of cars	Tax breaks to support farming. Mongolian law provides for natural resources pricing so is open to using economic instruments	Regulations on industrial wastewater emissions and some air pollutants in effect for major industries	Lack of information available on SCP	
Myanmar	Sustainable development policy framework **Myanmar Agenda 21** formulated and adopted in 1997	**National Sustainable Development Strategy** (2009) has strategies for various sectors; **Fifth Five-Year Plan** (2011 to 2016) for economic development covers certain environmental issues too	National Commission for Environmental Affairs (NCEA) responsible for environmental affairs and sustainable development	Little information about the policy process in Myanmar appears to be publicly available				**Myanmar Agenda 21** formulated and adopted by NCEA in conjunction with UN agencies
Nepal	**Three-Year Plan Approach Paper** (TYPAP - 2010/11 – 2012/13) includes section on environment and climate	Does not seem to be specifically addressed	**National Planning Commission** oversees planning and policy	Government makes policies and plans, but lacks sufficient resources for implementation	None found (subsidies offered for cleaner production technologies in the past, but discontinued)	Environmental regulations exist but lack implementation and monitoring	Knowledge of SCP currently low	Alternative Energy Promotion Centre (AEPC) established on initiative by UNDP; GIZ established Nepal Energy Efficiency Programme (NEEP)

	National Development	*Overall SCP Policy design*	*Coordination*	*Sectoral policies*	*Economic Instruments*	*Regulatory Instruments*	*Informational Instruments*	*Collaboration*
Pakistan	**Framework for Economic Growth** (FEG – 2011) pays little attention to environmental issues	**National Environmental Policy** 2005 lists important challenges but lacks timeline, implementation details	Environmental governance confusing and policies poorly implemented	Sustainability policies patchy and not well implemented	Relationship between environmental conservation and economic prosperity not recognized	Pakistan Environmental Protection Act 1997; EIA legislation	Knowledge of SCP currently low	
Philippines	Very strong development objectives, no SCP mainstreaming into national development goals	Traditional environmental policy objectives as an add on to the **National Development Plan** (PDP), no explicit SCP strategy	No strong coordinating agency	Contradicting development and SCP goals	**Green Public Procurement** instituted in 2004 **Cleaner production and extended producer responsibility** through the provision of tax incentives	**Biofuels Act** (2006) mandates 10% ethanol and 5% biodiesel share in gasoline by 2011 **Extended Producer Responsibility Bill** proposed	**Green Choice** Philippines national eco-labelling program **National Energy Efficiency and Conservation Program** (2004)	Target country in EU Switch-Asia Programme
Sri Lanka	National development framework **Mahinda Chinthana (Vision)** does not explicitly mention SCP but does address sustainability issues	National Sustainable Development Strategy includes goal to mainstream environmental dimensions into development planning	Responsibility spread between several ministries	Contradicting planning and SCP goals; conflicting policy objectives	Several mentioned in policies and plans but not yet implemented	**Environmental Protection Licensing** and **Environmental Impact Assessment**	**Environmental Charter**; **Green Jobs** awards; **Cleaner Production** awards	

	National Development	*Overall SCP Policy design*	*Coordination*	*Sectoral policies*	*Economic Instruments*	*Regulatory Instruments*	*Informational Instruments*	*Collaboration*
Thailand	**National Economic and Social Development Plan** (NESDP) includes sustainability issues	**10th NESDP** includes several specific SCP-related targets	Strong commitment to national policy making, but implementation remains challenging	Where policies have been implemented they are often not properly evaluated or monitored due to a lack of resources	Not yet, but **10th NESDP** suggests creation of economic instruments, such as subsidies and environmental taxes	Several laws and regulations need to be updated to ensure the successful implementation of SCP-related objectives	Public lacks knowledge of and interest in SCP	Target country in EU Switch-Asia Programme
Viet Nam	**Five-Year Socio-Economic Development Plan**(SEDP) – intention to integrate SCP into next one	**National Action Plan on SCP** (2011-2020) sets ambitious SCP goals and targets	Ministry of Natural Resources and Environment (MONRE) responsible for overall SCP policies, more coordination with other ministries required	There are plenty of policies, but implementation often problematic due to lack of finance, information and skills	Not found, but recommended	**Environmental Tax Law**; **Law on Environmental protection**; **Law on Energy Efficiency and Conservation**	Limited information available – awareness raising required	UNEP assisting in development of **National Action Plan on SCP**

Summary Table – Sectoral trends and policies

	Food and agriculture	*Buildings and construction*	*Mobility and transport*	*Consumer goods and manufacturing*	*Urban development and land use*	*Energy*	*Water*	*Waste*
Bangladesh	Agricultural sustainability policies included in **6th five year plan**	Sustainable urban development included in **6th five year plan**	Sustainable transport options included in **6th five year plan;** but many overlapping authorities involved	**Industrial Policy** (2010) promotes sustainable practices	**National Land Use Policy** (2001) aims to achieve integrated planning, but implementation challenging	**Energy Development Plan** in place to address energy security; plus **Sustainable Energy Development Agency** and **Energy Conservation Act**	Water sustainability policies included in **6th five year plan**	**Air Quality Management Project** in place; **3R** programme in place
Bhutan	**10th five year plan** includes sustainable food production strategies	Appropriate construction techniques and low cost housing options under **National Housing and Development Corporation**	**10th five year plan** includes various objectives for better (and greener) transport	**10th five year plan** includes plans for clearer industrial policies	**National Urbanization Strategy** plans to strengthen cities and develop regional hubs; 10th FYP plans conservation and sustainability measures	**10th five year plan** includes intention to expand and export hydropower and develop other renewable power sources	**Water Act** (2011) aims to achieve integrated water resource management	**Waste Prevention and Management Act** (2009) promotes 3R approach, and careful treatment and disposal of waste

	Food and agriculture	*Buildings and construction*	*Mobility and transport*	*Consumer goods and manufacturing*	*Urban development and land use*	*Energy*	*Water*	*Waste*
Cambodia	Plans and frameworks in place to improve productivity and diversification	Addressed in **National Strategic Development Plan** but may need more assistance if SCP is to be pursued	**National Strategic Development Plan** includes plans for enhanced public transportation	**National Cleaner Production Office** promotes cleaner production and resource efficiency; more can be done to promote cleaner and safer production	Planning agenda falls under **Ministry of Planning**; as urbanization progresses more strategic planning will be required	Some investments in renewable energy sector; some off-grid solutions being implemented	Water issues addressed in **National Policy on Water Supply and Sanitation** (2004), the **National Water Strategy** (2011), and relevant sections of NSDP	**National Strategic Development Plan** includes plans for 3R principle and waste management
China	**Land Administration Law** protects agricultural land; **CE Promotion Law** supports development of ecological agriculture	**11th FYP** established energy saving targets for buildings – made more ambitious in **12th FYP**	**Energy Conservation Law** promotes alternative fuels; **12th FYP** aims to develop better public transportation	**11th FYP** and **12th FYP** address energy efficiency and energy intensity; mandatory energy information labels in use	**11th FYP** addresses strategic urban development	**11th FYP** aims for reduction in energy intensity; series of laws in place to support this	Addressed in **11th FYP** and **12th FYP** – both demand-side and supply-side policies in place	Several laws/policies exist, e.g. **Law on Prevention and Control of Environmental Pollution caused by Solid Waste**, and **Measures for the Management of Municipal Domestic Waste**

	Food and agriculture	*Buildings and construction*	*Mobility and transport*	*Consumer goods and manufacturing*	*Urban development and land use*	*Energy*	*Water*	*Waste*
India	**11th FYP** aims to improve agricultural output, provide incentives to farmers	**Bureau of Energy Efficiency** recently introduced star rating for buildings	**11th FYP** identifies need for improvement in road and rail infrastructure	Energy consumption targets and rating systems under **Bureau of Energy Efficiency**	Current planning and infrastructure inadequate and will need to be addressed	**11th FYP** recognizes need to decrease dependence on fossil fuels, and improve energy efficiency	**11th FYP** addresses need for sustainable water management, but there are significant challenges to be faced	Waste management policies in place; new regulation on e-waste being implemented
Indonesia	Phase 1 of **National Programme for Food Security** (NPFS) 2006-2009 produced by the National Food Security Council in 2005 – key objective is household food security	Plan to construct 685,000 subsidized houses for low income families by 2012, but no national policies make specific reference to improved EE of buildings or sustainable building design	RPJMN sets targets for new road building; **Blueprint on Urban Transportation** plans to complete electric railway system by 2014	**National Policy on Cleaner Production** adopted 2003 to encourage 3R; **Ministry of Environment Decree No. 31/2009** has plans for environmental management systems, eco-labelling and environmentally sound technology	RPJMN includes infrastructure improvements, including a mass transportation system, and expansion in water and waste systems	RPJMN aims to remove fossil fuel subsidies by 2014; **Regulation for Energy Conservation** (No.70/2009) introduced mandatory energy conservation; **National Energy Policy** (2003-2020) seeks to reduce dependence on oil imports	**Law on Water Resources** (2004) regulates the sustainable use of water resources in Indonesia; **National Partnership Movement to Save Water** (2005) proposes better water management	**Strategy for Solid Waste Management** (2006) focuses on 3Rs; **Waste Management Law** (2008) includes provisions for solid waste reduction and recycling

	Food and agriculture	*Buildings and construction*	*Mobility and transport*	*Consumer goods and manufacturing*	*Urban development and land use*	*Energy*	*Water*	*Waste*
Lao PDR	Policies appear not to support SCP, e.g. new dams and plantations reducing food security	Current priorities are building safety codes, not environmental efficiency	Lao Ministry of Public Works and Transport piloting an environmental and social operations manual; little public transport	Government developing new **Minerals Law** to raise mining standards; **Cleaner Production Office** exists but demand and services small	**Lao Land Law** requires that Master Plans be created for 'urban' areas; **Land Management Agencies** and **Urban Development Authorities** newly created	Tensions between large hydropower development and lack of access to mains power for householders	Water supplies not yet safe or equitable	Currently there is a lack of effective waste management
Malaysia	**New Economic Model** seeks to achieve sustainable agriculture through efficiencies; **10th Malaysia Plan** also outlines food security objectives	**Malaysia Green Building Confederation** (MGBC) launched 2009 with vision to be leader in green buildings in Southeast Asia. **Green Building Index** (GBI) tool also in use	Improving urban public transport chosen as one of six National Key Result Areas (NKRAs); **10th Malaysia Plan** plans to increase public transport use	**Green Technology Policy** (2010) promotes low carbon technologies and sustainable development; Green Technology Financing Scheme introduced but has low take-up	**National Urbanisation Policy** (2006) includes objectives on public transport, waste management, and sustainable development	**10th Malaysia Plan** sets renewable energy target; **National Energy Policy** (1979) has guidelines about long-term energy objectives and strategies	**Integrated Water Resources Management** (IWRM) adopted and **10th Malaysia Plan** contains several objectives for managing the country's water resources	The **National Strategic Plan for Solid Waste Management** implemented 2005; **Solid Waste and Public Cleansing Management Act** adopted 2007

	Food and agriculture	*Buildings and construction*	*Mobility and transport*	*Consumer goods and manufacturing*	*Urban development and land use*	*Energy*	*Water*	*Waste*
Maldives	Government expanding agricultural land, establishing food storage facilities, providing support to farmers	Sector not well regulated or monitored	Current lack of public transport; but there are efforts to encourage cycling and cleaner vehicles	Very little manufacturing in the Maldives – most items are imported	Current transition from state land ownership to private ownership. More integrated policies and plans required	Plans to expand renewable energy sources. Action Plan on EE proposed	Feasibility study of solar desalination is planned and pilot projects on filtration currently being run	Few facilities for waste management; current regulatory framework weal
Mongolia	NDS emphasizes development of new, stronger breeds of animals and crop varieties	NDS includes strategy to increase housing, but EE/ sustainability not mentioned	Railway system improvement underway but car numbers increasing	Few incentives for investing in clean technologies and energy efficiency	NDS plans to strengthen urban planning capacity	Plans to increase renewable energy, and provide incentives to save electricity	National Water Programme is planned but not implemented	National 3R strategy currently being developed
Myanmar	Various laws in place, but implementation appears weak	Little information available to comment	Little information available to comment	Various laws in place, but implementation appears weak	City-based laws in place but no apparent nationwide laws	**Energy Policy** (2001) exists but implementation uncertain	**National Water Resources Committee** is planned	Various laws in place, but implementation uncertain
Nepal	Some improved technologies for agricultural production being implemented	Current priorities are building safety codes, not environmental efficiency	Future plans for railway system expansion	**Industry policy** adopted in 2010 includes environmental sustainability as one of the four key objectives	Urban planning currently inadequate	**Nepal Energy Efficiency Programme** (NEEP) adopted to improve energy efficiency, but ongoing energy problems	More access required to water supplies and sanitation	Current collection systems and treatment facilities insufficient

	Food and agriculture	*Buildings and construction*	*Mobility and transport*	*Consumer goods and manufacturing*	*Urban development and land use*	*Energy*	*Water*	*Waste*
Pakistan	**Prime Minister's Task Force on Food Security** (2009) recommended improvements	Programme recently launched to provide one million housing units per year	Need for public transport recognized but investment insufficient	EIA legislation exists but not well implemented	New national growth strategy aims to increase urban density	Annual Plan 2011–12 lists efficiency actions required, but implementation unknown	Agricultural policies have strong influence on water use efficiency, but linkages poor	Waste management infrastructure and systems insufficient
Philippines	Strong modernization focus with some consideration of organic agriculture and environmentally friendly technologies	Large housing shortage in urban areas, some consideration of environmental objectives and energy conservation	Low quality and capacity transport infrastructure but **National Environmentally Sustainable Transport Strategy** (2011)	**Cleaner production and extended producer responsibility** through the provision of tax incentives	**National Urban Development and Housing Framework** (2001) to guide urban planning Local governments have to prepare comprehensive land use plans (PDP 2001-16) **National Land Use Act** is being drafted	Strong energy security perspective in the **Philippine Energy Plan** (2009-30) some recognition of green energy and demand side management **Renewable Energy Act** (2009) and **Climate Change Act** (2009)	Mostly pollution problems **Clean Water Act** (2004) Integrate water resource management promoted in the **PDP** (2011-16)	**Ecological Solid Waste Management Act** (2000) promotes separation of waste, recycling and composting

	Food and agriculture	*Buildings and construction*	*Mobility and transport*	*Consumer goods and manufacturing*	*Urban development and land use*	*Energy*	*Water*	*Waste*
Sri Lanka	**National Agricultural Policy** placing focus on sustainable agriculture, e.g. integrated pest management, promotion of organics. **Haritha (Green) Lanka** also addresses water and erosion	**Mahinda Chinthana (Vision)** providing land to low income families, and introducing housing finance products	**Mahinda Vision** and **Green Lanka** both plan to improve rail infrastructure	**National Cleaner Production Strategy** 2005; **Mahinda Vision** and **Green Lanka** both highlight eco-industrial parks; **National Cleaner Production Centre** assists in greening industry	**National Physical Planning Policy and Plan** aim to provide safe living areas and necessary infrastructure	**Sustainable Energy Authority** created to increase support for renewable energy	**Green Lanka** objective to make rainwater harvesting mandatory	**Green Lanka** objective to rehabilitate waste sites and prevent further dumping
Thailand	**10th NESDP** (2007-2011) promotes organic farming; **Good Agricultural Practices** (GAP) Scheme uses food safety labelling	Two programmes in place to provide more housing; **Building Energy Code** (BEC) specifies EE targets but not well enforced	White paper **Transport for Thailand's Sustainable Development** seeks better multi-modal transport system; **10th NESDP** also promotes public transport	**Minimum Energy Performance Standards** (MEPS) cover six types of products; **Green Public Procurement Policy** (2008) in place; **10th NESDP** also has SCP-relevant sections	Urban development planning done at local level and not very effective; **11th NESDP** (upcoming) contains some plans for better urban design	**Energy Conservation Promotion Act** (1992) has energy efficiency targets; **Fifteen-Year Alternative Energy Development Plan** in place since 2009	**Integrated Water Resources Management** (IWRM) in national policy since mid 1990s however implementation inadequate	**10th NESDP** (2007-2011) contains specific targets for waste treatment; still significant problems with waste disposal

	Food and agriculture	*Buildings and construction*	*Mobility and transport*	*Consumer goods and manufacturing*	*Urban development and land use*	*Energy*	*Water*	*Waste*
Viet Nam	**Five-Year Plan for Agricultural and Rural Development 2011-2015** aims to improve productivity and protect environment; **SEDP** also addresses sustainable agriculture	**Building Energy Code** (2005) includes energy efficiency	**Transport Sector Development Strategy to 2020** plans construction and upgrading of major highways, but also endorses development of public transport services; **National Strategy on Environmentally Sustainable Transport** currently being developed	**National Strategy on Cleaner Production until 2020** adopted in 2009; **Law on Environmental Protection** (2006) prohibits discharge of toxic wastes; **Regulation of Eco-Labels** still in infancy	**National Housing Strategy to 2020** has target of increasing the number of apartments; **SEDP 2006-2010** contains a number of urban development objectives	**Decree on Efficient Utilization of Energy and Energy Conservation** issued 2003; **Viet Nam National Energy Efficiency Program** (VNEEP) approved 2006; **Law on Energy Efficiency and Conservation** (2011); **Environmental Tax Law** (2012) based on polluter pays principle	**National Strategy on Water Resources to 2020** (2006) seeks to protect water resources; **Law on Water Resources** (being revised) aims to strengthen water rights and water sharing frameworks; **National Target Program on Improvement of Efficiency for Water Resource Protection, Management and Multipurpose Use** (currently in draft) to deal with water scarcity	**National Strategy of Integrated Solid Waste Management** (2009) includes specific targets for reuse and recycling up until the year 2025

Synthesis

The SCP Context

While people, communities and businesses in rapidly developing Asia strive for opportunities associated with industrialization and modernization and work for increased material standards of living, governments have come to an understanding that the future prosperity of the region will crucially depend on enabling environmentally sustainable development. Sustainable Consumption and Production (SCP) underpins sustainable development and despite the use of different terminologies, all countries have taken steps to pursue SCP in one way or other. Despite these efforts environmental concerns are not always considered important by communities and individuals. This makes achievements in SCP across all levels of government a difficult task, and in 'real life' development objectives frequently contradict sustainability aims.

Despite the complex and contested nature of SCP issues, the recognition of the importance of SCP and sustainable development has resulted in the formulation of framework policies, laws and legislation including many different instruments and incentives.

Main policy domains relevant to SCP

In Asian developing countries, national development plans guide the integration of different objectives such as economic development, social development and raising the standard of living, and environmental integrity. The authority of the departments responsible for development plans varies between countries. In some cases, such as in China and Viet Nam, one department shows strong leadership and coordination, whereas in other countries such as the Philippines all departments act fairly independently with much a lower level of coordination.

For all countries, the Millennium Development Goals (MDGs) define an important set of aspirations, including environmental sustainability and the effective and efficient use of natural resources. Many countries have achieved significant improvements in recent decades. Different countries have followed different strategies to use laws and regulations to enable sustainability, including special frameworks for sustainable development, SCP and green growth, and mainstreaming goals into their development plans.

In regard to policies there has, understandably, been a focus on pollution control and to some extent on eco-efficiency of production and cleaner production, with important efforts to enable national innovation through the creation of National Cleaner Production Centres and an emphasis on preventive approaches.

More recently, some countries have looked at much more integrated approaches, considering the whole production-consumption conundrum and taking a life cycle perspective. Most notably, China has been one of the first countries globally to institute a *Circular Economy Promotion Law* covering all aspects of resource use, waste and emissions that occur when a society produces and consumes. Not surprisingly, there is no blue print and only a very few international examples for how to

implement such complex legislation across all levels of government, from national to local jurisdictions.

Most countries have well-developed frameworks for environmental protection and pollution control, which have emerged since about 1995. There is a lot of experience in implementation and important success stories in regard to, for example, mitigating urban air pollution. Examples include Law on Environmental Protection and Resources Management (Cambodia, 1996), Overarching policy frameworks and laws are very important for framing policy context and they provide important guidance for sectoral policy initiatives. Priorities are very similar in most countries investigated and include:

- Environmental protection
- Urban development
- Construction and housing
- Mobility and transport
- Food and agriculture
- Natural resources
- Manufacturing and consumer goods
- Tourism
- Energy and water

Food and agriculture

Most countries studied have a large agricultural sector both in terms of employment and contribution to GDP, often based on smallholder agricultural communities facing local food security and poverty issues. From a national policy point of view, agriculture has high potential for modernization and growth, to contribute to export income and to ensure local food supplies for the domestic population. Efforts include bringing technology to farmers, improving the efficiency of investments, rationalizing subsidies, diversifying production, improving supply chains, protecting food security and fostering inclusiveness through improvements in access to land, credit and skills.

Mining and energy sectors

There are numerous examples of rich resource endowment in Asian countries such as hydropower in the Lao PDR and Bhutan, fossil fuels in Indonesia, etc. to name a few. While mining and energy led development may contribute to export incomes and the balance of payments, local benefits are more questionable. The distribution of resource wealth across a nation crucially depends on policy mechanisms that enable a fair distribution of the gains across time and geographies. Some countries are considering moving from the traditional system of royalties to resource rent taxes to ensure adequate gain sharing when resource prices are high and are using this income to invest in infrastructure, systems for retirement pensions and support for manufacturing and small businesses.

There are many examples of policies favouring energy efficiency and renewable energy. For example, China has a target for reduction of energy intensity incorporated in the National Development Plan and numerous more detailed policies and programmes for energy efficiency

including buildings, transport and products. Energy efficiency is a very important policy goal to combat threatening climate change trough fundamental changes in the energy systems.

There are important linkages and trade-offs between food, energy and water that need be addressed through policy settings but are often overlooked because of the functional differentiation of departmental responsibilities.

Cleaner production

Cleaner production is a major policy imperative and has resulted in various laws to promote cleaner production. For examples see China, Sri Lanka and the Lao PDR. Many countries have established a cleaner Production Centre part of their national innovation system and there is very visible impact of achievements with regard to the resource and emission intensity in many industries including textile, the pulp and paper and chemical industries, iron and steel and cement.

Sustainable consumption

The domain of consumption is much harder to address by public policy because of the common understanding of the freedom of the consumer to make their own purchase decisions according to their taste and means. The policy context is further complicated by the co-existence of over- and under-consumption that exists in many countries in the region. On the one hand, countries whose economic growth strategy has been dependent on export incomes strive for the development of a stable domestic market to avoid over-exposure to world economic trends. On the other hand, a new consumer class adds to the environmental burden associated with consumption.

While public awareness plays an important role in shaping the consumption behaviour of households, infrastructure may well play a more important role. Investment in public transport and green buildings as well as quality urban planning will help shape consumer behaviour in areas of high environmental impact such as housing and mobility. The public sector will play an important role as a larger consumer, enabling changes in trend through the green public procurement initiatives that are being embraced by many countries in the region.

Businesses have an increasing incentive to organize their own supply chains in an environmentally and socially responsible form to ensure their future social license to produce. Corporate Social Responsibility (CSR) is growing in importance in a market where consumers have started to ask questions about the products they purchase. Another important area for government intervention is the tourism sector, and there are many examples of green tourism initiatives and associated regulations to help maximize the overall benefit of visitors.

Developing Asia will require new production and consumption methods to underpin the future prosperity and competitiveness of the region and its people. These important changes will not happen spontaneously but will depend on well-designed policies. There is a triple dividend of greater wellbeing, increased competitiveness and environmental integrity to be gained if the policy settings are correct. Asia seems, on the whole, to be making good progress toward achieving this.

Policy implementation

There is ample evidence for the abundance of national policies, laws, regulations and programmes to support SCP in Asia. One important aspect of policy analysis is the effectiveness of policy implementation especially for State and local level. There are a number of critical success factors for policy implementation that have been identified in this study

- It is of advantage if there is a single responsible authority for coordinating SCP activities in a country to avoid confusion, duplication efforts, conflicting activities, and inertia.
- The two main functions of the coordinating authority are to show leadership and capacity for decision making, in order to reduce complexity, and to help build linkages among all actors that need to be involved.
- Human capital and the knowledge transfer of SCP issues and policies to State and local authorities as well as city governments are crucial for successful implementation at these levels of government.
- If incentives are set in way to favor SCP it becomes easier and more likely to achieve good outcomes at all levels. Since businesses depend on the local context for their day-to-day business activities it is most important that national policy setting drive State and local practice.
- For society at large it will be crucial have champions of SCP among community leaders and decision makers who promote innovative technologies for SCP and sustainable lifestyles.

Monitoring and evaluation of policies

One important criterion for the success of policies is the ability to monitor and evaluate policy outcomes. If the relevant process and systems for monitoring and evaluation are put in place and reliable and credible data is available it becomes possible to learn from policy interventions and to allow for decision of policy extension, adaptation or cessation. For monitor and evaluate SCP policies, traditional sustainability indicators will not be sufficient. SCP puts a focus on the economic activities – production, distribution and consumption – and therefore requires data and indicators that incorporate economic accounts and environmental and social accounts that are compatible with the economic accounts. There is a need to invest in frameworks, knowledge and data generation and indicators for SCP, which may well be based on previous guidance frameworks for SCP developed by the UNEP.

Expressed priorities for regional capacity building

Based on the policy review and the consultations held during the on-site country studies, the project team has identified a number of areas where countries appear to have similar needs for capacity strengthening. This section summarizes such common needs in three key areas: frameworks, policies and institutions; education and training, and; research and innovation. It ends by identifying five broad domains that the project team considers as priorities for future efforts to strengthen the SCP capacities of the countries in Asia.

Frameworks, policies and institutions

Frameworks

One of the most frequently expressed needs was for developing close and effective collaboration among the various ministries and departments as well as between government and non-government agencies. Interviewees mentioned a need for a framework for coordinating SCP initiatives between ministries. In China, for example, there was a call to organize regular roundtable meetings to facilitate the sharing of knowledge and information, developing a common set of standards and criteria to avoid conflicting policy objectives. With support, the National development and Reform Commission (NDRC) and Ministry of Environmental Protection (MEP) could convene high-level inter-ministerial consultations for relevant SCP approaches to be discussed by the ministers of each department.

Another approach suggested for strengthening SCP frameworks was to strengthen and expand the mandate of the host ministry of the national focal point. In Sri Lanka, for example, better enforcement of monitoring mechanisms for existing policies was linked to strengthening the role and capacity of the Central Environmental Authority (CEA) in its enforcement of Environmental Protection Licenses and Environmental Impact Assessment. A similarly expressed need to increase coordination in Cambodia was to strengthen the mandate of the existing Green Growth Secretariat, to combine green growth and climate mitigation strategies.

Sustainable public procurement was frequently identified as an approach which, if properly developed, allows government to lead by example in their procurement practices. It would also use governments' substantial purchasing power to shift product manufacturers toward sustainable production. In India it was identified that establishing an effective system for sustainable procurement is not easy and would need support. A number of components need to be developed, including guidelines and training, and a coordinating body needs to be established within the government. A strengthening of the government's capacity will have to be complemented by capacity strengthening also on the supply side; in many sectors suppliers have limited capacity to comply with strict environmental demands and lack the ability to provide credible evidence of compliance. In Nepal, as in India, a first step should be to identify a limited number of product groups where sustainable public procurement could play a significant role in terms of overall positive impact and with a high estimated cost-performance ratio. Taking the idea further, Sri Lanka has indicated that support for collaboration between the Ministry of Environment and the Department of National Planning would allow for developing guidelines for SCP to be incorporated into national project financing. This should include specific guides to resource efficiency and pollution. Furthermore the government needs support to develop mechanisms and guidelines for sustainable public procurement.

To support sustainable procurement, most countries need **eco-labels**. Taking the Lao PDR as an example, limited labelling and standards regimes exist for efficient appliances and buildings. In this case, imported electrical devices are one obvious area where opportunities to review existing standards and labelling (e.g. for devices imported from Thailand or China) could lead to

improvements in efficiency and safety. Eventually, harmonizing labels across countries in the region or sub-regions would foster international trade in more sustainable products.

Another area where support could be provided is in developing and enforcing guidelines for corporate **sustainability reporting**. An example is the recently developed National Green Reporting System in Sri Lanka, which is yet to be implemented. The system is designed to target industry and service sectors in general, however there are special provisions to stimulate small and medium-sized enterprises (SMEs) to participate in the process through supply chain management. SMEs are quite crucial but often lack capacity to monitor their environmental impacts or appreciate the benefits of benchmarking and reporting. Over 85% of businesses in Sri Lanka are SMEs; and more than 50 organizations, including public and private ones, had already registered to use the system within the first two months of its adoption. Capacity support would provide information and support centres for participating SMEs, training on how to use the reporting system, monitoring and evaluation.

Several countries expressed need for support in development of energy efficiency **benchmarking schemes in industry**. These benchmarking schemes could eventually support the development of relevant standards. In China, the Environmental Certification Center (ECC) of the Ministry of Environmental Protection is already working toward the development of low-carbon certification schemes; the SWITCH-Asia programme could provide additional support. Beyond benchmarking schemes there is a need to develop an easily understandable **national and regional SCP indicator system**. An indicator system would allow policy makers to monitor implementation and effectiveness of policy initiatives related to SCP.

Agencies are needed to support implementation of government policy. While some countries have National Cleaner Production Centres, these centres find it hard to be financially independent. There is indication that more **targeted implementation agencies** handling a limited portfolio of practices addressing more immediate stakeholder needs (e.g. energy efficient production) could be more easily sustained. An example of support for such an institutional set-up can be seen in the case of Nepal. The Alternative Energy Promotion Centre (AEPC) was established in 1996 on an initiative by UNDP. It works with off-grid rural energy and focuses on micro-hydro, biogas, and solar energy. The centre works with a large number of donor agencies and other organizations and provides substantial subsidies, 85% of which are covered by donors and the remaining part by the government. So far, 300,000 solar home systems have been delivered and 15MW capacity of hydro power has been installed. The projects on biogas are also reported to have also been fairly successful in rural areas with livestock production. Despite these efforts, alternative sources still only provide less than 1% of the country's energy supply. Both the Ministry of Industry and the Federation of Nepalese Chambers of Commerce and Industry expressed the need for support to expand the AEPC for industry to include broader sustainability aspects. This could be realized as a collaborative effort among government, private sector and other international agencies. There are already opportunities to build upon. A new industry policy since 2010 includes environmental sustainability as one of the four key objectives. A centre for energy efficiency in industry is also starting up as collaboration between Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)and the Federation of Nepalese Chambers of Commerce and Industry (FNCCI) that will train energy auditors and offer subsidized audits, mainly to larger industries, develop showcases and build

awareness. In Bangladesh, there is a recommendation to strengthen an already established SME Foundation by raising its technical capacity and training more personnel to support sustainable production among SMEs – which comprise the majority of businesses in the country.

Education and training

Awareness-raising

The region could benefit from **coordinated awareness-raising campaigns**. In all countries, there was expressed need for raising awareness among all stakeholders, including consumers (about lifestyle choices), businesses (about benefits of more sustainable management and production methods), government officials and agencies (about the importance of SCP in achieving sustainable development policy objectives). Attention should be paid to public employees, consumers, farmers, SMEs, and legal practitioners.

Participants at the workshop in India observed that educational efforts, including both formal education in schools and more general awareness raising campaigns targeting the general public, need to go hand in hand with improved access to easily understandable consumer information. Eco-labels for energy efficient appliances, for example, would help in positive selective purchases of more sustainable light bulbs, air conditioners, fans, refrigerators, computers, televisions, etc., and mandatory requirements for producers to provide consumers with environmental product information could be instituted. Support to environmental NGOs working on consumer education could be strengthened and these organizations could be made more professional and better coordinated; and more resources could be allocated to professionally designed campaigns involving celebrities and other community leaders. In Viet Nam, participants mentioned the need to develop a **National Action Plan on SCP education** to promote SCP principles and practice, and also to identify options for building **SCP support networks** both in universities and in local communities. Sri Lankan participants proposed re-organizing school syllabi (at Advanced and Ordinary level) to integrate SCP, ensuring integration of theory and practice. To avoid being abstract, **consumer awareness could be linked to livelihood, health and lifestyles issues**. The awareness on nutrition and food hygiene is relatively low among the general public, contributing to health problems, especially among children. Efforts to educate consumers on these issues could increase the health benefits of poverty alleviation.

Sri Lanka provides an example towards sustainable agriculture – an area of primary importance to all countries. In Sri Lanka, an amendment, made in July 2011, to the 1980 Control of Pesticides Act, now requires agrochemicals sales staff to have undertaken training in said area, to understand the substances and be able to provide technical advice to customers. Over 7000 trained personnel are in demand; the Ministry of Agriculture needs technical assistance to meet the demands of such training. Training is also needed for **extension officers** especially on reducing overuse of pesticides and chemical fertilizers.

Legal practitioners would also benefit from more information to understand the conflicting issues related to economic, social and environmental development to better understand long-term sustainability implications of laws, and how decisions by courts and legal practitioners affect stakeholder adherence to sustainable practices at various levels in the legislative framework.

The Lao PDR has identified opportunities in using its Green Growth strategy to incorporate awareness of SCP. It expressed need for support to create a **multi-stakeholder platform** that would raise the profile of green growth/SCP while providing social learning opportunities. Such a platform would acknowledge the reality that responsibility for SCP is distributed across multiple sectors and scales of development.

Skills and Training

An oft identified need is for development of and training for use of **technical guidelines**. Examples include guidelines on sustainable agriculture (e.g. using less or no fertilizer, organic farming) or more sustainable practices. Bangladesh, for example, needs to train agricultural extension officers to better communicate with and develop skills of farmers. An example is in application of the alternate wet-and-dry (AWD) farm irrigation method which can save water and increase. As per the AWD method, instead of constantly flooding rice fields (which farmers do, to avoid weeds and to prevent insects from attaching to plant roots), the AWD practice encourages alternating periods of irrigation and non-irrigation. Once the water falls below required levels, a simple, inexpensive device (a 'pipe' inserted in the ground) automatically triggers more irrigation. The method has seen a 20 – 30% reduction in irrigation water use and 10 – 15% more rice yield. However it is only practiced by a limited number of farmers, due to a lack of practical guidelines and limited resources to reach out to the larger rural farming community.

Similarly, to achieve more sustainable tourism, SME tourism operators need guidelines on how to reduce the effects of their practices on, for example, biodiversity, pollution, etc. The scale of this cannot be underestimated in a region where tourism is a substantial source of income. Another example is the textile industry that is polluting waters from dyeing and finishing activities – an acute problem in Bangladesh and several other textile producing countries. Guidelines would be useful, for example, on suitable quantity of chemicals to use, appropriate quantity of dye for corresponding fabrics, or for the treatment of industrial sludge containing toxic chemicals and heavy metals.

There is significant scope for sustainability improvements in the construction sector, in terms of both energy efficiency and better supply chain management. Current building codes in Nepal, for example, focus on technical aspects, such as earthquake resistance, and do not include environmental criteria. There is generally a low skill level on applying sustainability measures in the construction. Training of architects and engineers and general awareness-raising in the sector could be beneficial, but would need to be complemented by demand creation efforts and possibly also with changes in regulations, such as building codes. Local government officials, who are in charge of inspections and enforcement, would also need to be involved in capacity strengthening efforts.

In Cambodia, workshop participants highlighted need for support in on-the-job training, internships, sandwich courses for graduate recruits to Ministries, knowledge transfer from (international) experts, capacity building for commune and district councils, refresher courses for ministerial staff and training on SCP for planning. Information sharing and the need to train technical people in marketing, management, communication and persuasion were also mentioned. Information and training programmes should be provided in local languages (e.g. Khmer language in Cambodia, both Sinhala and Tamil in Sri Lanka) and tailored to the recipient communities.

To support the above capacity development activities, tools should be developed for access across the region. Examples include mapping gaps in knowledge availability, developing databases (e.g. of best practices, of toxic substances, etc), the development of pilot and demonstration projects, as well as guides for replication and up-scaling, and the development of national SCP indicator systems.

Research and innovation

The need for research on SCP in order to support decision making and practices in the region was a recurring theme. Several technical knowledge gaps were revealed during interviews in areas such as industrial energy efficiency, sustainable agriculture, waste management, carbon footprint calculations, and building design standards. In most countries, interviewees stated the need for enhancing regional cooperation with neighboring countries to facilitate knowledge exchange and access technical expertise.

One commonly suggested area was a study on the **assessment of gaps in knowledge and practice** of SCP in the region. This would include in-depth review of the current policies, institutions and capacities in this area; studies on specific SCP policy instruments (e.g. learning networks, technology transfer, environmental taxes and charges, subsidies, green public procurement) that could be used by national and local governments to achieve greater policy implementation; and a comparative analysis to see which policy instruments are effective in other countries and regions, especially in Europe, and how these can be tailored to the regional context.

Eco-innovation and adaptation of new technologies for cleaner production was identified as an area where current capacity is low. Sectors often mentioned in this regard included agriculture, waste and wastewater management, and energy efficiency. An example of such a need was expressed by Cambodia, in drawing the link between food security and sustainable agriculture. Cambodia aims to significantly increase food productivity, especially for rice, without increasing land used for agriculture. However, knowledge about soil quality, land availability, industrial fish farming, and impacts of fertilizer use or biogenetics is limited. Suggestions for R&D activities and investments included a GIS-based land resource management system, strengthening the Scientific Agricultural Institute.

For energy, the Lao PDR expressed need to conduct an independent study on how to strengthen delivery of decentralized energy and water services. Such a study could focus on evaluating a range of public-private partnership models. Cambodia identified a need for research on how to up-scale the use of simple, sustainable technologies such as biogas stoves across the country. Bangladesh also expressed a need for further research into possibilities of setting up several biogas plants in each village. Supporting research to explore such innovative opportunities in technology, management practices, etc, and budgeting for them or partnering with donor agencies would allow Bangladesh to pursue a more sustainable path to consumption and production.

An approach recommended by workshop participants in Sri Lanka was that since R&D activities are usually considered costly, SCP research for now should focus on **adaptation of existing technologies**.

Another area with perceived opportunities was to support development of **partnerships between Government, Research and Development institutions, and market actors**. The aim was not only to

mobilize funding for research and implementation, but also to ensure that research findings are reflected in policy design, and also for easier adaptation of new SCP designs and SCP technologies. In this respect service laboratories were identified as a feasible model. In Cambodia there was expressed need for more service laboratories for agricultural or (water) pollution research. Sri Lankan interviewees suggested that upgrading the capacities of government service laboratories would be helpful, as well as facilitating development of service agreements between companies and universities to share research labs.

Potential domains for regional action

Cross-departmental collaboration will be instrumental to provide coherent policy settings across policy domains

SCP is a complex policy issue involving many areas of sectoral policy that need to work together to achieve the objectives of SCP. To enable this, countries need to strengthen capacity for cross-departmental cooperation at various levels including high-level decision making and lower level day-to-day operative arrangements. This involves strengthening horizontal communication within and among departments, greater transparency of departmental strategies among public servants and information sharing. The establishment of one single SCP body within each government, with an appropriate mandate and sufficient resources could facilitate such coordination.

Policy implementation at the sub-national scale will be crucial to achieve practical SCP outcomes

Many countries have identified SCP as an important overarching policy objective to underpin future prosperity, competitiveness and environmentally sound development which has resulted in policies, laws and regulations at national level. Countries have set different priorities based on their economic structure and development status and have either invested into national SCP strategies or mainstreaming of SCP into other policy documents and very often a combination of this. In general, priority has been given to the production side with less attention paid to policies aimed at influencing consumption patterns related with environmental impacts. As a result, most countries are equipped with policies that may partly enable SCP. However, what is often lacking is implementation at the sub-national level where SCP policies are implemented. Proper implementation will require additional guidelines for local authorities, urban councils and communities of how to use the high-level policy guidance in their day-to-day decision making, further awareness raising and information sharing with sub-national representatives to help overcome existing barriers of implementation, and clear incentives that motivate local decision makers to act in accordance with regulations issued at the centre.

Harmonization of development objectives and funding for SCP

Policy making in Asia has to address the dual objective of raising the standard of living and alleviating poverty while ensuring environmental sustainability of development. In such a context economic growth is a very important objective and usually involves environmental and resource degradation of some kind. Their need to be a broader discussion about the quality of growth and the merits of investment into SCP to inform priority setting in treasury and finance that match the ambition of SCP policies to ensure smooth implementation of programmes and activities. Investment into cities and

infrastructures such a public transport, renewable energy systems and sustainable water and waste water systems and also green manufacturing and industrial symbiosis will be crucial and will have a lasting legacy for SCP outcomes.

Measuring success will be vital informing future policy planning

The current set of economic indicators does not address SCP outcomes properly and countries need to invest into monitoring and evaluation of SCP including developing a set of broader SCP indicators. SCP indicators will be different from current sustainability indicator approaches because the will need to address the close linkages and dependencies of economic, social and environmental outcomes with the production consumption process. SCP indicators will be based on a system of economic, environmental and social accounts that work together well to address issues of SCP and to monitor progress of SCP policies.

Getting the mix of policies right to incentivize all sectors of society, industry and communities

Countries have started to invest into transformational policies such as budget and tax reform including resource and carbon taxes, trading schemes and payment for ecosystem services. These economic instruments and settings will help to create a different set of incentives in favor of SCP outcomes and will set countries on a new green growth economic development trajectory. The economic incentives will need to be supported by legal and planning arrangements especially for the fast growing Asian cities covering the domains of construction and housing, transport, water and energy. Awareness and readiness for SCP has to grow across all sectors of society and government can take a lead with regard of green procurement and eco-efficiency of government owned businesses. Most importantly, policy settings need to support initiatives among the business community to unleash the creativity and innovation of industries for eco-efficient production and green products.

Enhancing technical knowledge and supporting countries' innovation culture

Innovation will be crucial for developing the technologies and practices for production of goods and services and will involve experimentation in industries but also across all sectors of societies. To secure future prosperity their need to be new ways of producing and consuming based on new technologies and new lifestyles that support sustainability. Many of the technologies that will underpin SCP are already know but there is large potential for further development. There is also vast improvement through organizational settings and logistics that need be harvested. Countries need to invest in sharing knowledge and building a national innovation culture.

Opportunities and domains for action

Opportunities for policy tool development

The analysis of policy tools and of existing capacities in the studied countries paints a rich picture of promising initiatives and activities that are currently underway, and which any SCP strategy could build upon. Despite the existing efforts in countries there also appear to be opportunities for policy tool development to gain momentum in enabling SCP.

Broadly, policy tools can be classified as either transformational or incremental. Transformational policies are aimed at transforming current systems through system innovation, whereas incremental policies aim to improve existing systems. Both types of policies will be very helpful in guiding resource efficiency and systems innovation in Asian developing countries.

Text Box: Incremental policies – some useful definitions

Green investment – investment in sectors which have the potential to address climate change and other ecological challenges, and also contribute to economic growth, social equity and poverty reduction. Examples of such sectors include renewable energy, clean and efficient technologies, water provision and sustainable agriculture

Cleaner production – applying integrated preventive environmental strategies to processes, goods, and services to increase overall efficiency and reduce risks to humans and the environment

Eco-efficiency – delivering competitively priced goods and services that satisfy human needs and bring quality of life, while progressively reducing ecological impacts and resource intensity throughout the product life cycle

Extended producer responsibility – when producers take responsibility for their products from cradle to grave, developing products that have improved performance at all stages of the product life cycle

Green infrastructure and design – design, maintenance, adaptation, renewal, and development of a city's infrastructure in such a way as to provide a satisfactory human environment with minimal demands on resources

Eco-labelling – when products are judged by an impartial third-party to meet environmental criteria based on life cycle considerations

Service instead of purchasing – borrowing, sharing or renting products rather than purchasing them for sole use by one party

Buy responsibly – making purchasing decisions based on considerations such as environmental sustainability, corporate social responsibility, and product life cycle issues

Green procurement – process by which organizations meet their needs for goods, services and utilities in a way that achieves value for money on a whole life basis in terms of generating benefits not only to the organization, but also to society and the economy, whilst minimizing damage to the environment

Sources: UNEP, 2010; Von Weizsäcker *et al*., 2009

Text Box: Transformational policies – some useful definitions

Ecological budget and tax reform – placing taxes on fossil fuels and raw materials which are likely to end up as pollutants or waste while reducing other taxes, thus providing incentives to produce and consume more responsibly

Resource rent taxes – taxes on profits generated from the exploitation of non-renewable resources

Cap and trade systems for resources and carbon – pollution control systems under which governments set a cap on resource use or carbon pollution, limiting what companies are allowed to do. The government then issues credits which allow companies to consume or pollute a certain amount, as long as aggregate consumption or pollution equals less than the set cap

Repaying productivity gains as leisure time – rewarding productive employees with additional leisure time rather than additional money, with the potential resulting benefit of reducing excessive consumption

Removal of subsidies for energy and fuel – removing subsidies on polluting substances provides incentives for reduced consumption, and also for shifts to more environmentally friendly technologies and behaviours

Sources: UNEP, 2010; Von Weizsäcker *et al*., 2009

As the figure below shows, policies may influence production, i.e. businesses and corporations, or consumer activities of governments and private households. They may also be directed towards those large scale activity domains that are responsible for a large share of natural resource consumption and emissions and therefore link producers and consumers.

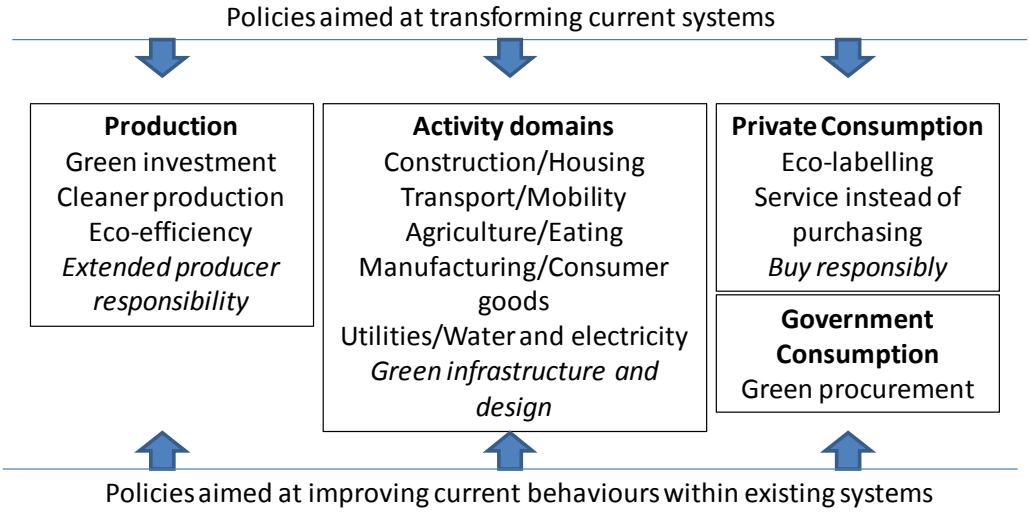


Figure: Transformational and incremental policy tools

Improvements in production will be driven by investment in activities that provide goods and services with low environmental impacts by adhering to clean production processes, implementing eco-efficient technologies and choosing environmentally friendly supply chains. Extended producer responsibility will complement these strategies and enable a greener production system.

Green infrastructure and good design, especially in fast growing cities in Asia, can improve the way in which important provisions – eating, housing, and mobility – but also consumer goods and utilities are provided. There is huge potential for eco-efficient buildings, public transport systems,

environmentally responsible dietary patterns, renewable energy provision, water sensitive design and consumer goods and services with high environmental standards, such as energy and water efficient appliances or products that can be repaired, recycled and reused.

Private consumption may become more sustainable through increasing information for consumers through eco-labelling to support responsible purchasing choices. Systems that allow consumers to borrow or rent rather than purchase, such as car sharing and tool sharing, can further reduce the environmental impacts of consumption. Very importantly, as people escape poverty and begin to consume more there need to be ways to minimize the environmental impact of consumption as economic activity expands.

Effective policies, instruments and tools that may drive responsible production, green infrastructure and smart design, as well as responsible purchasing behavior, will need to combine economic incentives with legally binding obligations for firms and consumers, and voluntary initiatives. These are usually classified as economic, regulatory and information-based instruments.

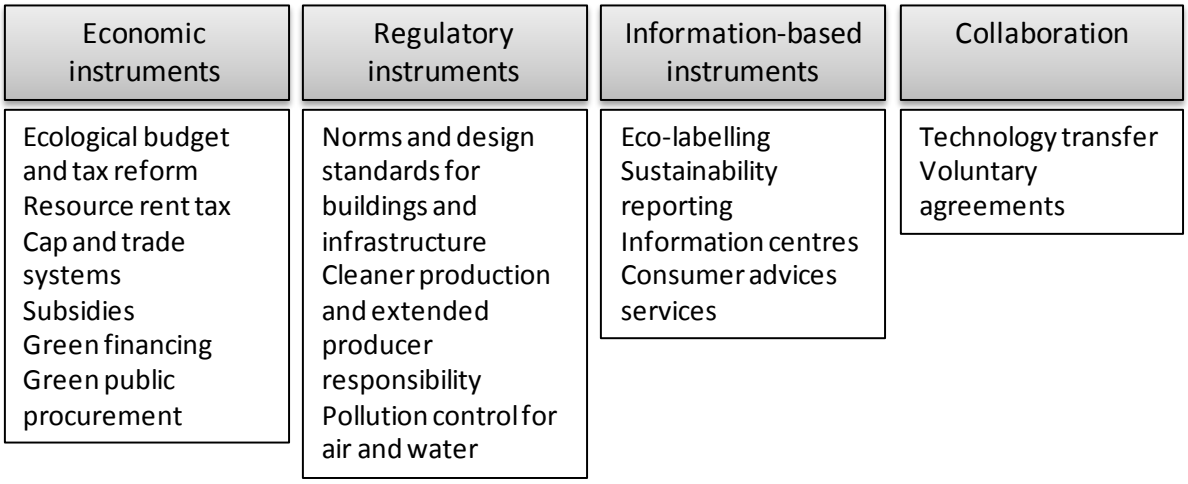


Figure: Economic, regulatory and information-based instruments

Many policies and instruments are available to help increase the efficiency of production-consumption systems, including standards and norms for producers to allow for pollution control of emissions to air and water, norms and design standards for buildings and infrastructure, guidelines for extended producer responsibility, recycling policies, standards and obligations for eco-labelling, and green public procurement guidelines. The text box below lists some potential policy options.

Text Box: Potential policies for activity domains

Construction/Housing
– Offer integrated approaches to reducing energy consumption, e.g. passive heating and cooling systems, efficient hot water systems, energy efficient appliances and lighting
– Promote use of renewable energy, i.e. green power
– Promote water efficiency measures, e.g. use of rainwater and onsite grey water, water recycling, water-sensitive garden design
– Encourage building design to reduce environmental impact, e.g. thermal chimneys, light wells and skylights, low ceilings, double glazing, recycled materials, natural ventilation, light coloured roofs
– Provide incentives (e.g. stamp duty exemptions) for the provision of buildings with high sustainability ratings

Transport/Mobility
– Reduce use of private vehicles through investment in public transport, transit-oriented city design, congestion charging, infrastructure for walking and cycling, and car sharing
– Support innovations in vehicle design, e.g. improved materials, low drag form, low rolling-resistance tyres, increased fuel efficiency, use of alternative fuels and power sources
– Provide alternatives to air travel, such as fast trains and videoconferencing

Agriculture/Eating
– Improve agricultural energy productivity through energy efficiency, fuel switching, and use of renewable energy
– Support innovations in food production, e.g. more targeted use of fertilizers and pesticides, conservation tillage, appropriate crop and livestock species choices
– Improve agricultural water productivity
– Encourage plant-based diets (or discourage consumption of animal products)

Manufacturing/Consumer goods
– Use recycled materials in production processes, and use materials more efficiently
– Design products that require less energy and water both during manufacture and through product life
– Ban or discourage wasteful technologies
– Run sustainable procurement campaigns to change purchasing behaviour in both public and private sectors, ands at the household level

Utilities/Water and Electricity
– Legislate minimum standards for energy and water efficiency
– Promote and support water purification and reuse
– Promote and support renewable energy sources
– Employ economic instruments, e.g. emissions/effluent trading, pollution fees and taxes, environmental subsidies, and feed-in tariffs for renewable energy

Sources: UNEP, 2010; Von Weizsäcker *et al*., 2009

There is significant potential for industrial symbiosis and eco-industrial parks to be supported through tax incentives and other incentive mechanisms, to drive innovation among businesses and to encourage recycling and cascading resource use. Housing and mobility in cities can make a large difference, but this will require urban planning and zoning that encourages mixed use, urban development to occur along transport corridors, and eco-efficient buildings and infrastructure at the

city and precinct scale. Increasing the efficiency of existing systems through an intelligent policy mix will be crucial to drive SCP but will by no means be sufficient to achieve it.

Recent data on material flows and resource productivity (UNEP, 2011) shows that in many Asian developing countries, labour productivity has increased at the expense of resource productivity. In other words, incentive systems are set up in a way that promotes the use of materials and energy to enable improvements in labour productivity. According to standard economic theory, labour productivity is vital to successful national economic policy because it increases the amount of goods and services available to an economy or its export sector. In an economic context where labour is scarce, this strategy makes a lot of sense. Global society is, however, increasingly confronted with rising and more volatile resource prices. There is a sense that the policy framework has to guide fundamental changes in production and consumption and consequently, many countries are exploring transformational policies to enable such changes.

The following types of policies have the potential to drive fundamental changes in practice, and to support SCP and RE:

1. Ecological budget and tax reform help improve natural resource use efficiency by taxing resources at their source. Lower income groups would need to be compensated through the taxation system, via direct payments or by lowering value added tax.
2. Resource rent taxes and future funds allow for the distribution of resource sector incomes to a larger group of beneficiaries through investment in public infrastructure, tax relief for the manufacturing sector and SMEs, and investment in retirement pension systems.
3. Cap and trade systems for resources and carbon to support an economically viable transition to low carbon and resource recycling economies.
4. Repaying productivity gains as leisure time for high-income groups to avoid resource intensive lifestyles in an emerging middle class and upper-middle class.
5. Removal of subsidies for the primary resource sector and for consumers, with regard to energy and fuel. Focus on urban development to allow for housing and transport infrastructure to transition to a much lower material, energy, carbon and water intensity through green buildings and public transport infrastructure combined with urban mix and socially beneficial housing density.
6. Support for agricultural modernization to incorporate existing knowledge, local materials and skills as much as possible, to promote local incomes and rural livelihoods and to counteract the social and environmental costs of rapid migration to urban centres.

The mix of policies would most likely differ between countries and would be based on socio-economic development status and countries' economic underpinnings. Countries that have embarked on a growth strategy based on export-oriented natural resource sectors would benefit from a different policy mix, than countries that have based their development on manufacturing or the service sector. There are a number of systems of provision that deserve special attention in policy design, including food and agriculture, housing and construction, and mobility and transport. These systems of provision link producers and consumers. They are also very resource intensive and have a lasting legacy through the long-term nature of investment in these sectors. They are also highly linked to energy and water use, and while energy and water deserve special attention in any

national economic and development strategy they also need to be seen as interlinked with other provision systems.

In concert with the transformational policy mix, initiatives that focus on design standards for buildings and infrastructure, and regulations that address pollution and toxic substances will be very important for driving SCP and RE. Green certificates for buildings, motor vehicles, and appliances will help document what is occurring in businesses and will provide information to consumers. There is a whole suite of information-based measures national governments may wish to apply to help guide new consumers to environmentally sustainable consumer choices.

SCP and RE are about change and therefore national innovation systems and cultures of innovation in countries are instrumental to success. It is most likely that traditional systems of knowledge provision will not be sufficient to provide the detailed knowledge and information businesses and employees will require in a green economy. Knowledge and technology transfer will need to be based on information systems that are flexible and accessible, and independent of where people operate. While innovative curricula in universities, colleges and vocational training schools will need to be a focus, new media will also play an increasingly important role.

This study found that policy development in many Asian developing countries has matured over the past decade, and many existing policies have the potential to be very beneficial to SCP and RE outcomes. There are, however, a number of levers and barriers to success. One important barrier is the development pressure that is apparent in many countries and is often represented in a mismatch or contradictions between development and SCP and RE goals in National Development Plans or sectoral policy statements. Another important barrier lies in policy implementation, especially at local and urban levels. The problem of successful policy implementation is not just that local levels lack capacity and financial means to drive SCP outcomes, but more importantly, that the contradiction between development imperatives and SCP objectives is often more apparent and poses very practical issues when closer to the practice of urban planning or regional management.

The study has identified a number of factors, which may help the SCP policy agenda in countries, at various levels of government. SCP policies will be more effective and relevant if:

- there is a clear high-level vision and framework policy such as, for example, a national action plan for SCP or a national strategy for resource efficiency that supports policy framing
- there is a good mix of transformational and sectoral policies that work together well
- there is a coordinating authority that manages the policy process and coordinates the different agencies that have to collaborate to achieve SCP outcomes
- there is a high level of ownership of SCP and RE policies by the respective line ministries
- cross-collaboration between different agencies at all levels is encouraged to avoid duplication of effort or contradictory efforts from different agencies
- SCP policies are mainstreamed into national development plans and sectoral policies, using well defined strategies, instruments and targets
- there are explicit policies for cleaner production and extended producer responsibility, and for green public procurement and eco-labelling of products
- there are dedicated agencies for cleaner production to support businesses

- there are dedicated consumer interest groups in the civil society sector.

Action plan for capacity development

This study analysed governments' capacity for developing, implementing, monitoring and evaluating SCP and RE policies to identify areas where capacity might be strengthened and technical support provided. This section firstly discusses an approach to capacity strengthening. It then summarizes the main elements of capacity strengthening that were identified through the eight country missions that occurred, and suggests a series of regional and sub-regional capacity building activities.

The UNDP has been at the forefront of developing approaches for capacity building, which have now become common practice for many UN agencies including the UNEP. UNEP understands capacity building as an inclusive process in which vision and strategy are aligned with organizational processes in governments to make best use of a country's resources to achieve a desired outcome, e.g. for development projects.

Capacity building activities operate across different levels including individual, institutional (organizational) and whole of society. They help build capacity at each of these levels but also, most importantly, improve the ability to work across levels. To allow this to happen, there needs to be a focus on communication and transparency well beyond the usual level of top-down information sharing. It is a common experience in professional organizations, that dedicated units build boundaries around their activities to ensure the identity and functionality of those units. This is also the case for government agencies. This strategy becomes problematic when policy issues demand interaction across functional units.

There are several strategies to encourage communication and transparency. Developing a whole-of-government vision and strategy is vital. Once such a vision has been created, which could involve a certain level of participation, organizational structures and processes should be aligned in a way that supports the vision. A tool-kit to support capacity development for SCP and RE policies in governments would start from these principles, and would provide governments with processes, questions for self-evaluation, and technical knowledge.

In more practical terms, what is required is an action plan for SCP capacity development in developing Asia. Such an action plan could comprise the following components and should address two questions: What can countries do with this study report (at national level and perhaps with the support of UNEP)? What activities can be developed based upon this study report, which would (led by UNEP) facilitate a transition to more sustainable consumption and production? A consultant would be needed to formulate the 'how' and 'what' of such an assessment.

a) At national level:
    i. Conduct a national assessment of the status of SCP and prospects for the future. This should:
        a. Examine recent and projected trends in the country (in the core areas of food, mobility, housing, energy, waste, urbanization, etc. as highlighted in the study)
        b. review SCP-related commitments at national and international level, as well as degrees of implementation

c. assess the strengths and weaknesses of the existing body of national legislation and policy tools
d. assess the government's and other stakeholders' capacity for implementation
e. etc.

ii. Formulate national strategies and action plans on SCP. National strategies on SCP should provide coordinated direction on SCP, but emphasis should be placed on developing action plans, since they are, of course, action-oriented.
   a. The strategy should not start from scratch, but pool together already existing policies and action plans, before attempting to fill the gaps (as identified in the assessment)
   b. It should include, among other national priorities, the key SCP areas identified in the report – food, housing, mobility, etc.
   c. Though government-led, this should be a multi-stakeholder process. One format is through national roundtables on SCP. It should not be driven by the Ministry of Environment (or similar) but by, say the Ministry of Economy and Finance, or some higher cross-ministerial authority – e.g. national planning commissions, etc.
   d. Strategies and action plans need to include monitoring and assessment aspects to be able to see progress through years

iii. Develop a portfolio of cross-cutting programs and develop key instruments.

b) At regional/sub-regional level

i. Develop concrete and practical indicator sets for SCP in Asia

ii. Set up (or improve existing) regional and sub-regional platforms for SCP (see for example ASEAN Forum on SCP – www.switch-asia.eu/switch-policy/news/jakarta.html) to focus on capacity building, experience exchange, multi-stakeholder interaction, etc., and to be supported by knowledge hubs, scientific and technical advisory groups, etc.

iii. Align regional policy activities with international policy processes and mandates. Agenda 21, the Johannesburg Plan of Implementation and the forthcoming Rio+20 summit are reference points. Two particular elements from Rio+20 will influence policy directions on SCP: the 10-year framework of programmes for SCP expected to be endorsed there; and agreements/declarations on the green economy. SCP activities in the region should reflect these. Also the outcomes of the Convention on Biological Diversity Conference of the Parties (CBD COP), such as the Aichi biodiversity targets, could serve as leverage points for action

iv. Build on countries' existing interests and identify openings for SCP. Food and energy security are key concerns in most countries in the region and SCP is an important strategy for addressing these concerns.

Priorities for regional capacity building

Main elements of capacity strengthening identified by countries

Developing and broadening the knowledge base and information systems for SCP and RE will play an important part in enhancing human and social capital in government agencies. Many governments in

Asia, mostly through specific expertise in Ministries for the Environment, have developed a good knowledge base for traditional environmental policy approaches including state of the environment reporting and environmental impact assessment. SCP and RE, however, pose new challenges for more integrated knowledge, i.e. they are holistic and systems based. Government agencies often struggle with thinking outside the canon of accepted approaches and therefore the environment is often seen as an add-on issue once economic and social policy decisions have been made. For SCP and RE to become effective, an integrated approach to environmental, economic and social policy domains becomes necessary. This introduces increased complexity around the issues being dealt with, and a more diverse and harder to access knowledge base.

Very often, government agencies have to deal with issues where knowledge is incomplete but contestation and stakes are high, and they are not well equipped to address these circumstances. A first and underpinning element in capacity strengthening therefore is the need to invest in building human and organizational capacity to identify and share information, to collaborate across agencies at all levels and hierarchies, and to embed the day-to-day activities and decision making processes of government employees within a strong and coherent vision for SCP and RE. This would involve data and information sharing and increased communication and transparency, to allow innovation to occur.

To strengthen institutional capacity for SCP and RE, countries may consider establishing a commission of distinguished scientists to provide advice to governments, to help inform options that may be identified in a National Action Plan for SCP and RE, and to create a roadmap to drive the process of SCP and RE policy design and implementation.

Information and knowledge needs to be improved at the level of individual government officials, agencies and their subdivisions as well as at a societal level. For individuals, workshops, written guidance and online training courses are a good way to increase knowledge. At the next level of government agencies and departments, it is important to create systems for information sharing which enable easy and timely access to a shared knowledge base, and which provide individuals with a history of organizational practices and thinking in the policy domain of SCP and RE. This process of knowledge storage and sharing may be supported by new media and internal online discussion forums, to allow easy access to information and also to increase transparency. The figure below depicts the process.

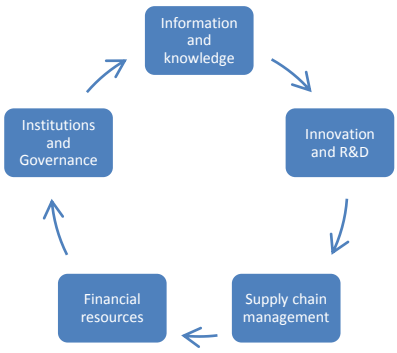


Figure: SCP policy development involves a cyclical process

New institutions and new forms of governance will be needed to allow for cross-agency collaboration to occur, which will be vital for SCP policy development and implementation. Financial resources will play a crucial role and may be increased through ecological budget and tax reform or trading schemes for e.g. emissions but also through sovereign wealth funds source by resource rent taxes. Financial resources will grow R&D and help finance important infrastructure projects that enhance SCP. Because the success of SCP will depend on finding new ways for supplying goods and services, innovation will play a critical role and a national innovation culture will need to be instilled in countries. New technologies, buildings and infrastructure will depend on the availability of specific goods such as solar panels or batteries for electric cars, and therefore supply chains become more important.

Planning for and sequencing capacity strengthening activities

In carrying forward the implementation of RPSC activities a number of criteria developed by the study, and specifics of the study approach, should be considered:

- RPSC implementation (years 2-4) should focus on the sub-regional scale, based on the fact that countries share similarities. This would enhance effectiveness and efficiency of the implementation, but such an approach would need to be balanced with specific country needs. This would mean coordinating regional (and sub-regional) capacity building initiatives with national activities and sharing knowledge and information in a timely manner.
- The study identified an integrated set of policy support activities at the national level which could also be applied at the sub-regional and regional level. Some of the activities identified by countries extend beyond the scope of the PSC. While this is an advantage of the study, because insights and recommendations can be used for the formulation of future support programs and SCP policy projects, it poses a challenge for identifying the specific subset of activities for the implementation of the PSC.
- The study shows a variety of political systems, forms of governance and institutional settings in the countries analysed. Any response to the specific needs of countries should therefore aim to provide support that is tailored to the specific characteristics of each country and take into account differences in legal systems and power structures. At the same time, support should be politically neutral and activities should be organized in such a way that they are easily transferable to the sub-regional and regional level.

Based on the need for policy development and capacity strengthening in countries identified through the study, and similarities that exist among countries, specific policy support and capacity strengthening activities should focus on three levels:

- Sub-regional capacity strengthening activities for groups of countries that share attributes in regard to the policy context, state of policy development and need for technical support
- National policy support for specific countries that are not yet serviced by the SWITCH program
- Sub-regional cooperation and information sharing.

For sub-regional capacity strengthening (2nd year of the PSC's implementation) the topics are most relevant to the needs of countries include information on SCP frameworks and concepts, SCP policies at large, and sectoral policies to further SCP. Focusing at the sub-regional level and grouping countries together will allow for an efficient implementation of programs and will create the basis for further cooperation between countries. Sub-regional workshops and targeted training will enable problem sharing and learning from good practice and failures in other countries.

The national policy support (2nd and 3rd year of the PSC's implementation) could include programs and activities for specific countries based on their specific needs identified through the study and summarized in the country overviews. The policy support will address specific needs related to the specific state of the SCP policy process and may include the following topics:

- The **problem definition** stage
    - National SCP roundtables with government agencies, businesses and community leaders
- The **policy objectives and options** (and formulating a policy) stage
    - National SCP Action Plans
    - Identifying regulatory and economic tools for SCP and formulation of specific policies
- The **policy implementation** (and change management) stage
    - Enhancing social capital and improving governance structures to support cross-agency collaboration and information sharing
    - Implementing policies to that address the eco-efficiency of production, public procurement and household consumption as well as urban planning and infrastructure
- The **policy monitoring and evaluation** stage
    - Provide a set of SCP indicators that connect economic activities with indicators for natural resource use, environmental impacts and social indicators that support monitoring progress towards SCP
    - Review of policy coordination

Sub-regional cooperation and information sharing (3rd and 4th year of the PSC's implementation) insights from the national policy support will be shared at the sub-regional level. The objective will be to use the national experiences for regional policy cooperation, to strengthen the dialogue with the private sector and to establish a network of Asian SCP champions and SC (policy) experts including from government, the private sector, academia and broader civil society.

Based on the findings and priorities identified in this study each of the SWITCH-RPSC eligible countries, in consultation with the UNEP, will choose activities that best suit their national needs and will identify national partners to participate in those activities. The figure below depicts possible stages and levels in the RPSC implementation process.

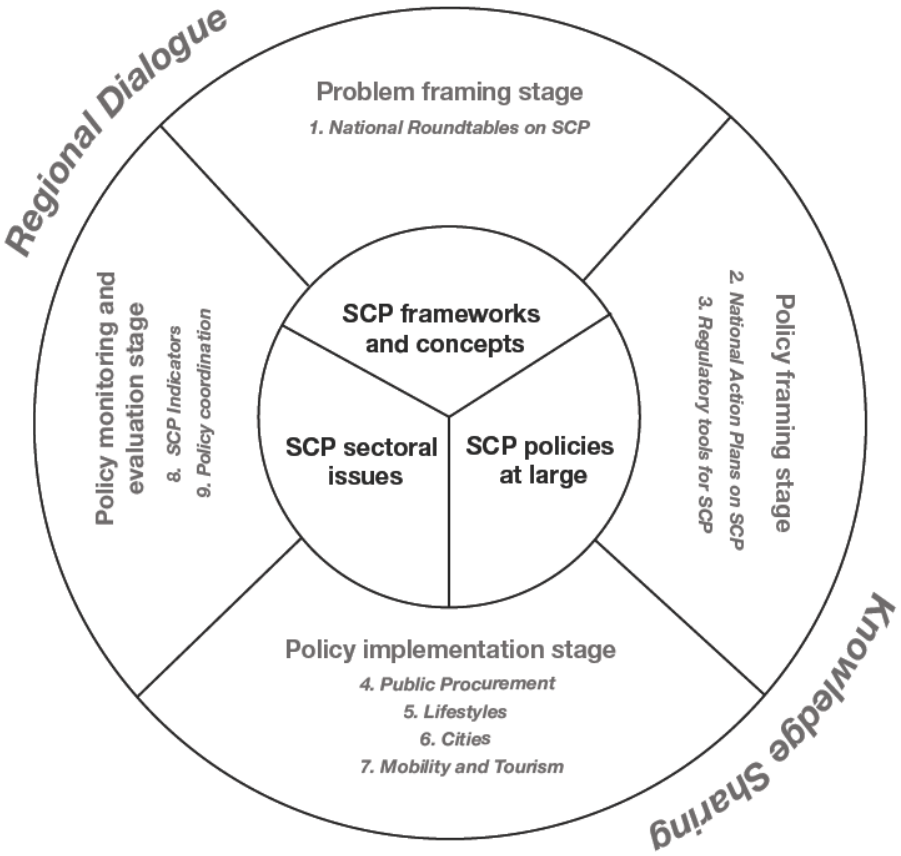


Figure: Stages and levels for specific policy support and capacity building activities

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- **The International Environmental Technology Centre** - IETC (Osaka), promotes the collection and dissemination of knowledge on Environmentally Sound Technologies with a focus on waste management. The broad objective is to enhance the understanding of converting waste into a resource and thus reduce impacts on human health and the environment (land, water and air).
- **Sustainable Consumption and Production** (Paris), which promotes sustainable consumption and production patterns as a contribution to human development through global markets.
- **Chemicals** (Geneva), which catalyses global actions to bring about the sound management of chemicals and the improvement of chemical safety worldwide.
- **Energy** (Paris and Nairobi), which fosters energy and transport policies for sustainable development and encourages investment in renewable energy and energy efficiency.
- **OzonAction** (Paris), which supports the phase-out of ozone depleting substances in developing countries and countries with economies in transition to ensure implementation of the Montreal Protocol.
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This publication is a technical report on the SCP policy needs of seventeen SWITCH-Asia countries, including Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Lao PDR, Malaysia, Maldives, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, and Viet Nam. The EU-funded study identifies an integrated set of policy support activities at national, sub-regional and regional levels, based on interviews, workshops, policy analysis and desk research. This is the first comprehensive SCP policy and capacity needs assessment for those countries. It is accompanied by an Executive Summary that goes into more detail about the sub-regional and regional policy needs in Asia.

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