

Making the Link: Greater Mekong Subregion Environmental Performance Assessment And Sustainable Development Strategies

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Table of Contents

Table of Contents	i
List of Tables	ii
List of Figures	ii
Acronyms and abbreviations	iii
1. Introduction.....	1
2. Environmental performance assessment.....	1
2.1 Environmental performance reviews in OECD countries	1
2.2 Environmental performance reviews in other countries.....	4
2.3 EPA in the GMS.....	7
2.4 Sectoral EPA.....	8
3. Sustainable development strategies	9
3.1 Sustainable development strategies – Worldwide.....	9
3.2 Subregional sustainable development strategies – GMS.....	11
3.3 National sustainable development strategies – GMS.....	12
3.3.1 Cambodia	12
3.3.2 Lao PDR.....	14
3.3.3 Myanmar	14
3.3.4 People’s Republic of China	14
3.3.5 Thailand.....	15
3.3.6 Viet Nam.....	17
3.4 Sub-national sustainable development strategies – GMS.....	17
4. Indicators	18
4.1 Indicators of sustainable development.....	18
4.2 Indicators of environmental performance	18
4.3 Indicators of compliance and enforcement.....	21
4.4 Indicators in the GMS.....	21
5. Bridging EPA and SDS	32
5.1 Common processes	32
5.2 Institutional connections.....	35
5.3 Indicator selection	36
6. Conclusions and recommendations.....	37
Appendix.....	41
References	45

List of Tables

Table 1 Selected targets for the Korean National Strategy for Sustainable Development	6
Table 2 Implementation tasks for the water resources targets in Korea's NSSD	7
Table 3 Indicator selection in SEF II – Climate change	22
Table 4 Indicator selection in SEF II – Fish resources	23
Table 5 Indicator selection in SEF II – Forest resources	24
Table 6 Indicator selection in SEF II – Inadequate waste management	25
Table 7 Indicator selection in SEF II – Inland water pollution	26
Table 8 Indicator selection in SEF II – Land degradation	27
Table 9 Indicator selection in SEF II – Mobile source pollution	28
Table 10 Indicator selection in SEF II – Natural disasters	29
Table 11 Indicator selection in SEF II – Threats to biodiversity	29
Table 12 Indicator selection in SEF II – Threats to coastal zone	30
Table 13 Indicator selection in SEF II – Toxic contamination	31
Table 14 Indicator selection in SEF II – Water resources	31

List of Figures

Figure 1 Existing sustainable development policy framework in Asia-Pacific	10
Figure 2 Sustainable development planning and performance assessment	33
Figure 3 Link between NSDS/SSDS and NEPA/SEPA	33
Figure 4 EPA, SOE, and NSDS tracking to identify management interventions	34
Figure 5 Trends in forest cover in Cambodia 1965-2002	35

Acronyms and abbreviations

ADB	Asian Development Bank
AECEN	Asian Environmental Compliance and Enforcement Network
ASEAN	Association of South East Asian Nations
BMA	Bangkok Metropolitan Administration
BOD	biochemical oxygen demand
CEP	core environment program
CO ₂	carbon dioxide
D-P-S-I-R	driver-pressure-state-response-impact
ECE	environmental compliance and enforcement
EIA	environmental impact assessment
EMS	environmental management system
EOC	Environment Operations Center
EPA	environmental performance assessment
EPR	environmental performance review
GDP	gross domestic product
GHG	green house gas
GMS	Greater Mekong Subregion
GRI	global reporting initiative
ha	hectare
IGES	Institute for Global Environmental Strategies
ISO	International Standards Organisation
kg	kilogram
mcm	million cubic meters
MDG	millennium development goals
NCDC	national commission on sustainable development
NEAP	national environment action plan
NSDP	national strategic development plan
NSDS	national sustainable development strategy
NSSD	national strategy for sustainable development
OECD	Organisation for Economic Cooperation and Development
PRC	Peoples' Republic of China
PRSP	poverty reduction strategy paper
P-S-R	pressure-state-response
SDS	sustainable development strategy
SEF	strategic environment framework
SOE	state of environment
SOx	sulphur oxides
SSDS	subregional sustainable development strategy
TA	technical assistance
toe	tonnes of oil equivalent
UNCSD	United Nations Commission on Sustainable Development
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme

1. Introduction

Component 3 of the Core Environment Program (CEP) for the Greater Mekong Subregion (GMS) deals with environmental performance assessment (EPA) and sustainable development planning. The Institute for Global Environmental Strategies (IGES) is primarily responsible for the sustainable development planning, while the United Nations Environment Programme (UNEP) is responsible for the implementation of the EPA. The purpose of this review paper is to demonstrate the best practice worldwide in attempting to link sustainable development planning at all levels with environmental performance. It also reviews the progress to date in the GMS with both sustainable development planning and EPA and the need for increased linkage. From this review, it is intended that IGES and UNEP will be able to assist the GMS countries to continue to strengthen their EPAs by (i) drawing additional sustainability indicators from sustainable development planning, and (ii) making a stronger link between EPA and broader sectoral performance assessments within governments. This stronger linkage between EPA and sectoral performance assessment will assist the overall goal of mainstreaming environmental considerations into all aspects of subregional, national and sub-national development planning. Careful selection of a core set of indicators will help to link EPA, State of Environment (SOE) reports and National Sustainable Development Strategies (NSDS).

2. Environmental performance assessment

2.1 Environmental performance reviews in OECD countries

While almost all countries regularly review the performance of their environmental agencies, in recent years external peer reviews have been seen as a useful adjunct to self-evaluation. Peer reviews¹ of environmental conditions and progress are conducted periodically for each Organisation for Economic Cooperation and Development (OECD) member country. Termed environmental performance reviews (EPR), rather than EPA,² analyse efforts to meet domestic objectives and international commitments and provide recommendations to each country on how to improve their performance. The first cycle of 32 EPRs (all OECD countries and three non-OECD countries) has been completed (OECD 2000). A brief summary of the assessments is attached as an Appendix. A new cycle began in 2001, focusing on accountability, environmental effectiveness and economic efficiency. This cycle should be completed soon. Of the GMS countries, an OECD-mandated EPR has been completed recently in People's Republic of China (PRC) (OECD 2007).

The first cycle reviewed (i) effectiveness in implementing environmental policies; (ii) the extent to which environmental concerns were integrated into economic decision making; and (iii) commitment to international obligations. The intention is to help governments assess progress with respect to domestic objectives and international commitments; it is not intended to benchmark countries against each other. Of particular interest to this study is the assessment of how countries have been able to integrate environment and economic decision making, and whether through such integration more advanced countries have been able to decouple economic growth and environmental degradation.

¹ The OECD defines the peer review process as "the systematic examination and assessment of the performance of a State by other States, with the ultimate goal of helping the reviewed State improve its policy making, adopt best practices, and comply with established standards and principles" (Lehtonen 2006).

² The acronym EPA is often reserved for Environment Protection Agency.

It should not be automatically assumed that developed countries have more successfully integrated the three pillars of sustainable development than developing countries. Australia, a country that has drawn international opprobrium from its failure to sign the Kyoto protocol, is an example of an OECD country with good environmental laws, mostly well-enforced, and a National Strategy for Ecologically Sustainable Development dating from 1992, that is finding that increasing economic and population growth have led to only a weak decoupling, with environmental pressures growing more slowly than GDP but still increasing (OECD 2000). The indisputable conclusion from the OECD review is that “better integration of environmental concerns into economic and sectoral policies and decisions is needed.” The review notes that economic objectives in Australia too often take priority over environmental concerns, “with most decision makers believing that the wealth created by economic activities will overcome environmental effects.” A specific recommendation is to “develop quantitative targets and timetables to further the implementation of the National Strategy for Ecologically Sustainable Development” (OECD *ibid.*).

Similar findings regarding the need for better integration were noted in the reviews of many OECD countries. If better integration of economic and environmental concerns is needed, then which countries are the exemplars? The OECD singles out at least 5 countries that have made the most progress: Canada, the Netherlands, Norway, Finland, and Switzerland.

Following broad consultation, Canada’s Green Plan represented a government-wide commitment to translate sustainable development concepts into specific qualitative and quantitative national targets and policy measures. Evidence of effective integration is included in the legislated environmental assessment process, environmental analysis of policy proposals and legislation, roundtables at various levels on the environment and the economy, and sustainable development plans for agriculture, fisheries, forestry and industry sectors. Legislation was introduced to establish an independent Commissioner of the Environment and Sustainable Development and to require federal departments to prepare sustainable development strategies to be debated in Parliament (OECD *ibid.*).

As for most countries, more could be done to integrate environmental and economic issues in Canada and the OECD peer review recommended, *inter alia*, (i) strengthened economic analysis of environmental policies; (ii) greater use of economic instruments to prevent pollution and conserve natural resources; (iii) increasing environmental charges and taxes; (iv) improved inter-ministerial consultation and decision making; (v) harmonised national and provincial environmental objectives and clear distinction of responsibilities; (vi) incorporation of sustainable development objectives and improved environmental controls into municipal land use planning; and (vii) developing a reliable system of information on the SOE and related economic and social issues.

Since the late 1980’s Finland’s industries have successfully decoupled discharges of suspended solids and biochemical oxygen demand (BOD) and emissions of sulphur oxides (SO_x) from production, partly through cleaner production processes and investment in pollution control equipment. Finland has also introduced environmental considerations into sectoral plans for transport, forestry, agriculture, energy and industry. For example, the Action Program for Reducing the Adverse Effects of Transport on the Environment includes specific environmental targets. Taxation has shifted from income and labour to be compensated by a new landfill tax and increased energy taxation. The Finnish National Commission on Sustainable Development (NCSD), created in 1993, is chaired by the Prime Minister. In addition Local Agenda 21 plans are being undertaken in many municipalities. The environmental impact assessment (EIA) Act

requires environmental assessment of policies and plans and several pilot projects have been conducted.

The main recommendations of the review were to (i) strengthen institutional mechanisms for integration of environmental concerns into sector policies; (ii) set quantitative environmental objectives and deadlines; (iii) continue to integrate environmental concerns into fiscal policies and remove environmentally harmful subsidies; (iv) use EIA procedures more widely; and (v) attempt to modify consumption and production patterns through consumer information and pricing, as well as “greening” government operations.

The Government of the Netherlands has resolved to reach sustainability by 2010. To achieve this, the Netherlands environmental planning system identifies 9 target groups and 8 priority themes, defines goals and ambitious quantitative targets and deadlines, describes in broad terms how to achieve these targets, and estimates the expected costs. Each target group is given flexibility to design its own implementation strategies to achieve the targets set, which are subsequently codified in the form of a contract or compact with the government. According to OECD, the planning system is “indicative, comprehensive, action-oriented and based on some of the most innovative and sophisticated analytical work in the world.” There is a high degree of coordination among ministries and all levels of government, although integration of environmental policies with other national policies is mostly voluntary.

Strong determination will be needed to achieve the changes in production and consumption patterns being advocated. Of all target groups, consumers appear to be the hardest to influence. While there is wide support for shifting the tax base from labour to environmental “bads”, the Netherlands also has to harmonise its tax system with its European neighbours. The main OECD recommendations are to (i) extend the use of land utilisation planning and regulation to serve pollution abatement, nature conservation, and risk prevention; and (ii) integrate environmental assessment earlier in decision making to influence plans, policies, and programs.

Norway has been a pioneer in promoting sustainable development in the international arena. They have (i) adopted specific sustainable development targets and the most cost-effective ways to achieve them; (ii) introduced environmental taxes and other economic instruments; (iii) explored fiscal reforms and shifting the taxation burden; (iv) updated regulatory instruments; (v) strengthened land use planning and other legislation; (vi) provided public information on sustainable development; and (vii) strengthened institutions, inter-ministerial coordination, and coordination with county and municipal administrations.

Recommended improvements included (i) preparation of a national plan for the environment; (ii) translation of sustainable development goals into sectoral targets, with new targets for environmental quality and stocks of key natural resources; (iii) strengthened coordination between the Ministry of Environment and other ministries; (iv) improved integration of environment, economic planning and budgets; and (v) a review of regulations relating to conservation and use of natural resources.

Switzerland has decoupled economic growth and air pollutant emissions, but decoupling is less obvious for water and waste management. The sustainable development strategy (SDS) adopted in 1997 identifies the actions that need to be taken. Switzerland has introduced policies to internalise the environmental externalities and to remove or reorganise environmentally harmful subsidies. Switzerland has a Committee on Sustainable Development but it still needs to set quantitative targets and deadlines. The Federal Council is promoting green tax reform, shifting from taxation of labour to environmental taxes, energy taxes, and new eco-taxes in the areas of agriculture, natural resources, and transport. The OECD also recommends

development of action plans to promote sustainable development at the cantonal level, strengthen environmental aspects of cantonal administrative structures, and assess environmental performance at canton level using inter-cantonal cooperative mechanisms.

Generally peer-reviewed EPRs, such as those conducted by the OECD, are seen as an opportunity to share learning and experience rather than any attempt at benchmarking. Lehtonen (2006) claims that the peer reviews empower weaker actors (typically environment ministries) within governments and improve the factual basis for decision making. They also create space in a non-threatening environment to discuss “hot” topics and how other jurisdictions have handled similar issues. Peer reviews enhance policy dialogue, foster transparency and accountability, build capacity and promote learning, and facilitate compliance with internationally agreed policies, standards and principles (Lehtonen op. cit.). Credibility of the reviews lies in the objective, fact-based, independent evaluations by a team of experts. The added value of the peer review process is its ability to push or persuade governments to establish clear reform targets, with implementation reports expected 2-3 years after the EPR is completed and a repeat round of reviews within 5-10 years.

2.2 Environmental performance reviews in other countries

Under the United Nations Economic Commission for Europe (UNECE) programme on EPR, countries reviewed (essentially using, or at times in combination with, the OECD procedure) include Estonia (1995, 2001), Bulgaria (1995, 2000), Slovenia (1997), Belarus (1997, 2005), Moldova (1998, 2005), Lithuania (1998), Latvia (1998), Ukraine (1999), Croatia (1999), Russia (1999), Kyrgyzstan (2000), Kazakhstan (2000), Armenia (2000), Uzbekistan (2001), Romania (2001), Albania (2002), Macedonia (2002), Serbia and Montenegro (2002), Azerbaijan (2003), Georgia (2003), Tajikistan (2004), and Bosnia and Herzegovina (2004).

The key lesson to be drawn from this set of countries is to assess how first round EPRs have led to significant improvements by the time of the second review, as this has particular importance for the second round EPAs in the GMS. Drawing from the latest report in this series, the second review of Ukraine (UNECE 2007), it is instructive to examine the lessons learned since the first review in 1999. One of the 98 recommendations in 1999 was to revise the National Environmental Action Plan and set clear priorities, targets and time frames for environmental protection in all sectors. The Government decided instead to first draft a Strategy of Sustainable Development of Ukraine, which sets out priority goals and objectives, and is now in the process of consideration and approval. It is expected that the national environmental policy will only be revised once the NSDS is approved.

Another key recommendation in 1999 was to strengthen the coordinating activities regarding environmental monitoring and provide environmental information to raise public awareness of environmental problems. The second review found that the Cabinet of Ministers had established an Inter-departmental Commission on Environmental Monitoring in 2001, followed by approved procedures for information exchange in 2002. The European Environment Agency was provided with comparable data sets for its 2003 Pan-European State of Environment Report. A Public Council, comprising various environmental NGOs, was established within the Ministry of Environmental Protection to consider regulatory documents and implementation of environmental policy. In 2003, the Aarhus Information and Training Center was opened in the Ministry of Environmental Protection and environmental information is routinely released to the media. Also, in 2003, the Government established a mechanism for public participation in environmental impact assessments.

On the negative side, a number of the 1999 recommendations have seen no change or (as in

the case of a draft law on a national environment fund) have been rejected. Other actions have been superficial and have not had any real impact. For example, the National Committee for Sustainable Development was removed from the purview of the Cabinet of Ministers and transformed into a National Council on Sustainable Development under the President of Ukraine in 2003, but no meetings of the Council have taken place since its inception. Following the Chernobyl disaster, one specific recommendation was to urgently develop a “realistic scenario for the role of nuclear energy”. The Energy Strategy for Ukraine (2006-2030), however, proposes construction of 22 new nuclear reactors and only briefly mentions renewable energy resources.

The updated review concludes that environmental protection and sustainable development have been low on Ukraine’s political agenda in recent years. Although there are now about 200 laws and by-laws, harmonising Ukraine’s legislation with the European Union would cost about \$1 billion. The strategic directions are still unclear and environmental institutions are not stable. Environmental monitoring still needs major improvement as there are significant gaps, inadequate treatment of the data, and access to data remains difficult. There has been a slight decoupling between economic growth, energy intensity and pollution but the environmental pressure from industry has barely changed since the first review. In short, the EPR process has effectively highlighted many of the priority issues that should be tackled by the Government of Ukraine and while some changes were triggered there has been an apparent lack of real commitment to the task.

Apart from France (Ministry of Ecology and Sustainable Development 2005), the Republic of Korea is the only country to date that has volunteered to have a “peer review” of its national strategy for sustainable development (NSSD) (Chung and Hwang 2006). Korea has had a national action plan to implement Agenda 21 since 1992, a Presidential Commission on Sustainable Development since 2000, and a national vision for sustainable development since 2005. To achieve this vision, the NSSD implementation plan (2006-2010) adopted by Parliament in October 2006 has five core themes, 48 implementation tasks and 224 detailed tasks, each matched with a performance indicator. The implementation plan is intended to undergo a continuous process of revision, supplementation and development through monitoring using a range of performance indicators.

The United Nations Commission on Sustainable Development (UNCSD) suggested that Korea would be a suitable country for shared learning and review of NSDS. Five northeast Asian countries organised workshops in 2002 and 2005 for shared learning on sustainable development experience and methodologies. In October 2006, these five countries, plus the Netherlands and the UN adopted a Seoul Declaration and the workshop reports were considered at the 14th UNCSD held in May 2006. A peer review workshop was held in March 2007.

Some of the quantitative and qualitative targets are given in Table 1. On the surface, these targets appear to be fairly conservative, perhaps reflecting a view that more ambitious targets will need to be deferred to subsequent versions of the NSSD. For example, announcing that nearly 2 million people will remain over-exposed to pollution by 2010 would seem hard to justify to those who are already suffering.

Table 1 Selected targets for the Korean National Strategy for Sustainable Development

Indicator	Baseline 2005	Target 2010
Secure (safe) water resources	7.737 million cu. m. (mcm)	8.368 million mcm (2011)
Natural protected area	9.7%	11.0%
Coastal and marine protected area	14.8%	20% (2020)
Park size per capita	8.2 sq. m.	9.8 sq. m.
Strategic environmental impact assessment	Investigating introduction	Settlement
Total amount system of green space	Investigating introduction	Enforcement and establishment
No-net-loss system for natural coast and habitats	Investigating introduction	Enforcement and establishment
Population over-exposed to pollution	3,515,000	1,760,000
Increasing market share of eco-friendly products	3.2 trillion won	16 trillion won
Increasing production of eco-friendly agricultural products	4.0%	10.0%
Decreasing quantity of chemical fertilizer usage	375 kg/ha (2003)	280 kg/ha
Re-using industrial wastes	77%	80%
Increasing energy efficiency	0.359 toe/\$'000	0.294 toe/\$'000
Product life cycle sustainability assessment	Introduction	Expansion of establishment
Carbon dioxide emissions per unit GDP	0.88 t/\$'000 (2002)	0.77 t/\$'000
Ratio of new to recycled energy supplies	2.3%	5.0%
Fund for combating desertification	\$700,000	\$2,000,000

Each target is matched by one or more detailed tasks, a timeline, and a cost estimate. For example, for the safe water resource target, there are four implementation tasks and 22 detailed tasks, as shown in Table 2. An estimated cost of 1,500 billion Won is indicated for the water sector for the period 2006-2010.

While the results of the “shared learning” for Korea are not yet available, it will be instructive to see if there is a qualitative difference in the recommendations for a peer review of a NSSD and a peer review of environmental performance. Given the multiple dimensions of sustainable development strategies (economic, social and environmental), it may be more difficult to identify specific experts as “peers” or it may require a larger number of experts to be involved.

Table 2 Implementation tasks for the water resources targets in Korea's NSSD

Implementation Task	An increased supply of drinking water	Integrated water resource management and the establishment of an efficient system of use	Building a water resources network and data base	A sustainable water management policy
Detailed tasks	Enhance the standard for drinking water quality Expand and reform waterworks facilities Streamline management system for operating waterworks Enhance the sanitation management system for drinking water in vulnerable areas Secure water supply sources and develop alternative water sources	Develop water resources and improve the supply system Integrate water resource management Enhance the system of water recycling Strengthen management policy concerning tap water demand Prepare a reasonable water price structure Construct a sustainable management system for under-ground water	Establish a national flux quantity monitoring network Expand the measuring of flux and water levels Automate water investigation, including remote automatic flux measurement Expand the sharing of information on water management, and improve the function	Anticipate water supplies and complement the long term master plan for water resources Establish a national master plan for water supply management Change policy for dam management Set up an advanced water management policy Enhance the quality of drinking water Introduce the public nature of underground water Introduce total load management for floods.

2.3 EPA in the GMS

Under TA 6069-REG: National Performance Assessment and Subregional Strategic Environment Framework for the GMS (SEF II) the first round of EPAs was completed for the GMS countries and the subregion (UNEP 2006). As agreed at the final workshop for SEF II, future approaches to EPA in the GMS should “remedy the shortcomings of the current EPA.” Thus, it is instructive to examine the achievements and shortcomings of SEF II before embarking on the next round of EPAs.

Each GMS country ranked its priority environmental concerns, thus limiting the assessment to the top priority issues. Pressure-State-Response (P-S-R) indicators were identified for each of these issues. For example, in Cambodia for the “threat to biodiversity” concern the indicators chosen were (i) loss of critical habitats between 1993 and 1997 (P); (ii) percentage of globally threatened species 1996 to 2004 (S); and (iii) protected areas as a percent of total land area 1993 to 2002 (R). For “forest resources” the indicators were (i) forest concession areas 1994 to 2002 (P); (ii) forest cover as a percent of total land area 1965 to 2002 (S); (iii) reforested area 1985 to 2002 and protected forest as percent of total land area 1993 to 2002. Where data are available these indicators were graphed as trend lines and compared to a long term national “target” if one exists. All available data was collated in a set of fact-sheets, which provide a valuable assessment of not only the data but also the quality and reliability of the data.

Each of the P-S-R indicators was rated subjectively, with a justification given for each rating. An overall “star” rating (1 to 3) was then given for the environmental concern, based on the ratings for each indicator. For example, a 2-star rating was given for forest resources in Cambodia based on the evidence that the current responses will have the desired impact on improving the “state” indicator (forest cover) and meet the national target of 60% forest cover by 2005 and be

maintained through to 2015.

While no attempt was made to benchmark institutional performance in the GMS, and there may have been resistance to participating if that was set as an initial objective of the exercise, interesting comparisons were possible across countries. For example, in the area of forest cover, the variation between the S-indicators in GMS countries ranges from 33.2% in Thailand to 61.0% in Cambodia, while the long term targets range from 70% by 2020 in Lao PDR to no less than 35% in Myanmar. It was also found that some countries actually had more than one target for the same indicator, most notably in the forest sector, suggesting a need for rationalisation and harmonisation of targets between government agencies.

The TA 6069-REG: National Performance Assessment and Subregional Strategic Environment Framework for the GMS also prepared a subregional assessment (UNEP 2006). The subregional assessment found three environmental concerns of greatest common interest: (i) threats to the Mekong River's vital functions; (ii) illegal trade in wildlife resources; and (iii) degree of harmonisation of environmental policy and standards. In addition to assessing region-wide progress in relation to these issues, the subregional assessment was supplemented by work on biodiversity modelling and formulation of an environmental sustainability index.

In relation to the Mekong's vital functions, the subregional EPA concluded that lack of data (particularly longitudinal data) hampers any real assessment of the state of fisheries in the Mekong River, despite its obvious importance. There are also no quantified subregional environmental targets for fisheries and no institutional responsibility for developing goals and programmes to reach those goals.

In relation to the illegal trade in wildlife, the subregional assessment found that all six GMS countries are signatories to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Convention on Biodiversity, although this is clearly insufficient to stop the illegal trade across national boundaries. Again, no specific sub-regional target exists in relation to illegal trade in wildlife (although it presumably should be zero) and there is no subregional institutional mechanism to control the trade across national borders (thus relying on under-resourced national wildlife agencies).

In relation to harmonisation of environmental policy and standards, with the exception of Lao PDR and Myanmar, GMS countries have water quality standards broadly aligned with the Association of South East Asian Nations (ASEAN) long term water quality goals. For air quality, the only regional standard is an ASEAN standard for ambient air quality to reach a Pollutant Standard Index of below 100 by 2010. No commonality was found in relation to forest cover standards.

2.4 Sectoral EPA

EPA at a sectoral level, whether in the public or private sector, generally relies on an evaluation of performance in implementing environmental management systems (EMS) and/or application of various environmental (or sustainability) reporting protocols. The International Standards Organisation (ISO) 14000 series has become the *de facto* indicator of an intention to implement an internationally acceptable EMS (<http://www.iso.org>), whereas the Global Reporting Initiative (GRI) is becoming the gold-plated standard for environmental performance reporting (<http://www.globalreporting.org>). According to the latest statistics, ISO 9000 and ISO 14000 standards are implemented by some 887,770 organisations in 161 countries. Since its inception in 1997, about 1,000 organisations have referenced the GRI guidelines in their sustainability reports and over 20,000 individuals and organisations are included in the GRI communication

network.

GRI has also developed sector supplements for financial services, logistics and transportation, mining and metals, public agencies, tour operators, telecommunications, and the automotive industry (GRI 2005).³

3. Sustainable development strategies

3.1 Sustainable development strategies – Worldwide

Despite consistent calls since the United Nations Commission on Environment and Development (UNCED) in 1992 and the World Summit on Sustainable Development (WSSD) in 2002 for all countries to prepare a NSDS and establish a national council on sustainable development before 2005, less than half have complied. According to a 2004 UN review, 12% of 191 countries had a NSDS under implementation, while another 24% had strategy documents which were approved by governments or were under development (OECD 2006).⁴ Generally Asia-Pacific has performed slightly better than the global average, although implementation has been weak.

In part, the reluctance to prepare a NSDS stems from the existence of many similar plans that remain unimplemented. The Asia-Pacific region has a surfeit of national plans covering the environment (Figure 1), many of which have been funded by external agencies and conducted by consultants, ensuring rather weak national ownership of the plans (UNEP 2007). UNEP is currently assisting 17 countries in the region to develop NSDS, as well as contributing to three subregional sustainable development strategies.

The current view of sustainable development planning is that the three pillars of sustainable development (economic, environmental, and social) should be integrated, but not necessarily in a stand alone NSDS document. Agenda 21 actually stated that the objective was “to improve or restructure the decision-making process so that consideration of critical socio-economic and environmental issues is fully integrated and a broader range of public participation assured” (UNCED 1992) and did not propose establishment of a new stream of national planning.

The current view is that, to the extent possible, the sustainable development plan should act to bridge other existing plans such as a poverty reduction strategy paper (PRSP) or a national environment action plan (NEAP) and fill in any gaps. It should also provide the long term vision and framework within which specific sector plans and strategies fit seamlessly. Sustainable development planning should shift centralised and government controlled decision making towards sharing results and opportunities, transparent negotiation with stakeholders, and cooperation with key groups. Fixed plans should be replaced by more adaptive systems accommodating improved monitoring, social learning, and continuous improvement. The extent to which this emerging concept of sustainable development planning is being implemented in the GMS is analysed in the following sections.

³ See <http://www.globalreporting.org>

⁴ The World Summit in 2005 stated a new goal “to adopt, by 2006, and implement comprehensive national development strategies to achieve the internationally agreed development goals and objectives, including the MDGs.”

Agenda 21 <ul style="list-style-type: none"> ○ Philippines ○ China ○ Nepal ○ Indonesia ○ Viet Nam ○ Turkmenistan 	National Action Plan <ul style="list-style-type: none"> ○ Mongolia ○ Japan 	National Development Plan <ul style="list-style-type: none"> ○ India ○ Maldives ○ Thailand ○ Many others
Poverty Reduction Strategy Paper <ul style="list-style-type: none"> ○ Cambodia ○ Sri Lanka ○ Tajikistan ○ Viet Nam ○ Kyrgystan ○ Indonesia ○ Pakistan 	National Conservation Strategy <ul style="list-style-type: none"> ○ Pakistan ○ Nepal ○ Bangladesh ○ Malaysia 	Vision 2020 <ul style="list-style-type: none"> ○ Malaysia ○ India ○ Bhutan ○ Turkmenistan ○ Viet Nam

Figure 1 Existing sustainable development policy framework in Asia-Pacific (after UNEP 2007)

Experience from global assessments of the best practices for preparation and implementation of NSDS (OECD 2006) and peer review of the French NSDS (Ministry of Ecology and Sustainable Development 2005) offers insight into process and content improvements. The French peer review recommended the following process improvements:

- (i) empower champions in the civil service to integrate sustainable development into their normal activities;
- (ii) invest more time and resources into future iterations and implementation of the NSDS;
- (iii) clarify the role of the National Council for Sustainable Development, especially in relation to other arms of government;
- (iv) ensure that the NSDS is fully institutionalised so that it is not subject to the vagaries of political change; and
- (v) establish a more participatory process, by adopting a dialogue model rather than consultation.

The OECD best practice guidelines stress that NSDS should be a process rather than a document (OECD 2006), leading to dynamic plans that are subject to periodic revision as circumstances change. The key elements of global best practice are as follows:

- (i) policy integration – integrate economic, social and environmental objectives in a comprehensive and integrated strategy;
- (ii) inter-generational timeframe – develop a consensus on a long term vision and provide vertical linkages from the long term (20-25 years) to the short term;
- (iii) analysis and assessments – make sure the strategy is based on comprehensive and reliable social, technical and economic analysis, building on existing processes and strategies;
- (iv) coordination and institutions – embed the sustainable development strategy in high-level government commitment and influential institutions;

- (v) local and sub-national governance – link all levels of administration, e.g. through Local Agenda 21 plans;
- (vi) stakeholder participation – ensure effective participation through a people-centered strategy;
- (vii) indicators and targets – set realistic, flexible targets with clear budget priorities; and
- (viii) monitoring and evaluation – incorporate monitoring, learning and continuous improvement.

From experience with the 23 out of 30 OECD countries that have produced some form of NSDS, the OECD found that most have focused on environmental objectives, with some treatment of economic objectives, but almost all foundered on adequate treatment of social issues (OECD 2006). Belgium, New Zealand and Sweden were cited as good exemplars of integrating social dimensions into their NSDS. The review found that “the integration of the three dimensions of sustainable development is one of the most difficult balances to achieve in formulating a national strategy.” Few NSDSs have worked out a robust mechanism for making trade-offs between the three pillars of sustainable development.

Experience has shown that sustainable development strategies are often most effective at local levels, where implementation activities and Local Agenda 21 plans tend to have a closer relationship than at the national level. As an example, the City of Liverpool in the United Kingdom covers issues of (i) efficient use of resources, energy and waste; (ii) healthy and safe living environments; (iii) lifelong learning and community involvement; (iv) limiting pollution; (v) satisfying work in a sustainable economy; (vi) access and sustainable transport; (vii) local identity and the built environment; and (viii) enhancing the diversity of nature and leisure opportunities (City of Liverpool 2005). A clear link is made to the national Sustainable Development Strategy and the Regional Action for Sustainability. Priority environmental actions (waste reduction and recycling, energy conservation, renewable energy, water conservation, green transport planning, sustainable procurement, and staff training and awareness) are carried forward into the Council’s Corporate Performance Plan. Sustainable Development Plan indicators are embedded in mainstream activities and reviewed every 3 years for a public report on progress. About 120 indicators are included in the plan and they tend to be very specific compared to indicators at national level. For example, one energy efficiency indicator is “percentage of new or major refurbished buildings commissioned by the Liverpool City Council attaining an energy efficiency “good rating” as set out in the council’s energy guide.”

3.2 Subregional sustainable development strategies – GMS

At the time of the World Summit on Sustainable Development (2002), progress towards sustainable development strategies in the ASEAN region was described as follows. “Unfortunately, although many excellent strategies and plans have been prepared, they are poorly linked to economic development plans, not adequately financed and to date have had little political support” (ADB/ESCAP/UNDP/UNEP 2001).

UNEP is currently attempting to develop a Subregional Sustainable Development Strategy (SSDS) for several subregions of Asia-Pacific, including the GMS. The Thailand Environment Institute (TEI) has been commissioned to prepare a draft version of the SSDS, to focus on trans-boundary issues of concern in the GMS (TEI 2007). Although still at a very preliminary stage of development, the draft SSDS refers to numerous statements by the subregion’s leaders of a vision of the GMS as “an integrated, harmonious and prosperous subregion characterised by steady economic growth, social progress and environmental sustainability.” At the Second GMS Summit in Kunming, PRC in 2005, the heads of government outlined a “road ahead

towards sustainable development” as well as their commitment to pursue the Millennium Development Goals (MDG). Priority action areas identified included (i) reinforcing infrastructure for development; (ii) improving trade and investment environment; (iii) strengthening social and environmental infrastructure; and (iv) mobilising resources and deepening partnership.

Unfortunately, like many other sustainable development strategies fostered by environmental agencies, the draft SSDS tends to over-emphasise the environmental aspects of sustainable development, repeating the approach that many other sustainable strategies have made in not adequately addressing social issues. The institutional challenges identified include (i) the lack of any regional coordinating body for sustainable development; (ii) the diversity of legislative frameworks for sustainable development; (iii) a congestion of donor-driven regional initiatives; (iv) a lack of coordination by civil society organisations; and (v) the lack of involvement by the subregional scientific community. However, no substantive solutions are offered to overcome these challenges.

The draft document outlines a vision for each of the three pillars of sustainable development, identifies some overall objectives and possible strategies and actions. However, it is not clear how a regional consensus will be reached on these strategies and actions, especially as the draft SSDS has not been built up from national sustainable development plans or their equivalents. The need for extensive consultation is noted but insufficient resources are available to carry out the public participation required. ASEAN is identified as a likely institution for taking the SSDS forward but as ASEAN may not be the best institution for this.

In summation, there is a clear need for a more integrated development plan for the GMS that will carefully balance environmental, social and economic objectives. However, greater country ownership and participation in the planning process is needed before the draft SSDS can be regarded as a useful contribution.

3.3 National sustainable development strategies – GMS

3.3.1 Cambodia

The sequence of contributing plans to sustainable development strategies in Cambodia follows a typical pattern in developing countries of the Asia-Pacific region, which have been heavily influenced by external donors and/or UN organisations, as shown below:

- National Programme to Rehabilitate and Develop Cambodia 1994
- National Environmental Action Plan (NEAP) 1997
- National Biodiversity Strategy and Action Plan 2001
- Governance Action Plan (GAP I) 2001
- Cambodia Millennium Development Goals (CMDG) 2001
- National Poverty Reduction Strategy (NPRS) 2002
- Rectangular Strategy for growth, employment, equity and efficiency (2004)
- 3rd National Strategic Development Plan (NSDP) 2006-2010 incorporating the Rectangular Strategy philosophy
- Preceded by 1st (1996-2000) and 2nd (2001-2005) Socio-economic Development Plans (SEDP)
- Education Sector Strategic Plan (2006-2010)

The Cambodian Government has launched its third five-year plan, called National Strategic Development Plan (NSDP), for 2006-2010. The core focus of this five-year plan is to reduce poverty and to increase national economic growth, and to achieve other Cambodia Millennium

Development Goals (CMDG) and socio-economic development goals for the benefit of all Cambodians. It incorporates the national development philosophy referred to as the “Rectangular Strategy”, emphasising the need to balance economic growth, employment, equitable distribution of wealth and access to services, and efficiency.

The Government considers the NSDP as the single, overarching development strategy for pursuing prioritised goals and actions for the period 2006-2010. The NSDP has been framed as the operationalisation of Cambodia’s Rectangular Strategy, linking the long term vision in the Rectangular Strategy to concrete goals, targets and strategies. It synthesises goals and targets contained in the Second Five-Year Socio-Economic Development Plan for 2001-2005, the National Poverty Reduction Strategy for 2003-2005 and the CMDG. The NSDP highlights most essential strategies, targets and actions, but it leaves more details to be spelled out in sectoral and sub-national plans which will feed into the first annual review of the NSDP scheduled for March 2007. As an example, the Education Sector Strategic Plan (2006-2010) will be replicated by other sectors.

NSDP consists of seven chapters, including (i) future programme and action; (ii) progress and current situation; (iii) priority goals and targets; (iv) key strategies and actions; (v) costs, resources and programme; (vi) monitoring and evaluation; and (vii) conclusion. NSDP has 15 goals that are aligned to CMDG and the Rectangular Strategy. Moreover, in order to achieve these goals, 43 targets have been set up in the NSDP. The Cambodian government also set up a target on poverty reduction to 25% by 2010. Historic causes and decades of conflict have left a large proportion of people below the poverty line. However, there has been a rapid decline in poverty levels from 39% to 28% in both 1993 and 2004 surveys. In 2004, 90% of the poor were in rural areas.

NSDP preparation began in December 2004 and was led by the Ministry of Planning (MOP). In March 2005, the Government created an Inter-Agency Technical Working Group on NSDP Formulation – composed of 29 Ministries/agencies – whose day-to-day work was managed by a Secretariat chaired by the MOP. Government ministries and agencies, donors and civil society organisations were involved in the formulation of the NSDP. National-level consultations were held to elicit comments and to agree upon the overall goals and objectives of the NSDP. In mid-2005, a Technical Working Group on Planning and Poverty Reduction was established so that stakeholder inputs could be incorporated in the NSDP formulation process. Suggestions from stakeholders were incorporated in the draft NSDP, which was subsequently discussed at a national workshop held in November 2005. The NSDP was approved by the Council of Ministers in January 2006; by the National Assembly in May; by the Senate in June; and promulgated by the King in early July 2006. A NSDP monitoring framework was approved and announced in June 2006, with the first review expected in mid-2007.

Based on this information, is the Cambodian NSDP 2006-2010 equivalent to a NSDS? According to the UN and OECD recommendations on best practices for NSDS, the Cambodian NSDP brings together (but not necessarily integrates) economic, social and environmental objectives. As a five-year plan, it does not deal with the inter-generational time frame and longer term vision. However, it does build its analysis on existing processes and strategies, especially the Rectangular Strategy. It does coordinate national institutions in the planning process but does not link effectively with local and regional governance structures. There has been extensive participation in its formulation, indicators and targets have been set, and a monitoring and evaluation framework has been developed. Therefore, with some relatively minor amendment, the next revision of the NSDP could meet the criteria of an effective NSDS.

3.3.2 Lao PDR

In Lao PDR, a country dominated by Soviet era central planning, top-down five-year plans from the central government are the norm. Lao PDR's overarching development objective is to graduate from being a least developed country by 2020. Socio-economic development plans have been prepared for the 5, 10 and 20 year periods. As shown below, the sixth plan has been released for the period 2006-2010. In addition, Lao PDR has formulated a longer term socio-economic strategy to 2020.

- Strategic Vision for the Agriculture Sector (1999)
- State of Environment Report 2000: Lao PDR
- National Environmental Action Plan 2000
- Socio-economic Development Strategy (2001-2010) adopted by 7th Party Congress
- National Forestry Strategy 2020 (2002)
- National Growth and Poverty Eradication Strategy (NGPES) (2003)
- National Environment Strategy and National Biodiversity Action Plan 2004
- 6th National Socio-Economic Development Plan (NSED) 2006-2010
- Long Term Strategy of Socio-Economic Development to 2020

Lao PDR has numerous sectoral strategies and long- and medium-term socio-economic strategies at the national level. Economic and social issues are addressed comprehensively. However, the environmental dimension is still addressed mainly as a separate issue, rather than being fully mainstreamed into socio-economic development planning. In addition, increased linkage with local level planning and more effective integration of the three pillars of sustainable development are needed.

3.3.3 Myanmar

Myanmar remains one of the few countries in the Asia-Pacific region without a ministerial level environment agency and most environmental management is handled by line agencies. A National Commission for Environmental Affairs was established in 1990 and transferred to the Ministry of Forestry in 2005. Apart from Myanmar's Agenda 21, as shown below, there has been little attempt at integrating the economic, social and environmental pillars of sustainable development.

- National Environment Policy (1994)
- Myanmar Agenda 21 (1997)
- National development plans

A national environmental protection law has been drafted and there are plans for a new Ministry of Environment, but institutional change is relatively slow in Myanmar. A National Coordinating Committee for Environment was created in 2004, with a mandate to coordinate ministries and local authorities. Nevertheless, sustainable development planning and implementation must be regarded as an unfinished agenda in Myanmar.

3.3.4 People's Republic of China

The People's Republic of China (PRC) was one of the first countries in Asia to develop a national Agenda 21 following the 1992 Summit and agreement on the global Agenda 21. This was followed by a detailed action plan in 2003, as shown below.

- China's Agenda 21 (1994)

- Programme of Action for Sustainable Development in China in the Early 21st Century (2003)
- Tenth Five-Year Plan for Ecological Rehabilitation and Environmental Protection of Yunnan Province (2001-2005)

Over time, PRC has progressively increased the environmental content of its national five year plans. The 11th Five Year Plan proposes (i) a 20% decrease in energy intensity; (ii) maintenance of total population below 1.36 billion; (iii) protection of 120 million ha of cultivated land; (iv) a 10% decrease in total pollutant emissions; and (v) increased forest cover to 20% of the total land area (Xu 2007). The national five-year plan is quickly followed with provincial level (and lower) plans to implement the national plan. In 2007, Premier Wen Jiabao announced to the National People's Congress that environmental protection and economic development should be treated equally and that it was no longer acceptable to favour economic growth at the expense of the environment. It will be instructive to monitor how this policy announcement is incorporated into national and provincial plans over the next few years.

The OECD peer review of PRC's NSDS found that "the environmental pressures and demand for energy and other resources associated with China's rapid economic development dramatically underlines questions about the environmental sustainability of current production and consumption patterns globally" (OECD 2007). The EPR made 51 recommendations to strengthen PRC's environmental performance in the context of sustainable development. Recommendations in relation to sustainable development improvement include:

- (i) Reviewing price levels for natural resources to better reflect their scarcity value and internalise externalities;
- (ii) Establishing a inter-ministerial group to consider restructuring environment-related taxes;
- (iii) Increasing and diversifying sources of environmental finance and more efficient allocation of public expenditure;
- (iv) Strengthening institutional mechanisms for integrating environment into economic and sector policies;
- (v) Continuing to establish national targets to achieve environmental objectives;
- (vi) Reducing the share of people without access to sound environmental services (safe water, basic sanitation, electricity);
- (vii) Developing a national health-environment plan of action;
- (viii) Improving environmental information by developing and using indicators of environmental performance, environment-related economic information, and environmental accounting tools and providing public access to environmental information;
- (ix) Further expanding environmental education and awareness, particularly among young people; and
- (x) Continuing efforts to work with NGOs, the public and enterprises to achieve environmental policy goals.

3.3.5 Thailand

For many years, Thailand has accepted the need to mainstream environmental issues into the national economic and social development plans, as shown below.

- Policy and Prospective Plan for Enhancement and Conservation of National

Environmental Quality (1997-2016) completed in 1996

- 10th National Economic and Social Development Plan (NESDP) 2007-2011
- Environment Quality Management Plan (2007-2011)

The 10th National Social and Economic Development Plan (NESDP) is based upon H.M. King Bhumibhol's "sufficiency economy" philosophy (Isarangkun and Pootrakool u/d). It emphasises the improvement of knowledge and understanding of geographical environment, society, culture and value of existing resources, particularly linkages between human and natural resources and the environment. It supports the concept of sustainable development for the improvement of natural resources (e.g. soil, water, forest, coastal resource and biodiversity) as well as pollution control. Special attention is focused on biodiversity issues, which have a connection with livelihood, culture and local knowledge. Three key objectives are to (i) conserve and recover biodiversity and natural resources and environmental (NRE) conditions for fostering the quality of life; (ii) develop biodiversity and NRE capital as the foundation of national development toward stability, balance and sustainability; (iii) promote decentralisation and fair benefit sharing at all levels and protect the nation's interests that may be affected by bilateral and multilateral agreements.

Other environment-related concerns addressed in the 10th plan include: (i) free trade links with natural resources and environmental management; (ii) deforestation leading to natural disasters such as floods and drought; (iii) misuse of soil in agriculture; (iv) air pollution and health impacts; (v) import and production of hazardous substances; and (vi) domestic and hazardous wastes. Some specific environmental targets include (i) conserving forest land to be no less than 30% of the total land area; (ii) rehabilitating problem soils, such as saline/acid soils (1.6 million ha) or eroded soils (0.8 million ha); (iii) matching local demand for natural resources with supply, including issuing land title for 1.6 million ha for 700,000 underprivileged people; (iv) implementing integrated river basin management in 25 river basins; (v) recycling 30% of total household wastes and 80% of hazardous waste treated properly; (vi) reducing imported fertilizer and agricultural chemicals to less than 3.5 million t/yr; (vii) maintaining 85% of water quality in rivers and lakes at moderate to good condition; (viii) controlling air pollution to meet national standards; (ix) developing a national biodiversity database and a mechanism for accessibility, commercialisation and benefit sharing; and (x) developing at least 1,500 self-sufficiency networks for food and health security from management of local biodiversity (Koomsin 2007).

The key dilemma in Thailand is how to hold the line agencies accountable for implementation of the general thrust of the NESDP as well as the specific environmental dimensions. The current emphasis on "sufficiency economy" seems to be not well understood outside NESDB, except perhaps in relation to small scale agriculture (where the concept was initially developed). Thailand's "sufficiency economy" has its critics, too (Anonymous 2007).

In addition to the 10th Plan, Thailand is also preparing a NSDS with UNEP assistance, with a planned launch date of June 2007. The current draft consists of four strategic approaches (i) eliminate poverty through sustained and equitable economic growth; (ii) enhance environmental sustainability and security; (iii) create a knowledge-based society and social security; and (iv) ensure good governance at all levels of society. For each of these main headings there are 5-6 strategies with existing tools and policies, proposed actions and instruments, and indicators listed. The intention is to address long term issues and targets not currently covered by the 10th Plan, although that objective has not been reached in the current draft. The current draft also fails to adequately link upwardly to GMS and ASEAN development plans or downward to local level plans (for example in Thailand's 76 provinces). The authors are aware of these challenges but it is uncertain if they will be able to address them adequately by June 2007.

3.3.6 Viet Nam

Perhaps stemming from its long involvement in central government planning, Viet Nam has one of the most complete sets of planning documents making up its sustainable development planning framework, including the following plans:

- Socio-economic Development Strategy (2001-2010) adopted by the 9th National Congress;
- Comprehensive Poverty Reduction and Growth Strategy (CPRGS) prepared in 2002;
- National Strategy for Environmental Protection until 2010 and Vision Toward 2020, released in 2003;
- Strategic Orientation for Sustainable Development in Viet Nam, or Viet Nam Agenda 21 (VA21) issued in 2004;
 - Integrated into SEDP 2006-2010
- Socio-Economic Development Plan (SEDP) 2006-2010;
- Five Year Plan for Natural Resources and Environment Sector 2006-2010;

The National Strategy for Environmental Protection sets the following targets to be reached by 2010:

- (i) 100% of newly-established units must apply clean technology or be equipped with pollution-reducing and waste-treatment facilities to meet environmental standards;
- (ii) 50% of production units shall obtain ISO 14001 certificate or Certification of Environmental Standards Satisfaction;
- (iii) 40% of urban areas, 70% of industrial zones and export processing zones must have standardised wastewater treatment facilities; 90% of residential, industrial and services waste will be collected; 60% of hazardous waste and 100% of hospital waste will be treated;
- (iv) Seriously polluted production units will be thoroughly resolved by various measures (such as closure, upgraded technology, or investment in waste treatment systems);
- (v) 50% of seriously polluted canals, lakes and ponds in urban areas will be improved;
- (vi) 50% of mineral exploitation areas and 40% of seriously degraded ecological areas will be recovered; and
- (vii) Increase forest covered land from 35.8% to 43% and recover 50% of degraded upstream forest areas.

Within the SEDP 2006-2010, environmental goals (covered by 8 environmental indicators) have been fully incorporated for the first time. In addition the 2004 Viet Nam Agenda 21 is being followed up with a Natural Resource and Environment Agenda 21, currently being formulated by the Viet Nam Poverty-Environment Initiative. The main deficiencies appear to be in the area of institutional coordination and linkage to local levels.

3.4 Sub-national sustainable development strategies – GMS

As noted in the OECD countries, often the most effective sustainable development strategies are found at the local level. The number of Local Agenda 21 plans around the world has been one of the most effective outcomes of the World Summit on Sustainable Development. The global website⁵ listing Local Agenda 21 plans from a 2001 survey found that more than 6,400 local

⁵ <http://www.iclei.org>

authorities in 113 countries had prepared a Local Agenda 21 or equivalent. This included 20 local authorities in Viet Nam, 21 in Thailand, and 25 in PRC. The current number is uncertain as local authorities have now entered a new phase, preparing Local Action 21 plans, moving from an “agenda” to concrete actions.

As an example, Bangkok’s Agenda 21 was prepared in 1998 and identifies a 20 year programme for improvement of the city environment and quality of life (BMA 2003). Consisting of 10 chapters, the Agenda 21 covers (i) the strategy for a sustainable Bangkok; (ii) how to direct the urban economy towards sustainability; (iii) urban planning to improve the quality of life; (iv) reorganising traffic and transport systems to improve air quality; (v) investment in green urban areas; (vi) making Bangkok a clean city; (vii) good governance; (viii) access to information; (ix) human resources; and (x) citizen participation. The Bangkok Metropolitan Administration (BMA) has prepared a Sustainable Urban Management Handbook, which has been distributed to all its administrative units. Other actions include a Green Area Development Master Plan, the Bangkok Comprehensive Plan, the We Love Canals Project, the Mass Transit Project, and preparation of district inventories as a tool for budgeting city development.

With the assistance of UNEP, Bangkok has also prepared a series of SOE documents (BMA 2003). The SOE covers critical issues such as air pollution, water quality, solid and hazardous waste management, land subsidence, noise pollution, energy, historical places and architecture, green areas, environmental nuisance control, public participation, and important events.

4. Indicators

4.1 Indicators of sustainable development

The OECD best practice guidelines (OECD 2006) indicate wide variance in development of indicators of sustainable development. Some of the variants reported are as follows:

- (i) New Zealand’s Programme of Action is based on 40 indicators covering population change, environmental and ecosystem resilience, economic growth and innovation, skills and knowledge, living standards and health, consumption and resource use, and social cohesion;
- (ii) Switzerland monitors sustainable development according to 115 indicators for 26 themes;
- (iii) Norway’s Action Plan for Sustainable Development has 16 indicators that are intended to reflect the value of financial, real, human, natural and environmental capital, as elements of national wealth;
- (iv) Finland has 68 indicators in 8 categories;
- (v) Germany has set indicators in fiscal, economic, education, research, housing, spatial planning, crime prevention, energy and environment areas as national targets;
- (vi) The United Kingdom’s Securing the Future strategy has 68 indicators linked to specific quantifiable goals, using a traffic light approach to report progress; and
- (vii) The Czech Republic has one set of 116 indicators to monitor progress with another set of 24 indicators to communicate with policy makers and the public.

4.2 Indicators of environmental performance

The OECD programme on environmental indicators, initiated in 1989-1990, covers several sets of indicators, viz. (i) the OECD Core Set of Environmental Indicators to monitor environmental

progress and performance⁶; (ii) a small set of key environmental indicators, derived from the Core Set, to serve public communication purposes and to attract attention to key environmental issues; (iii) various sets of sectoral environmental indicators to monitor and promote the integration of environmental concerns into sectoral decision making and policies; and (iv) indicators derived from environmental accounting to monitor the integration of environmental concerns into economic policies and the sustainability of natural resource use and management (UN 2001). The work, carried out in close co-operation with OECD member countries, has resulted in (i) agreement on terminology and a conceptual framework common to OECD countries; (ii) identification and definition of indicators on the basis of three major selection criteria: policy relevance and usefulness for the user, analytical soundness and measurability; (iii) the systematic measurement of these indicators and their regular use in the OECD's analytical work and EPRs; and (iv) the provision of guidance on how to use and interpret the indicators.

The conceptual framework that underlies the work on environmental indicators uses the PSR model as a common structural basis, adjusted for varying purposes to account for greater details or for specific features. The framework includes a common terminology, criteria to be used for selecting environmental indicators and guidance for the use and interpretation of the indicators. The OECD Core Set of Environmental Indicators is directly based on the P-S-R model in combination with 13 core environmental issues.

P-indicators describe pressures from human activities exerted on the environment, including natural resources. "Pressures" here cover underlying or indirect pressures (i.e. the activity itself and trends and patterns of environmental significance) as well as proximate or direct pressures (i.e. the use of resources and the discharge of pollutants and waste materials). Indicators of environmental pressures are closely related to production and consumption patterns; they often reflect emission or resource use intensities, along with related trends. They can be used to show progress in decoupling economic activities from related environmental pressures, or in meeting national objectives and international commitments (e.g. emission reduction targets).

S-indicators relate to the quality of the environment and the quality and quantity of natural resources. As such they reflect the ultimate objective of environmental policies or legally defined standards. Indicators of environmental conditions are designed to give an overview of the situation (the state) and its development over time. Examples of indicators of environmental conditions are: concentration of pollutants in environmental media, exceeding critical loads, population exposure to certain levels of pollution or degraded environmental quality and related effects on health, the status of wildlife and of natural resource stocks. In practice, measuring changes in environmental conditions can be difficult or costly. Therefore, environmental pressures are often measured instead as an imperfect substitute.

R-indicators refer to individual and collective actions and reactions, intended to (i) mitigate, adapt to or prevent human-induced negative effects on the environment; (ii) halt or reverse environmental damage already inflicted; or (iii) preserve and conserve nature and natural resources. Examples include environmental expenditure, environment-related taxes and subsidies, price structures, market shares of environmentally friendly goods and services, pollution abatement rates, waste recycling rates. In practice, indicators mostly relate to abatement and control measures; those showing preventive and integrative measures and actions are more difficult to obtain.

⁶ The third revision of the UNCSD core set in 2006 now covers 50 indicators, which are part of a larger set of 98 indicators of sustainable development.

Sectoral environmental indicators are based on an adjusted P-S-R model that better reflects the specificities of the various sectors. These distinguish (i) sectoral trends and patterns of environmental significance (i.e. indirect pressures and/or related driving forces); (ii) interactions between the sector and the environment, including positive and negative effects of sectoral activity on the environment as well as the effects of environmental changes on sectoral activity; and (iii) economic linkages between the sector and the environment, as well as policy responses.

The supplementary sectoral indicators help improve the integration of environmental concerns into sectoral policies and with indicators derived from environmental and natural resource accounting. These indicators also provide a building block for the environmental dimension of sustainable development indicators and contribute to the broader objective of sustainable development reporting. A few key environmental indicators have been selected from the OECD Core Set to serve public information and communication purposes.⁷

National governments that have adopted sectoral environmental reporting include Australia, which has both mandatory reporting under the Environment Protection and Biodiversity Conservation Act and voluntary reporting through Public Environment Reports (also referred to as triple bottom line reports).⁸ The US Environment Protection Agency's Sector Strategies Performance Reports document the environmental performance of major manufacturing and service sectors. Performance trends over the past decade for sectors like cement, metal casting, iron and steel, paint and coatings, ports, shipbuilding, chemicals, construction, and forest products are provided.⁹ The Canadian Government released environmental codes of practice for steel mills specifying minimum environmental performance standards and best environmental management practices. Compliance with these codes of practice was reviewed using a structured audit process consistent with ISO 14010 and 14011.¹⁰

Indicators of environmental performance are not limited to governments, however, as both the private sector and non-government organisations have also developed their own indicators. For example, the World Business Council for Sustainable Development has developed eco-efficiency indicators for measuring and reporting on company performance (Verfaillie and Bidwell 2000). Some good reviews of the progressive development of corporate indicators of environmental performance are given in Skillius and Wennberg 1998 and Global Environmental Management Initiative (1998).

The United States Environment Protection Agency maintains a National Environmental Performance Track programme which measures progress towards environmental performance goals, including air emissions, discharges to water, energy management, land use, material procurement, material use, noise, preservation, restoration and site cleanup, product performance, transportation management, vibration, waste management and water use. A life cycle approach is adopted for categorisation, divided into upstream stage, input stage, non-product output stage, and downstream stage. Implementation of an approved environmental management system is a prerequisite for entry into the Performance Track. Information on the best practices and innovations in environmental management is provided online through the National Center for Environmental Innovation. The Environmental Performance Track content and format were informed by the GRI Sustainability Reporting Guidelines.

⁷ Source: <http://www.iisd.org/measure/compendium/DisplayInitiative.aspx?id=83>

⁸ Available at <http://www.environment.gov.au/settlements/government/reporting.html>

⁹ See <http://www.epa.gov/sectors/performance.html>

¹⁰ Results are summarized at <http://www.ec.gc.ca/nopp/docs/rpt/ironSteel/en/summ.htm>

4.3 Indicators of compliance and enforcement

Performance indicators are key tools for decision-makers in developing and implementing environmental compliance and enforcement (ECE) programmes. Indicators allow decision-makers to (i) monitor and control programme operations; (ii) ensure accountability to legislative bodies, budget authorities, constituent groups, and the public; and (iii) improve overall programme performance.

Increasingly, environmental agencies worldwide, even in developing and transitioning countries that generally face more serious implementation and enforcement challenges of their environmental laws, are developing and applying meaningful performance ECE indicators to measure and evaluate the effectiveness of their programmes. In so doing, they are looking at a mix of these different types of indicators.

To measure progress and ensure commitment to reform, the Asian Environmental Compliance and Enforcement Network (AECEN) is helping to develop indicators to track agency performance in environmental compliance and enforcement. These indicators are both tailored to country programmes and pilot activities, and can be aggregated regionally. Members also develop indicators as part of their participation in AECEN pilot projects in PRC, Thailand, Viet Nam and the Philippines.¹¹

Based on the national indicators developed by members for their own ECE programmes, AECEN intends to draw out common indicators that can be used to compare the progress of members in implementing their programmes. The first assessment of Thailand was recently completed (AECEN 2004). This assessment found that “by not tracking outcome or impact indicators, Thailand does not adequately assess the overall effectiveness of its programmes, since there is no clear link between the number of inspections conducted and the level of compliance in the regulated community or the state of the environment. These indicators alone fail to reveal increased compliance levels achieved by agency programmes, as well as improved environmental conditions.”

The Viet Nam assessment (AECEN 2005) found that “Vietnam currently does not have a comprehensive indicators system to evaluate the success of its environmental compliance and enforcement programme. Data is collected on an annual basis by provincial and municipal DoNREs and indicates an overall low compliance rate among regulated facilities. In Hanoi, for example, only 12% of all facilities comply with environmental regulatory requirements.”

4.4 Indicators in the GMS

In SEF II, the selection of indicators was driven not only by statistical availability but also by the need to match the indicators to the environmental concern and the underlying policy target. The most suitable indicators were those that best relate to the policy target, thus defining the benchmark for performance assessment. From the outset of SEF II, 14 priority environmental concerns were identified (air pollution by stationary sources, climate change, fish resources, forest resources, inadequate waste management, inland water pollution, land degradation, mobile source pollution, natural disasters, ozone layer depletion, threats to biodiversity, threats to coastal zone, toxic contamination, water resources). Of these, no indicators were chosen for air pollution by stationary sources or ozone layer depletion, either because the concern was not ranked highly by any GMS country or because there are no data available.¹² For the remaining

¹¹ <http://www.aecen.org>

¹² Illustrating the need to constantly review and revise EPAs, air pollution in Chiang Mai from open air

12 concerns a variety of indicators was chosen as shown in table 3-14. Some brief observations on the indicators selected follow.

Table 3 Indicator selection in SEF II – Climate change

GMS Country	Pressure Indicator	Time Frame	State Indicator	Time Frame	Response Indicator	Time Frame
Cambodia	Greenhouse gas (GHG) emissions	1994-2020	n.a.	n.a.	n.a.	n.a.
Lao PDR	Volume of GHG emissions	1990	n.a.	n.a.	Expenditure on reducing the extent of slash and burn farming	2001-2005
Myanmar	GHG emissions in CO2 equiv.	1990-2005	n.a.	n.a.	GHG emission per unit of GDP	1990-2002
Thailand	Emission of GHG	1990-2020	n.a.	n.a.	Emissions of CO2 equiv. per unit of GDP	1990-2020
Viet Nam	National GHG emissions	1993-2002	n.a.	n.a.	n.a.	n.a.
Yunnan Province, PRC	Coal consumption for energy generation	1991-2003	n.a.	n.a.	Energy intensity	1991-2003

Five of the six countries chose GHG emissions as the P-indicator, but note the variation in approach. Thailand and Cambodia project GHG emissions from the early 1990s to 2020. Given the likelihood that developing countries will be required to participate in some form of post-Kyoto protocol after the first commitment period (2008-2012) and that EPA is meant to assess past performance, the longer-term projection appears to be not the most appropriate choice. If the projection is used, however, to indicate the likelihood of achieving a longer-term target, then it may be reasonable. Other countries, like Myanmar and Viet Nam opted for the Kyoto protocol reference year (1990) or the nearest available year with data (1993 for Viet Nam) as the baseline and the most recent estimate of GHG emissions (2005 and 2002 respectively). Given the global importance of the Kyoto protocol, a case could be made for using 1990 as the baseline for all countries.

Yunnan Province, on the other hand, opted for “coal consumption in energy generation” as the P-indicator, presumably in the belief that this is the major source of GHG emissions in the province and coal consumption is easier to convert into GHG data than most other sources.

Perhaps reflecting the difficulty in accurately measuring a change in state, given the normal wide variability in climates, none of the GMS countries used an S-indicator for climate change. Possible candidate indicators could include (i) average annual temperature increase compared to long term averages; (ii) maximum recorded temperature; or (iii) average decadal temperature. It would be instructive to see how this environmental dimension is handled in SOE reports. By not including an S-indicator, one must rely on an assumption that climate change is actually happening in these countries and that GHG emissions are the primary cause.

burning and from thermal power plants on the Eastern Seaboard are major environmental issues in Thailand in 2007.

For responses, Cambodia and Viet Nam had no R-indicator, while most of the other countries used variations of GHG emissions per unit GDP, reflecting the need to decouple fossil fuel use and economic growth. This indicator would measure such decoupling from economic growth but it would not necessarily have any meaning in terms of climate change. If total GHG emissions drives climate change, then increased fossil fuel use would still result in climate change as the economy grew, although at a lower rate than if the energy intensity remained the same.

Table 4 Indicator selection in SEF II – Fish resources

GMS Country	Pressure Indicator	Time Frame	State Indicator	Time Frame	Response Indicator	Time Frame
Cambodia	n.a.	n.a.	Inland fish consumption	1981-2003	Number of community fisheries	1996-2005
Lao PDR	Volume of fisheries production	1995-2004	Retail price of fish at constant prices	1995-2002	Expenditure on fisheries management	1991-2000
Myanmar	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Thailand	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Viet Nam	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Yunnan Province, PRC	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

There can be little doubt that rapidly diminishing fish stocks (both freshwater and marine) are a major environmental issue in the region. Therefore, it is rather surprising that only Lao PDR and Cambodia identified this as a priority issue.

For Lao PDR, the volume of fisheries production is given as a P-indicator because increasing fish production is putting pressure on freshwater fish stocks. However, theoretically, increasing volume of fish production could also be a result of improved fish management and growing demand for fish, for domestic consumption and export. As an S-indicator, the retail price of fish is not necessarily a reflection of the state of fish stocks, but rather the balance between supply and demand. With static fish stocks, the retail price could increase merely because of increased demand or willingness/capacity to pay higher prices (e.g. relative to other meat prices). As an R-indicator, public expenditure on fisheries management is a proxy measure for improved management, although it could also reflect the increasing cost of public services in Lao PDR. It is also not clear why the data is only available up to the year 2000.

In Cambodia, note that inland fish consumption is given as an S-indicator, although it is equivalent to the volume of fisheries production given as a P-indicator for Lao PDR. The logic for this S-indicator is that decreasing fish consumption would be a sign of a fishery in serious trouble in Cambodia, where over 70% of the protein intake is from fish. Decreasing fish consumption, however, could also be due to changes in relative prices with other forms of meat, changing consumer preferences, or concern over the safety of consuming fish from increasingly polluted water. The number of community fisheries as the R-indicator is based on the assumption that fisheries management is more effective than community-based than fisheries managed by government bodies. An increasing number of community-based fisheries, without

any cap on fish harvesting, may lead to long term decline of the fishery rather than being an improvement.

One interesting observation is that countries not selecting fish resources as a priority issue are mostly those with long coastlines, perhaps reflecting a belief that coastal fisheries are under less pressure than inland fisheries.

Table 5 Indicator selection in SEF II – Forest resources

GMS Country	Pressure Indicator	Time Frame	State Indicator	Time Frame	Response Indicator	Time Frame
Cambodia	Forest concession area	1994-2002	Forest cover as % of total land area	1965-2002	Protected forest as % of total land area Reforested areas	1993-2002 1985-2002
Lao PDR	Area under shifting cultivation	1976-2004	Forest cover as % of total land area	1943-2002	Protected forest area as % of total land area	1993-2002
Myanmar	Ratio of wood removal over thousand hectares of forest cover	1975-2001	Percent of forest cover over total land area	1975-1998	Permanent forest estate as % of total land area Expenditure on forest conservation	1985-2002 1988-2001
Thailand	Available agricultural land per capita	1975-2002 (projection to 2030)	Forest cover as % of total land area	1961-2000	Protected areas as % of total land area Reforested area	1961-2004 1997-2002
Viet Nam	Ratio of round wood production over total forest area	1961-2000	Forest cover as percent of total land area	1942-2003	n.a.	n.a.
Yunnan Province, PRC	Ratio of wood consumption to forest standing stock increment	1960-2002	Percentage of forest cover	1960-2002	Area under forest conservation programmes Afforested area	2000-2004 1999-2004

There was unanimous agreement among the GMS countries that forest resource management is a major environmental issue in the subregion. The primary causes of forest loss, however, seem to vary considerably if judged by the variation in P-indicators. Cambodia attributes the main pressure coming from forest concessionaires, Lao PDR from shifting cultivators, and Thailand from agricultural development. Myanmar, Viet Nam and Yunnan, however, view forest harvesting and consumption of wood products as the major pressures. All countries used forest cover as a percentage of land cover as the S-indicator, regardless of initial forest endowments. This illustrates one of the main problems associated with benchmarking—different starting points.

Two main responses were identified—declaration of protected areas and forest plantations. Myanmar also identified expenditure on forest conservation as a proxy response. Viet Nam did not identify an R-indicator. Note that the responses often do not directly attack the pressures. Declaration of protected areas or creation of forest plantations might merely turn Lao shifting

cultivators or Thai landless farmers into criminals as the legal status of land they have used traditionally is changed by the State. As the responses do not address their need for land, then they may not be effective in reducing loss of forest cover. The problem of using expenditure data as a proxy R-indicator is that the more degraded the forests become the greater the expenditure needed. Government budgets are rarely sufficient to give 100% coverage of all forest management needs, so expenditure data may be more related to available funds than real forest protection needs.

Table 6 Indicator selection in SEF II – Inadequate waste management

GMS Country	Pressure Indicator	Time Frame	State Indicator	Time Frame	Response Indicator	Time Frame
Cambodia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Lao PDR	Urban population	2005	Percentage of collected waste	2005	Expenditure on waste management	2005
Myanmar	Municipal solid waste generated in Yangon City	1983-2004	Percent solid waste collected in Yangon City	1983-2004	Expenditure on solid waste management in Yangon City	1994-2004
Thailand	Municipal solid waste generated	1993-2003	Percentage of collected municipal solid waste	1993-2003	Percentage of waste disposal and utilisation	1993-2003
Viet Nam	Volume of solid waste generated	2000-2003	Solid waste collected as a percentage of solid waste generated	2000-2003	Investment in solid waste management	1998-2003
Yunnan Province, PRC	Volume of municipal and industrial solid waste generated	1989-2004	Percent of non-recycled industrial waste	1989-2004	Municipal solid waste safely disposed of as a percent of total municipal solid waste generated Percent of industrial waste recycled	1989-2004 1989-2004

For the issue of waste management, most countries identified this as an urban environmental management issue, although Viet Nam did not distinguish between urban and rural sources. Yunnan distinguished between municipal and industrial solid waste at the pressure and response levels, but only referred to industrial waste in the S-indicator. Interestingly, Cambodia did not choose waste management as a priority issue, although the tourism sector has identified solid waste as major problem affecting the industry. Reflecting the difficulty in obtaining nationwide data, Myanmar restricted the waste management issue to the former capital Yangon City.

Most countries chose the percentage of solid waste collected as the S-indicator, although this could easily be turned into the percentage of solid waste that remains uncollected as a more accurate statement of the state of environmental quality. As a state indicator, this assumes that collected solid waste is properly disposed of, treated or recycled—an assumption that is not always true in these countries. In fact, poorly managed solid waste dumps may be as much of an environmental hazard as uncollected waste, especially if the waste dump is located close to a water source. Yunnan Province chose “percent of non-recycled industrial waste” as the

S-indicator, reflecting a preoccupation with the circular economy and the need to ensure adequate raw material for industrial production.

Three countries used expenditure on waste management as a proxy indicator for the response. As for forests, expenditure on solid waste management may not reflect the adequacy of the response. For example, in slum areas a relatively small expenditure on hand carts and a community-managed system of waste collection may be more effective than higher expenditure on large waste collection trucks that cannot enter the narrow streets. Thailand's choice of "percentage of waste disposal and utilisation" as an R-indicator relates to the observation that it is better to re-use waste rather than dispose of it. Capturing data on the amount of waste that is re-used rather than dumped, however, may be difficult in most developing countries, where the recycling of waste is mediated by informal rag-pickers or waste collectors. Yunnan Province used "percent of industrial waste recycled" as an R-indicator, while "percent of non-recycled industrial waste" was the S-indicator. As these two indicators are merely mirror images of each other, either version of the indicator may be better as an S-indicator than an R-indicator.

Table 7 Indicator selection in SEF II – Inland water pollution

GMS Country	Pressure Indicator	Time Frame	State Indicator	Time Frame	Response Indicator	Time Frame
Cambodia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Lao PDR	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Myanmar	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Thailand	Discharge of untreated domestic wastewater	1994-2003; 2001, 2003	Water quality in designated water bodies	1993-2003	Amount of waste water treated	2003
Viet Nam	BOD discharges	1995-2003	BOD ₅ concentration in selected rivers	1995-2002	Industrial waste water discharge fees	2003
Yunnan Province, PRC	Volume of municipal waste water discharge of untreated industrial wastewater discharged	1989-2004 1993-2000	Percent of major rivers meeting Grade III water quality criteria	1990-2004	Percent of industrial waste water treated prior to discharge	1993-2000

Viet Nam appears to have adopted a very logical P-S-R sequence for inland water pollution. Total BOD loads clearly cause reduced BOD concentrations in rivers and a reasonable response is to impose a wastewater discharge fee. The problem with inland water pollution, however, is that it is very location and time specific. The massive accidental spill of molasses on the Chao Phraya River in Thailand in 2007 or benzene chemical discharge to the river upstream of Harbin in PRC in 2006 were short-term incidents that caused serious pollution but are almost impossible to include in a national environmental performance assessment system. Similarly, total BOD loads will have quite different impacts if they are more or less evenly spread across

the nation's rivers than if they are concentrated on a few key rivers.

For the S-indicators, Thailand's choice of water quality in designated water bodies and Viet Nam's BOD concentration in selected rivers demonstrate the problem of aggregation for location specific environmental quality. Yunnan's S-indicator takes the location differences into account and if the goal is to have all rivers meet at least Grade III standards, then it is a practical and useful indicator. The R-indicator, however, is less appealing as treatment levels may range from primary to tertiary. Primary treatment of highly toxic industrial wastewater may not remove the toxic elements and treatment at this level may be no better than no treatment at all. It is also not clear why only industrial wastewater is singled out, as domestic wastewater is a significant source of pollution in PRC.

Table 8 Indicator selection in SEF II – Land degradation

GMS Country	Pressure Indicator	Time Frame	State Indicator	Time Frame	Response Indicator	Time Frame
Cambodia	Agriculture land as a percent of total land/per capita	1961-2002	Average rice yield	1961-2003	Growth of agricultural irrigated area De-mined areas	1961-2002 1992-2004
Lao PDR	Number of upland households practicing shifting cultivation	1995-2004	Sediment load in selected rivers	1989-1995	Number of households under LUP/LA programmes	1995-2003
Myanmar	Growth in upland population	1980-2000	Vulnerable farm area as percent of total cultivated area	1998	Land rehabilitated as percent of area sown to crops	1974-2002
Thailand	Loss of forest area	1961-2000	Vulnerable farm land as a percent of total farm land Marginal lands as percent of total farmland area	2000, 2002 2000	Rehabilitation area of degraded land	1997-2003
Viet Nam	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Yunnan Province, PRC	Farm land per capita	1984-2004	Total area affected by soil erosion	1987-2000	Total soil erosion area rehabilitated Government expenditure on soil conservation	1989-2004 2001-2004

Five of the six countries chose land degradation as an important environmental issue, with only Viet Nam abstaining. As for forest loss, however, the causes seem to vary from country to country. The P-indicators for Yunnan and Cambodia are agricultural land area per capita, suggesting that land degradation increases as density of the farm population increases. A similar approach is adopted in Lao PDR and Myanmar, but specifically targeting upland population (Myanmar) or upland households practicing shifting cultivation (Lao PDR). This approach reflects the pressures that come from shifting cultivators having to return to previously cleared areas more frequently as population density increases, thus allowing the land less fallow time to recover. It may not capture, however, the pressure from lowland farmers and other land users

forcing shifting cultivators into a shrinking and more vulnerable area of uplands.

The S-indicators also vary widely including (i) average rice yields (Cambodia); (ii) sediment load in selected rivers (Lao PDR); (iii) various measures of vulnerable farm land as a percentage of total farm land (Myanmar and Thailand); and (iv) area affected by soil erosion (Yunnan). Of these, the area affected by soil erosion (assuming that this is the major form of land degradation) appears to be the most direct measure. Declining rice yields could be due to many other factors, such as reduced fertilizer use, increasing pest attacks, or reduced availability of irrigation water. Vulnerable farm land is land that is potentially affected by land degradation (due to excessive slope, or erodible soil types, for example) rather than land that has already been affected by land degradation.

For the R-indicator, most countries opted for slightly differing measures of area rehabilitated by government programmes. Cambodia has a rather unique measure of areas de-mined that can be used for agriculture again.

Table 9 Indicator selection in SEF II – Mobile source pollution

GMS Country	Pressure Indicator	Time Frame	State Indicator	Time Frame	Response Indicator	Time Frame
Cambodia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Lao PDR	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Myanmar	Car equivalent unit per sq km in major cities	1999-2004	TSP concentrations in Yangon City	1998-2000	Percentage of vehicles inspected	1998-2004
Thailand	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Viet Nam	Number of vehicles in Hanoi and Ho Chi Minh City	1990-2001	Concentrations of SO ₂ , NO ₂ , PM and CO in Hanoi and Ho Chi Minh City	1997-2002	n.a.	n.a.
Yunnan Province, PRC	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Only Viet Nam and Myanmar chose mobile source pollution, and then only for selected cities where car densities are high. It is not clear why Viet Nam did not identify any response indicator.

Yunnan Province was the only one that chose natural disasters as a primary environmental issue. It is not clear, however, why provincial GDP should be seen as a P-indicator. Presumably GDP responds to rather than causes natural disasters. Perhaps this is one issue where there is no obvious cause but rather reflects the geological and climatological endowment of the province. The S-indicators (population affected and economic losses) are sensible choices, although financial loss may be clearer than economic loss (insurance companies, for example, are more interested in financial loss). Economic losses such as loss of income earning potential by injured or deceased inhabitants are more difficult to measure. The R-indicator combines preventative and reactive expenditure. If the expenditure on disaster preparedness is high enough, then the expenditure on disaster relief should shrink. Perhaps it would be better to separate these two indicators rather than combining them.

Table 10 Indicator selection in SEF II – Natural disasters

GMS Country	Pressure Indicator	Time Frame	State Indicator	Time Frame	Response Indicator	Time Frame
Cambodia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Lao PDR	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Myanmar	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Thailand	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Viet Nam	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Yunnan Province, PRC	Provincial GDP at constant prices	1992-2003	Population affected by natural disasters Economic loss caused by natural disasters	1992-2003 1992-2003	Expenditure on disaster relief and preparedness	1992-2003

Table 11 Indicator selection in SEF II – Threats to biodiversity

GMS Country	Pressure Indicator	Time Frame	State Indicator	Time Frame	Response Indicator	Time Frame
Cambodia	Loss of critical habitat	1993-1997	Threatened species as percent of globally threatened species	1996-2004	Protected area as percent of total land area	1993-2002
Lao PDR	Ratio of natural forest to plantation forest	1976-2002	Threatened species as percent of globally threatened species	1996-2004	National protected area as percent of total land area	1993-2002
Myanmar	Loss of tropical rainforest in Tanintharyi Division Loss of mangroves in the delta forest reserves	1990-2000 1924-2001	Threatened species as percent of globally threatened species	1996-2004	Percent protected area over total land area	1918-2004
Thailand	n.a.	n.a.	Threatened species as a percent of globally threatened species	1996-2004	n.a.	n.a.
Viet Nam	Loss of natural forest habitat	1990-1998	Threatened species as percent of globally threatened species	1996-2004	Protected area as percent of total land area	1992-2002
Yunnan Province, PRC	Area of natural forests	1979-2002	Threatened species as percent of globally threatened species	1996-2004	Protected area as percent of total land area	1989-2004

All countries chose threats to biodiversity as a priority issue, predominantly in forested areas. Loss of natural forest was identified as the main P-indicator. All turned to the World Conservation Union (IUCN) Red Book list of endangered species as the S-indicator, notwithstanding the possibility that increases in species listed may be due to increased surveys and new discoveries rather than any real change in species loss. All countries also chose protected area as a percentage of total land area as the R-indicator, even though there is considerable variation in the extent to which each gazetted protected area is actively managed. So-called “paper parks” are ranked equally to well managed protected world heritage parks. Also, by focusing on terrestrial areas the loss of biodiversity in rivers, lakes, and coastal waters is not covered and may be more serious than loss of terrestrial biodiversity.

Table 12 Indicator selection in SEF II – Threats to coastal zone

GMS Country	Pressure Indicator	Time Frame	State Indicator	Time Frame	Response Indicator	Time Frame
Cambodia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Lao PDR	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Myanmar	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Thailand	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Viet Nam	Growth of aquaculture area	1995-2003	Area of mangrove forest	1943-2001	n.a.	n.a.
Yunnan Province, PRC	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Perhaps reflecting this concern over threats to aquatic biodiversity, Viet Nam chose threats to its long coastal zone as a priority issue. The main pressure identified is from the rapid growth of aquaculture (particularly shrimp ponds) along the coastline. This growth is reflected in the S-indicator, area of mangrove forest, which has been declining precipitously. The reason for the absence of a response indicator is not clear. Mangrove forest rehabilitated is one obvious indicator.

Thailand and Lao PDR chose toxic contamination as a priority issue, although they obviously view it in different terms. Perhaps reflecting the more advanced industrial production capacity in Thailand, the P-indicator chosen was the total amount of hazardous substances utilised, while in Lao PDR it was the volume imported. While unexploded ordnance is a hazard, it is not clear why it was included under this topic. For Thailand, the S-indicator (number of health incidents) possibly pays inadequate attention to the severity of each incident. One Bhopal-type incident may be more serious than hundreds of small incidents involving few people. As the environmental damage from toxic and hazardous materials may stem from accidental release (in a train derailment, for example), the R-indicator relating to treatment of hazardous “waste” may not capture the necessary policy response.

Table 13 Indicator selection in SEF II – Toxic contamination

GMS Country	Pressure Indicator	Time Frame	State Indicator	Time Frame	Response Indicator	Time Frame
Cambodia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Lao PDR	Volume of imported hazardous substances	2005	Number of UXO-related accidents	2005	n.a.	n.a.
Myanmar	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Thailand	Amount of hazardous substances utilised	1993-2003	Number of health incidents related to hazardous substances	1993-2003	Amount of treated hazardous waste	1994-2004
Viet Nam	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Yunnan Province, PRC	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Table 14 Indicator selection in SEF II – Water resources

GMS Country	Pressure Indicator	Time Frame	State Indicator	Time Frame	Response Indicator	Time Frame
Cambodia	Urban and rural population Agricultural population	1961-2003 1980-2003	Percent of population with access to safe potable water Area under rice cultivation	1998-2002	Urban and rural drinking water provision Expenditure on irrigation system construction and maintenance	1998-2003
				1980-2003		1999-2003
Lao PDR	Rural population	1961-2004	Percent of population with access to safe potable water	1998-2004	Expenditure on improved water supply	2001-2005
Myanmar	Population growth Irrigated crop sown	1985-2015 1985-2002	Percent population with access to safe drinking water Irrigated area as percent of irrigable area	1995-2003	Expenditure on drinking water supply Expenditure on irrigation management	1997-2003
				1997-2002		1992-2002
Thailand	Water consumption by agriculture	1993-2006	Area of under-irrigated land	1990-2004	Irrigation water storage capacity	2002
Viet Nam	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Yunnan Province, PRC	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

With the exception of Viet Nam and Yunnan, water resources were viewed as a priority environmental concern, in both rural and urban areas. This raises the question of whether natural resources management should be covered by an environmental performance assessment. Population growth was viewed as the P-indicator by most countries, although Thailand singled out water consumption by agriculture. Is this a tacit assumption that efficiency of water consumption is not a major variable? Access to safe drinking water (one of the MDGs) and area irrigated (or under-irrigated) were identified as S-indicators. Expenditure on water resource infrastructure was the most common R-indicator, with Thailand deviating slightly with “irrigation water storage capacity.”

5. Bridging EPA and SDS

5.1 Common processes

The traditional way of thinking about sustainable development planning and performance assessment is as shown in Figure 2. The NSDS, based on extensive public consultation, provides a long term “vision” over a time frame of 15-20 years, which is then captured in a five-year socio-economic development plan, incorporating the objectives and medium-term targets of the longer term Vision document. The five-year plan also incorporates other strategic plans like NEAPs, TFAPs, PRSPs etc. The five-year plan is then broken down (or preferably built up from) medium-term sectoral strategies, which are in turn used to guide annual plans for each sector. The annual plans are broken into specific programmes and projects, submitted for budget approval, and approved or rejected in the annual budget process, which draws revenue from domestic resources like taxes and external resources like donor funds. Once funds have been allocated (often broken into recurrent expenditure and development funds) detailed implementation plans are prepared and the projects/programmes are then implemented. Implementation is monitored by the executing agency or some external party and the monitoring results are collected and stored in a database. National audit agencies conduct regular checks on expenditure of the funds and achievement of milestones.¹³ At regular intervals, governments conduct performance assessments to feed back into the revision of the various plans.

Unfortunately few countries carry out this logical sequence rigorously and the entire chain of logic is only as strong as its weakest link, which too often rests with the monitoring and feedback loop. The following section attempts to tease out the importance of this step and its relevance to the GMS economic development programme.

The essential difference between EPA and the environmental pillar of SDS as applied in the GMS is that EPA examines past and present performance against the policy targets set for specific environmental concerns while SDS sets in place environmental management strategies for the future, based on achievements (or lack of them) to date. If trend lines are considered for specific indicators, EPA stops at the present, while SDS projects future trajectories, often using several scenarios to illustrate the consequences of following certain paths. EPA accepts given policy targets, while SDS attempts to set new (more ambitious) targets for some future date. The overlap between the two approaches is seen when EPA makes a judgement call on whether current performance levels will achieve the policy targets set and recommends future actions to ensure that the policy targets are met. A bridge is formed by the SOE report, which provides a ‘snapshot’ of the current situation.

¹³ Both Canada and the United Kingdom have opted for independent audits of their sustainable development strategies as learning strategies (OECD 2006).

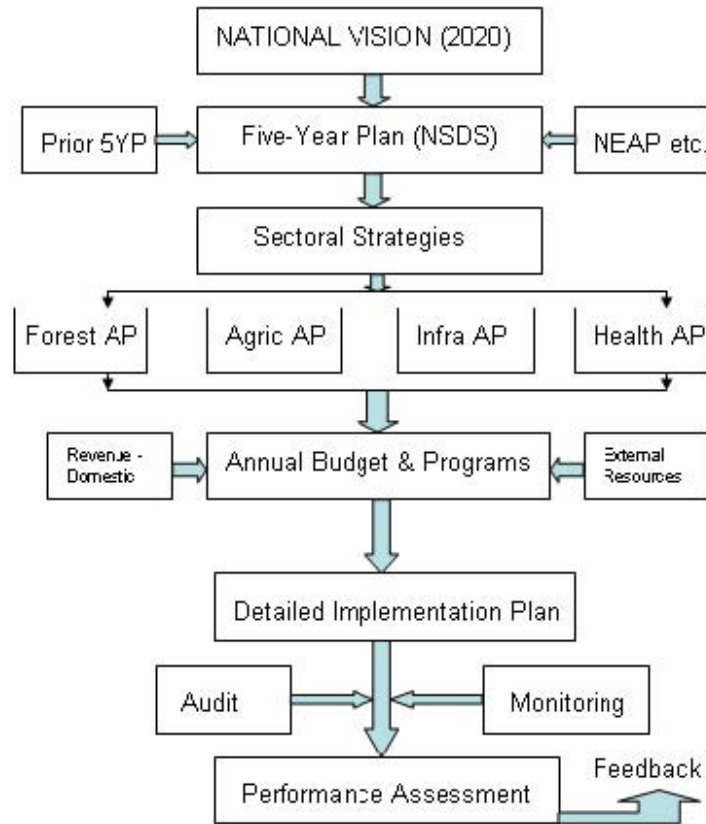


Figure 2 Sustainable development planning and performance assessment

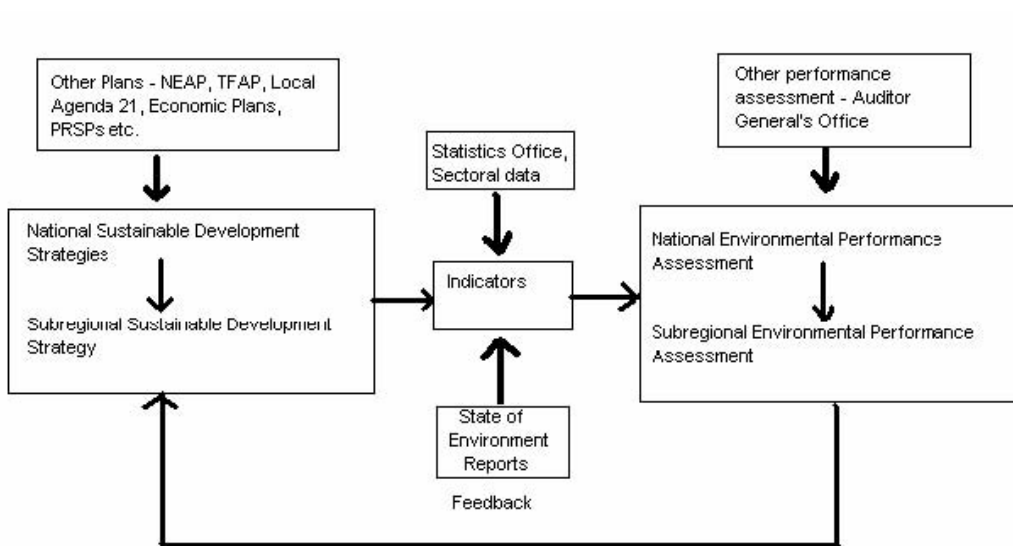


Figure 3 Link between NSDS/SSDS and NEPA/SEPA

Figure 3 illustrates the important connection between setting goals and targets under SDS, selection of the relevant indicators to “indicate” progress towards those targets, and using

performance assessment as part of a broader governance management to feed back into revisions and the updating of the national plans. Figure 3 also shows that SDS should merely fill in the gaps of other plans or consolidate them into a coherent synthesis. As sustainable development rests on the three pillars of economics, social dimensions and environment, but cannot be regarded as truly sustainable without integration, all plans that relate to these three areas should be integrated into a NSDS, so that there is no inherent contradiction or conflict between different plans.

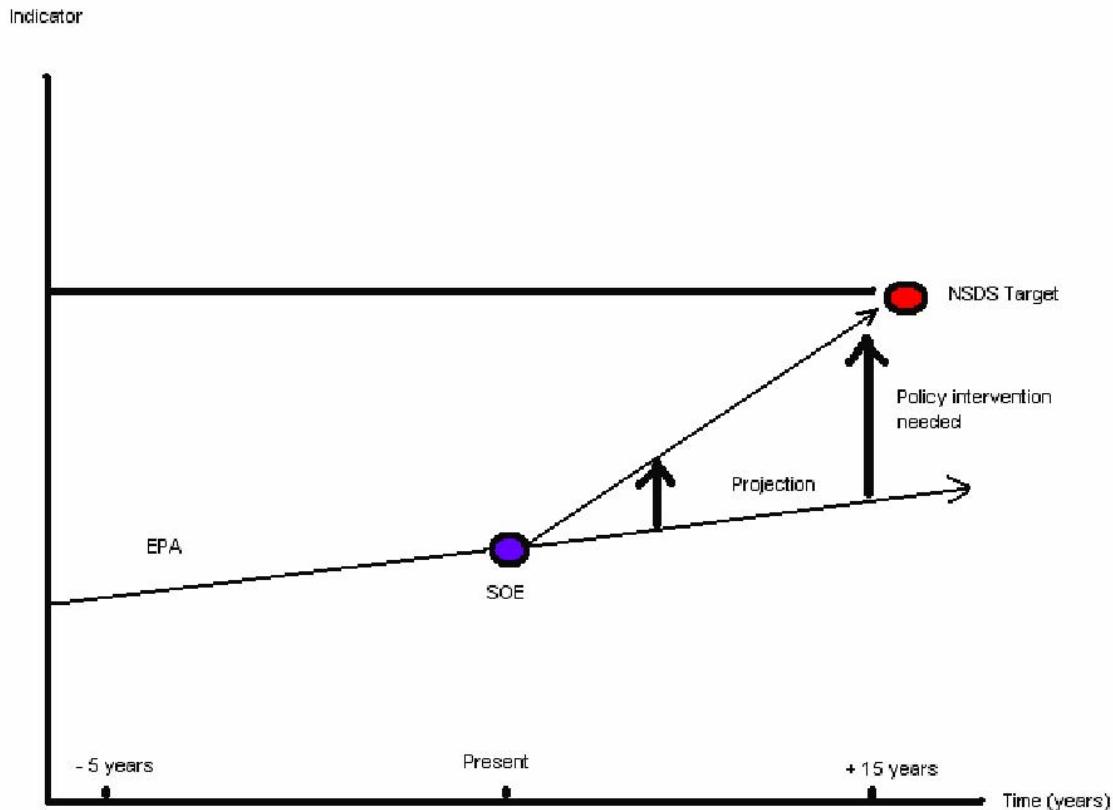


Figure 4 EPA, SOE, and NSDS tracking to identify management interventions

Thus EPA, SOE, and NSDS can be linked together as a management tool, as shown in Figure 4. If NSDS identifies a long term target, EPA measures past performance, and SOE measures the current situation, then projection of the trend line can indicate the likelihood of meeting the long term targets given no change in current policies. If the projection shows that the target is unlikely to be met, then one can identify policy or other interventions that would move the trend line upwards to meet the target. Note that policy interventions may be sequenced in such a way that less draconian policy measures can be tried first and their impacts monitored and reviewed by a subsequent SOE +/- EPA, before applying more drastic measures. This highlights the dynamic nature of SDS planning and the importance of feedback loops and periodic revision of the SDS, usually no longer than 5 year intervals.

The fact-sheets collated in SEF II provide the underpinning data for this approach. To select one example from the very valuable data set collected by SEF II, Cambodia has set a target of maintaining forest cover at 60% by 2015. As shown in Figure 5, since 1965 forest cover has

consistently declined from the starting point of 73%. The very rapid deforestation rate from 1965 to 1993 appears to have been halted but the prospect of maintaining forest cover at 60% by 2015 may be difficult without further policy intervention. In addition, there is some doubt over the latest survey data as they were collected during the dry season when it may have been difficult to separate forest and scrub cover, leading to an over-estimation of forest cover.

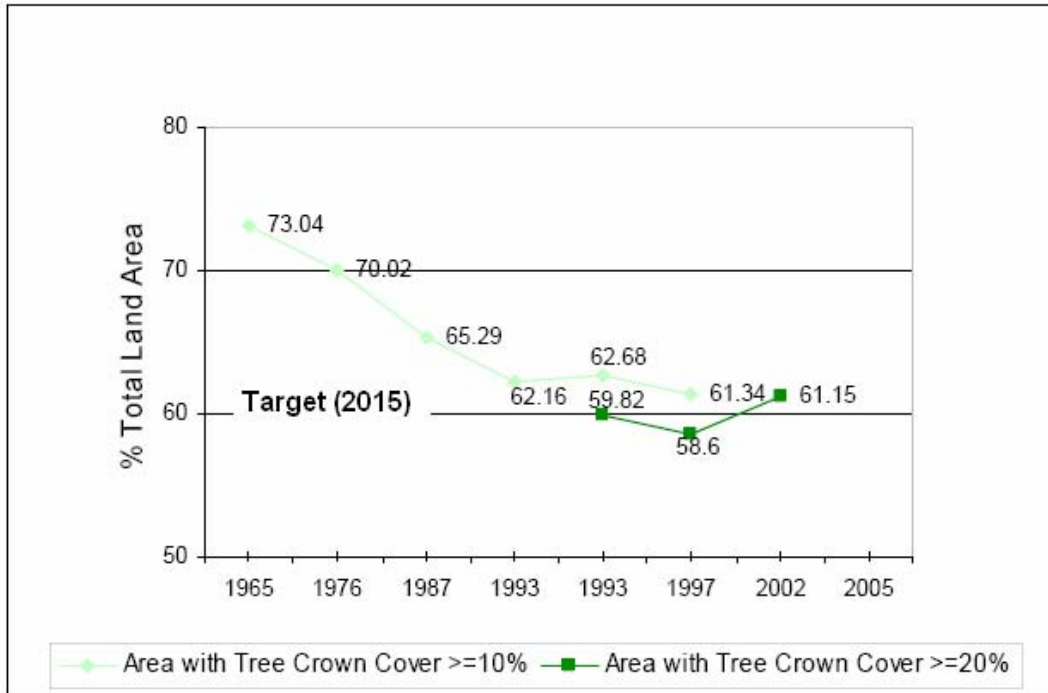


Figure 5 Trends in forest cover in Cambodia 1965-2002

Policies implemented to date in the forest sector include:

- (i) Replanting degraded forests in Svay Rieng and Takeo provinces from 1985-2002;
- (ii) Royal decree in 1993 establishing 15% of the land area as protected forest areas;
- (iii) Declaration of Tonle Sap as a Biosphere Reserve in 2001;
- (iv) Added protected forests in 2002, bringing total protected area to 23.5% of the total land area;
- (v) Some forest concession areas cancelled; and
- (vi) Ministry of Agriculture, Forestry and Fisheries attempts to control illegal logging.

Based on the slowing deforestation trajectory and policy interventions to date, it may be possible to achieve the 2015 target. However, careful monitoring is suggested and additional policy measures and institutional strengthening may be needed prior to 2015. As noted in SEF II, many of the protected areas are former concession areas and improved management of cancelled concession areas may be the most effective measure for increasing forest cover.

5.2 Institutional connections

Typically a NSDS (or other form of SDS) is the product of a National Council on Sustainable Development or similar form of multi-stakeholder forum. SOE and EPA remain embedded in the national environment agency, often with some external donor providing financial and/or technical support. This would not matter if the environmental component of the NSDS was built on and

equivalent to the environmental implementation plan of the national environment agency, which in turn is represented on the multi-stakeholder forum.

Unfortunately, environmental agencies are not responsible for all aspects of environmental management and many of the policies and other interventions that will result in environmentally sustainable development are the province of other government departments (e.g. Ministry of Energy or Ministry of Transport). Unless these agencies have an environmental strategy that is endorsed by the national environment agency, then as a typically weak government entity, the environment agency may have inadequate ability or intention to influence sectoral policies. Indeed, many countries do not even have inter-agency coordination processes that would provide institutional “space” for such coordination. In this situation, environment agencies compiling an EPA often find that they do not have access to the relevant data and may even be unaware of some key targets.

To illustrate the difficulties of inter-departmental coordination, in formulating the Korean NSSD, several NGOs proposed that “green job creation” should be included. The Ministry of Environment initially felt that this should be the province of the Ministry of Labour or the Ministry of Finance and Economy. Nevertheless, the Ministry of Environment did conduct some research on the matter and announced clean job creation plans, only to find that they were rejected by the Presidential Committee on Job Strategy (Chung and Hwang 2006). Due to an over-emphasis on the environmental pillar, key ministries (like Education and Human Resources Development and Government Administration and Home Affairs) did not fully participate in the development of the implementation plans for the Korean NSSD and important avenues for sustainable development such as education and local administration may not be fully committed.

As shown in Figure 2, the logical chain connecting NSDS and annual implementation plans through normal budget processes is highly dependent on effective institutional coordination. While a national council for sustainable development may be able to coordinate preparation of the long term vision, they are almost never adequately resourced to control coordination at the level of sectoral plans or annual implementation plans. Two approaches are possible (i) extension of the powers of the national council using the mandate of the office of the President, or other chief executive; or (ii) mandating inter-sectoral coordination through legislation. Possibly a combination of both approaches may be most effective.

5.3 Indicator selection

From the above description of common processes, it can be seen that indicators (whether environmental or sustainability indicators) link EPA, SOE and SDS. Therefore, common processes of indicator selection are called for. The evidence suggests that in the past indicator selection has not been a process held in common by EPA, SOE and SDS.

For example, the Korean NSSD drew its inspiration for 77 sustainable development indicators from the core set of 57 UNCSO indicators (Chung and Hwang 2006), modified as necessary to suit Korean conditions.¹⁴ The indicators were divided into 14 themes (social – 6, environment – 5, and economic – 3), 34 sub-themes (12, 11, and 11 respectively) and 77 indicators (25, 27, and 27 respectively).

¹⁴ Chung and Hwang (2006) note that “SDIs for Korea follow UNCSO work for the further development and technical improvement of indicators.....Indicator selection was based as much as possible on the availability of indicators that complement the present UNCSO core list by relating it to important areas in Korea not well covered by Agenda 21.”

For monitoring purposes, the Korean NSSD proposes a three-tiered approach (i) voluntary monitoring at a departmental level; (ii) performance evaluation by the Office for Government Policy Coordination; and (iii) the national sustainable development indicator system. Monitoring results will be disseminated through white papers, reported to Cabinet and then open to the public. This multi-level monitoring system is seen as necessary to overcome the short-term horizons of government departments and to force them to begin thinking about longer term strategies. However, the rationale for allowing monitoring by government departments to be voluntary rather than mandatory is rather questionable.

If a common process of indicator selection is undertaken then there will be a greater likelihood of monitoring programmes consistently collecting data for these indicators, as there will be multiple uses of the same data.

6. Conclusions and recommendations

Across the globe, the mainstreaming of environmental concerns into development decision making remains a patchy endeavour. Nevertheless, there is adequate experience to provide guidance to those countries willing to attempt the task. In the GMS, experience shows that linking EPA, SOE and sustainable development planning is an achievable goal for developing countries, as the basic building blocks exist. Such linkages can become an important environmental management tool, indicating where current trajectories are likely to fall short of sustainable development targets and where strategic policy interventions may be needed. To date, however, no country in Asia-Pacific has systematically used such linkages to identify strategic policy entry points.

Recommendation: Component 3 of the CEP should attempt to link EPA, SOE, and NSDS in a systematic fashion, so that strategic policy interventions can be identified.

The apparent success of peer reviewed EPRs in the OECD countries raises the question of whether a similar approach should be adopted in the GMS. If Lehtonen (2006) is correct and peer reviews empower weaker actors (like environment ministries) and improve the factual basis of decision making, then there is a strong argument for trialing peer reviews in at least one of the GMS countries, if a willing volunteer can be found.

Recommendation: The OECD should be approached to see if it would help raise awareness on the benefits of peer reviews of EPAs in the GMS. Even without OECD assistance, peer review by the GMS countries working together may be possible in the medium term.

The UNECE experience of the second round of EPRs suggests that there is value in referring back to the first round reviews and assessing progress over the intervening period. However, circumstances change and there is frequently a need to adjust the original objectives and targets. Hence, slavish adherence to the EPR recommendations that applied at the time they were formulated should be avoided and a more flexible approach adopted, provided that the overall movement is towards sustainability.

Recommendation: The second round of EPAs in the GMS should document how circumstances have changed since the first round of assessments as well as reviewing progress in implementing the SEF II recommendations.

The review of SEF II achievements and shortcomings demonstrates that despite some early misgivings, it was possible to identify the priority environmental issues in each GMS country, some existing targets, suitable indicators, some trend data, and make an informed assessment of progress. Some of the indicators selected were too removed from the issue of concern,

meaning that changes in the indicator could have been due to other factors. In addition, the sequence of indicators in accordance with the P-S-R model was not always logical. For example, the P-indicator may have no relationship to the selected S-indicator, meaning that it is not possible to judge if the response would make any changes to the underlying pressure.

Recommendation: The SEF II indicators should be re-examined by the GMS countries during implementation of Component 3 with a view to introducing a more logical and internally consistent set of indicators. Reference should be made to the UNCSD core set of indicators to make sure that international reporting obligations can also be facilitated by the EPA work. The feasibility of expanding the P-S-R model to the broader D-P-S-I-R (Driver-Pressure-State-Response-Impact) model used by the UNEP global environmental outlook series should be carefully assessed before introduction, as it potentially increases the number and complexity of the indicators used.

The review found that EPA has potential application well beyond assessment of national level environmental performance of public environment agencies. Sectoral agencies whose activities impinge on the environment (such as forestry, agriculture, public works etc.) may also benefit from sectoral performance assessments, possibly using the public agencies sector supplements developed by GRI. The private sector environmental performance can be tracked by application of the ISO 14000 series standards. As several local government levels in the GMS have developed Local Agenda 21 plans and some (like Bangkok) already report on progress through SOE reports, more systematic approaches to EPA are possible at sub-national level.

Recommendation: In addition to making sure that routine EPAs are embedded at the national level in the GMS, Component 3 should begin the process of raising awareness of the advantages of EPA and suitable tools at the sectoral agency, private sector, and sub-national levels, possibly through pilot projects and workshops.

The review found that most GMS countries have the elements of a NSDS even if there is no formal document prepared to date. UNEP is assisting several GMS countries to document their NSDS and is preparing a draft SSDS. The best practices globally suggest that the real advantage of sustainable development planning comes from the process rather than preparation of the document. In this respect, the current efforts by UNEP and their selected consultants fall short. Insufficient time and resources have been devoted to public participation in the process and many sectoral agencies have not been involved despite their potential contribution to sustainable development. This is a particular problem for the SSDS which is yet to find an institutional “home” that will take ownership of the process and be responsible for stimulating and monitoring implementation.

Recommendation: Rather than submitting a partially prepared SSDS to the next GMS Summit, Component 3 should consider preparing a decision document that would propose the Environment Operations Center (EOC) to evolve into the institutional home for a SSDS and a clearing-house for information on sustainable development plans at all levels throughout the GMS. Once the institutional arrangements are agreed and endorsed by the GMS heads of government, the EOC could then take steps to ensure that future efforts in relation to sustainable development planning are adequately resourced and financed.¹⁵ The draft SSDS could be submitted for information purposes rather than endorsement at this stage.

¹⁵ Among other things the EOC could keep a watching brief on national socio-economic development plans and sectoral strategies to make sure that the environmental concerns are adequately mainstreamed.

The peer review of the French NSDS recommended that a key element of success is to empower champions in the civil service to integrate sustainable development into their normal activities.

Recommendation: In considering staff to be seconded to the EOC from GMS governments, “champions” from sectoral agencies other than the national environment agency should be included. By exposing such staff to current environmental concepts and performance assessments, they will be more effective in mainstreaming environmental concerns in their sectoral agencies on return.

The OECD best practice guidelines matched against experience in the GMS suggests that several areas of improvement are needed especially in relation to integration of the three pillars of sustainable development, underlying scientific data and analysis, coordination and governance arrangements, and stakeholder participation. As in the OECD countries, the over-emphasis on environmental issues needs to be balanced out with increased attention to social aspects. Of particular relevance to Component 3, there is a need to set more realistic, flexible targets with clear budget priorities and to make sure that sustainable development strategies are continuously monitored and progressively improved.

Recommendation: Use ongoing processes leading to NSDS or their equivalent to set more realistic, flexible targets (tied to annual budget priorities and consistently funded monitoring programmes) as the basis of modifying the indicators for second round EPAs in the GMS.

At least 60 local government areas in the GMS have prepared a Local Agenda 21 or equivalent. Currently these local government areas are being encouraged to convert from an “agenda” for action into more concrete action plans, termed Local Action 21. As many environmental issues are best addressed at the local level, such action plans should be encouraged.

Recommendation: Component 3 should consider conducting a review of existing Local Agenda 21 plans and assist other local government areas to learn from this experience and prepare their own plans. A selected group of municipalities should be assisted to prepare model Local Action 21 plans.

The review of NSDS and associated economic, social and environmental plans in the GMS suggests that there are adequate numbers of existing plans and ongoing planning processes to generate meaningful sustainable development targets for the second round of EPAs, with some exceptions (such as Myanmar). The primary functions of any new NSDS should be to update existing plans, fill in any remaining gaps, and formulate a longer-term vision of where the country is headed.

Recommendation: Ongoing external support for NSDS processes in the GMS should assist countries to move away from a stand-alone NSDS to a continuous process of setting the longer term targets within which five-year socio-economic development plans and sector strategies are fully embedded. These medium term plans, in turn, should be fully linked to annual action plans and budget allocations.

The OECD has spent considerable effort in drawing up a core set of environmental indicators, covering 13 environmental themes, and has extensive experience in their application. The third revision of the UNCSD core set of sustainable development indicators in 2006 now covers 50 indicators, which are part of a larger set of 98 indicators of sustainable development.

Recommendation: In the second round EPAs for the GMS, the UNCSD and OECD core set of indicators should be examined and at least some of these indicators adopted so that GMS

countries can be compared with more advanced economies.

The Asian Environmental Compliance and Enforcement Network (AECEN) is helping to develop indicators to track agency performance in environmental compliance and enforcement, with pilot assessments in PRC, Thailand and Viet Nam among GMS countries. The draft assessments to date indicate that compliance monitoring tends to be restricted to process indicators (like number of inspections and prosecutions) rather than outcome indicators.

Recommendation: Component 3 should work closely with AECEN to ensure that robust compliance and enforcement indicators focused on outcomes are included in the second round of EPAs for the GMS.

In SEF II, the selection of indicators was determined not only by statistical availability but also by the need to match the indicators to the environmental concern and the underlying policy target. A patchwork of indicators based on the PSR model has now been developed from the first round of EPAs. These indicators could be expanded to the broader D-P-S-I-R model although a more complete effort using the existing approach may be a higher priority. The brief review of the GMS indicators in this report will provide some guidance to country teams.

Recommendation: As indicators are the point of commonality between EPA, SOE and NSDS, considerable care should be taken in revising the indicators for the second round of EPAs under Component 3. The gaps in coverage should be filled and the logical sequence connecting pressure, state, and response indicators should be re-examined.

This report has shown that EPA, SOE, and NSDS can be linked together as an effective environmental management tool, helping to identify where and when new policy initiatives may be needed.

Recommendation: Component 3 should address the linkages between these formerly separate exercises and demonstrate to GMS countries how they fit together to offer a clear indication of policy interventions needed to attain long term targets.

The connection between NSDS and EPA (as well as SOE) needs greater attention at the institutional level in the GMS. SOE and EPA remain embedded in the national environment agency, often with some external donor providing financial and/or technical support, while NSDS is either under a national council for sustainable development or some other form of multi-stakeholder forum. If the environmental component of a NSDS was under control of the national environment agency and that agency had sufficient powers to coordinate the environmental activities of all other sectoral agencies, then this separation of responsibilities would be of little concern. However, in practice, most environmental agencies are relatively weak and do not have these coordinating powers.

Recommendation: If the linkages between NSDS, EPA and SOE are to operate seamlessly, the current institutional arrangements in the GMS need to be re-examined. Changes in institutional mandates may be needed to give national environmental agencies greater coordinating powers over the environmental plans and actions of other sectoral agencies.

Appendix

Summary of First Cycle Reviews of Environmental Performance by OECD (1993-2000)

Country	Economy-wide Integration of Environmental Concerns	Integration of Environmental Concerns into Key Sectors
Australia	Weak decoupling with environmental pressures growing slower than GDP but still increasing.	Progress has been made in promoting sound environmental practices within the mining industry.
Austria	Current approaches largely based on regulations and the best technology may have to be streamlined and supplemented by efforts to integrate environmental and economic decisions.	Energy policies have achieved good environmental results, with energy intensity per unit of GDP decreasing for 20 years. Continuous improvement in making the tourism sector more environmentally friendly.
Belgium	Concept of sustainable development (SD) incorporated into legislation and a federal plan for SD. Economic development not yet sustainable in practice.	Sectoral integration is still weak and priorities seem to be given to economic growth, with significant negative effects on the environment. Inter-ministerial integration is making progress.
Canada	Green Plan represents commitment to translated SD concept into qualitative and quantitative national objectives and policy measures. Legislation establishing Commissioner of the Environment and Sustainable Development.	Notable achievements made in integrating environmental considerations into economic and sectoral policies, including environmental analysis of policy proposals and legislation. SD plans for agriculture, fisheries, forestry and industry.
Czech Republic	In recent years, integration of environmental consideration in economic policies was not sufficient and the words "sustainable development" were not used. This is now changing.	Centrally planned economy resulted in pollution black spots. In the transition period, structural changes led to industrial decline, closing of some plants, environmental investment in others, and substantial environmental improvement.
Denmark	Significant strengthening of integration of environmental concerns in economic and social decision making is needed.	Progress has been made in sectoral integration at planning, budget and project levels. Sectoral plans such as Energy 21 and Traffic 2005 are steps towards integration.
Finland	Promoting SD has been a key goal since the late 1980s. Government policy aims at full cost pricing of goods and services.	Industry has been successful in decoupling pollutants from production. Environment built into sector plans for transport, forestry, agriculture, energy and industry.
France	National Environment Plan in 1990 provided an integrated approach but needs to be updated, with quantitative and qualitative targets.	Integration has been approached in different ways according to sectors – extensive for industry, but insufficient for transport and agriculture.
Germany	Some progress but incorporation of East Germany has added to environmental pressures. Structural changes in industry have led to environmental improvements.	Energy intensity has improved and supply structure has diversified. Environmental benefits in transport sector offset by growth of road transport. Chemical industry improving environmental performance.
Greece	Progress has been uneven. Council of State has played a positive role in practical interpretation of SD in case law. EU directives and funding seem to dominate over national objectives.	Good integration of decisions in the energy sector and adequate in physical planning and housing policy. Ad hoc integration in other sectors. Horizontal coordination among departments could be improved.

Hungary	GDP rebound after 1993 not accompanied by former levels of pollution, due to industry modernisation and environmental legislation. Inter-ministerial commission on SD and Local Agenda 21 activities with support of NGOs.	Efforts have been made to integrate environmental concerns into sectoral policies, but need to be strengthened. Environmental sustainability is an objective of the 1996 Transport Policy, but air pollution increases. Emphasis on renewables in energy policy.
Iceland	New Ministry of Environment (MOE) and government White Paper, needs to be followed up with a Strategic National Environment Plan. Increased expenditure on environment is inevitable.	Policy coordination by MOE through ad hoc committees. Central highlands and waste management need better coordination. Structural adjustment in agriculture is an opportunity to mainstream environment.
Ireland	1997 National Strategy for Sustainable Development implemented by high level inter-ministerial committee and National Sustainable Development Partnership. Local Agenda 21 and Environmental Partnership Fund supporting local efforts.	SEA systematically assessing potential impacts of sectoral policies, implemented in context of 2000-2006 National Development Plan. New Planning and Development Bill to strengthen spatial planning.
Italy	Need to implement national plan in response to Agenda 21 and assess results of first 3-year Environmental Management Programme.	Success in integrating environmental and energy policies, with very low energy intensity, energy efficient technology, high energy taxes and prices, as part of National Energy Plan. Initial progress in transport sector has been undermined by growth in transport volume.
Japan	Some decoupling of economic growth and traditional pollutants, but more needed. A comprehensive national environment plan could better integrate key agencies.	Transport sector relatively clean, but traffic is growing. A comprehensive transport development plan is needed. In energy, Japan has successfully decoupled GDP, energy use and CO2 emissions. Energy conservation and efficiency programmes have slowed, however.
Korea	Some progress but no broad improvement of environmental quality. Rapid economic and institutional transformations add to environmental challenges.	Green Vision 21 sets quantitative objectives but vertical structure of public administration makes it difficult to formulate and implement integrated environmental policies. Pollution and congestion in the transport sector are worsening.
Luxembourg	Shift to a service economy has reduced pressure on the environment, but rising affluence is generating new challenges. National Plan for Sustainable Development finalised in 2000.	With few exceptions, environmental concerns are not integrated into sectoral policies. Emphasis is placed on economic and social development, protection of agriculture, road transport and consumption.
Mexico	Sound SD strategies with national development plan and environment programme (1995-2000), National Consultative Council for SD, and new partnerships with industry.	Inter-ministerial cooperation has improved with Ministry of Environment, Natural Resources and Fisheries (SEMARNAP). A formal body deals with energy and environmental issues. Further integration of environmental concerns into fiscal policies, transport sector, and coastal area management is needed, however.
Netherlands	Dutch environmental planning since the 1980s has been highly successful, with quantitative targets with deadlines and nine target groups identified for achieving these targets. Probably global best practice aimed at achieving sustainability by 2010.	Environment is thoroughly integrated into transport planning, with quantitative targets, high share of public transport and bicycles, and clean cars and fuel. Although sustainable agriculture is the goal, emissions remain above sustainable levels and structural changes are needed.

New Zealand	A coherent approach to natural resources management is given in the Environment 2010 Strategy and the comprehensive Resource Management Act.	Agriculture, energy and industry underwent structural reforms since the 1980s, but environmental concerns had little role to play. Devolution to local level has not been matched with local level planning capacities.
Norway	Norway has been a pioneer in support of SD and has made good progress in integrating environmental and economic policies. Specific targets have been set for SD and there are many environmental taxes and other economic instruments.	Norway has attempted to integrate environmental considerations into its extensive, export oriented energy sector, with caps on carbon emissions, carbon taxation, and a Climate Change Action Plan. Cost effective sectoral plans should be coordinated with the Ministry of Environment.
Poland	Pollution, energy and resource intensity of the economy are higher than other OECD countries despite a National Environment Policy built around SD principles. Environment is still seen as an expensive “add-on” and a responsibility of the environment agency.	Major ministries have not internalised a commitment to the environment and existing arrangements are not sufficient to hold them accountable. The Energy Policy incorporates the objectives of the Environment Policy, but major environmental problems remain. Major investment is needed in the industry sector.
Portugal	Portugal's environmental expenditure has generated some improvements but it needs better integration to pursue SD and environmental convergence with the EU.	The legislative framework is in place but additional economic instruments are needed, such as taxes or charges on air pollution. All economic aspects of water resources and waste management need attention.
Spain	Spain's environmental management has improved since the 1980s, but it needs greater use of economic instruments to support its environmental policies. There is progress on waste disposal and recycling but not on waste prevention.	Despite a National Hydrological Plan, balance between ecology and economy in the crucial water sector has yet to be achieved. Some steps were taken to integrate energy and environment in the 1991 National Energy Plan but further effort is needed.
Sweden	Despite some progress in decoupling environmental pressures from GDP, Sweden sees the need for increased integration as the key to improving environmental performance and SD.	Environmental considerations are taken into account in development strategies for the transport and energy sectors, but consumption is still trending upwards. Environmental integration in agriculture has been fairly successful.
Switzerland	Good progress in green tax reform, sustainable consumption, and a new Committee on SD. Cantonal plans for SD and Local Agenda 21s are needed.	Integration of environmental and transport policies is a good example for other countries. Reforms towards sustainable agriculture are underway. Greater effort is needed in land use planning and tourism.
Turkey	Turkey benefits from integrated planning by the State Planning Organisation and incorporation of environmental planning into Five Year Development Plans. Considering legislation for a Sustainable Development Council.	There is limited coordination between sectoral ministries and different levels of government. Attention needs to be paid to integrating environmental concerns into energy, transport, tourism, industry, and agricultural policies.
United Kingdom	Much remains to be done to integrate environmental, economic and sectoral policies, as recognised in the 1994 Strategy for Sustainable Development.	A coherent Climate Change Programme, but greater internalisation of environmental costs is needed in the energy sector. Responsible Care Programme is a good model for voluntary approaches by industry.
United States	Environmental policies focus on separate issues and remedying environmental deterioration rather than prevention. President's Council on SD and EPA's Five-Year Strategic Plan are setting environmental goals.	Cooperation among federal agencies is growing, despite the scattered structure of environmental law. There is a National Environmental Performance Partnership with the states. Pollution per vehicle has declined but there has been no success in reducing the growth in vehicle traffic. The Toxic Release Inventory is a good tool in the chemical industry, although clear targets are needed.

Belarus	Environmental pressures have decreased since 1990 due to reduced economic output, energy supply changes and environmental action. There is excessive reliance on end-of-pipe solutions.	Environmental concerns need to be integrated into policies for industry, agriculture and energy. Economic reform should lead to a less resource- and pollution-intensive economy. An integrated response was provided to the Chernobyl incident.
Bulgaria	The pollution and resource intensity of the economy remain high, despite the fall in GDP and industrial output. Progress has been made in the environmental policy framework.	Pollution from industry remains high and energy intensity of industrial production has increased. Industrial policies largely ignore environmental concerns. Good housekeeping and environmental audits are cost effective means to improve environmental performance.
Russian Federation	Economic reform has not been matched by institutional reform. A Concept of the Transition to SD was approved in 1996. There is also a National Environmental Action Plan.	Little decoupling has been achieved and the pollution intensity of the economy has increased. The priority attached to environment within public policy has declined with most environmental programmes too ambitious and seriously under-funded. Liabilities for past environmental damage impede new investment.

Source: OECD (2000)

References

ADB/ESCAP/UNDP/UNEP (2001) *Synthesis Report for Asia and the Pacific: 2002 World Summit on Sustainable Development*. (<http://www.rrcap.unep.org/projects/nsds/pub/synthesisReportAP.pdf>)

Asian Environmental Compliance and Enforcement Network (AECEN) (2004) *Thailand Country Assessment: Enforcement and Compliance Programme*. (http://www.aecen.org/documents/TH_20041022.pdf)

Anonymous (2007) *Rebranding Thaksinomics and Wrecking the Economy with the UN's Ill-judged Backing*. *The Economist*, 13-19 January 2007, page 26.

ASEAN Secretariat (2002) *ASEAN Report to the World Summit on Sustainable Development*. (<http://www.aseansec.org/pdf/wssdd.pdf>)

Audit Commission (2005) *Local Quality of Life Indicators – Supporting Local Communities to Become Sustainable: A Guide to Local Monitoring to Complement the Indicators in the UK Government Sustainable Development Strategy*. (<http://www.mkiobservatory.org.uk/download/ylzeij55rftnbe451oeakd45/2371/QofL2005.pdf>)

Bachmann, G. (2005) *NSDS Formulation and Implementation in Europe: Experiences and Good Practices*. Presented to Conference “1/3 of our Planet: What can Asia and Europe do for Sustainable Development?” Jakarta 23-25 November 2005. (http://www.nachhaltigkeitsrat.de/service/download_e/contributions/2005/Presentation_Bachmann_ASEF_11-2005.pdf)

Barg, S., Anielski, M. and Waddell, J.T. (2006) *Using Performance Information in Government Budgeting and Reporting: Review of Best Practices*. International Institute for Sustainable Development, Winnipeg, Manitoba, Canada. (http://www.iisd.org/pdf/2006/measure_performance_info.pdf)

Bangkok Metropolitan Administration (BMA) (2003) *The Bangkok State of Environment Report*, 2nd Edition. Bangkok Metropolitan Administration and United Nations Environment Programme. Bangkok, Thailand.

Chanrithy, C. (2004) *National Policy Coordination in Cambodia*. National Training Workshop on Enhancing Policy Coordination on Trade and Environment Issues: Implementation of Multilateral Environmental Agreements containing Trade-Related Measures. Phnom Penh, Cambodia, 5-6 October 2004. (<http://www.unep-unctad.org/cbtf/events/Cambodia/study1.pdf>)

Chung, Y.K. and Hwang K. (2006) *The Korean National Strategy for Sustainable Development: A Background Report*. (<http://www.un.org/esa/sustdev.natlinfo/nsds/tm/Korea/backgroundReport.pdf>)

City of Liverpool (2005) *Liverpool's Sustainable Development Plan 2006-2009*. City of Liverpool, United Kingdom.

Dalal-Clayton, B. (2004) *The EU Strategy for Sustainable Development: Process and Prospects*.

Environmental Planning Issues No. 27, January 2004. International Institute for Environment and Development, London. (http://www.nssd.net/pdf/eustrategy_14jan2004.pdf)

Dalal-Clayton, B. and Bass, S. (2002) *Recent Progress and New Thinking on Strategies for Sustainable Development*. Presented at Annual Meeting of the International Association for Impact Assessment, 15-21 June 2002, The Hague. International Institute for Environment and Development, London. (<http://www.nssd.net/new.html>)

Dalal-Clayton, B. and Bass, S. (2006) *A Review of Monitoring Mechanisms for National Sustainable Development Strategies*. Environmental Planning Issues No. 27, July 2006. Report prepared for OECD, Paris. (http://www.nssd.net/otherdocuments/OECD_Review_final.pdf)

Dalal-Clayton, B., Bass, S. and Swiderska, K. (eds.) (2002) *Stakeholder Dialogues on Sustainable Development Strategies: Lessons, Opportunities and Developing Country Case Studies*. International Institute for Environment and Development, London. (<http://www.nssd.net/pdf/epi26.pdf>)

Department for Environment, Food and Rural Affairs (DEFRA) (2005) *One Future – Different Paths*. The UK's Shared Framework for Sustainable Development. Department for Environment, Food and Rural Affairs, London. (<http://www.sustainable-development.gov.uk/publications/pdf/SD%20Framework.pdf>)

DEFRA (2006) *Sustainable Development Indicators in your Pocket 2006*. Department for Environment, Food and Rural Affairs, United Kingdom. (http://www.sustainable-development.gov.uk/progress/documents/sdiyp2006_a6.pdf)

Dolan, P., Peasgood, T. and White, M. (2006) *Review of Research on the Influences on Personal Well-Being and Application to Policy Making*. Final Report for Department of Environment, Food and Rural Affairs. (http://www.defra.gov.uk/science/project_data/DocumentLibrary/SD12005/SD12005_4017_FRP.pdf)

Dulamday, E. (1998) *Mongolia's Journey Toward Sustainability*. (http://www.rrcap.unep.org/projects/nsds/pub/ncsd_mongolia.pdf)

Dumaru, P. (2006) *Fiji National Assessment Report: A Background Document for the Formulation of the National Sustainable Development Strategy*. (http://www.un.org/esa/sustdev/natlinfo/nsds/pacific_sids/fiji_nar.pdf)

Earth Council (2001) *NCSD Report 1999-2000: National Experiences of Integrative, Multi-Stakeholder Processes for Sustainable Development*. United Nations Development Programme. (http://www.rrcap.unep.org/projects/nsds/pub/NCSD_report.pdf)

Global Environmental Management Initiative (1998) *Measuring Environmental Performance: A Primer and Survey of Metrics in Use*. (http://www.gemi.org/MET_101.pdf)

Hanson, A., Bass, S., Bouzaher, A., Samdani, G. and Zehra, M. (2000) *Pakistan's National Conservation Strategy: Renewing Commitment to Action – Report of the Mid-Term Review*.

<http://www.nssd.net/pdf/mtrch1.pdf>

Hanson, A. and Martin, C. (2006) *One Lifeboat: China and the World's Environment and Development*. International Institute for Sustainable Development, Winnipeg, Manitoba, Canada. (http://www.iisd.org/pdf/2006/china_one_lifeboat.pdf)

International Atomic Energy Agency (IAEA) (2005) *Energy Indicators for Sustainable Development: Guidelines and Methodologies*. Vienna. (http://www-pub.iaea.org/MTCD/publications/PDF/Pub1222_web.pdf)

Isarangkun, C. and Pootrakool, K. (u/d) *Sustainable Economic Development through the Sufficiency Economy Philosophy*.

Isberto, E. (1998) *The Philippine Council for Sustainable Development: Like Cooking Rice Cakes*. (http://pdf.wri.org/ncsd_philippines.pdf)

Jones, B. (2001) *Integrating Environment and Sustainability Issues in the Development of Namibia's National Development Plan 2: A Participatory Process for Developing a Sustainable Development Strategy*. Prepared for OECD-DAC Project on Donor-Developing Country Dialogues on National Strategies for Sustainable Development. (<http://www.nssd.net/pdf/nam01b.pdf>)

Koomsin, S. (2007) *Thailand: Environmental Policy in the 10th National Economic and Social Development Plan*. Presentation to Workshop on Mainstreaming Environment for Poverty Reduction and Sustainable Growth in Asia and the Pacific, Bangkok, 26-28 March 2007.

Lehtonen, M. (2006) *Deliberative Democracy, Participation, and OECD Peer Reviews of Environmental Policies*. American Journal of Evaluation No. 27: 185. (<http://aje.sagepub.com/cgi/reprint/27/2/185>)

Ministry of Ecology and Sustainable Development (2005) *The French National Strategy for Sustainable Development: Report on a Peer Review and Shared Learning Process*. Ministry of Ecology and Sustainable Development and Ministry of Foreign Affairs, France.

Ministry of Environment and Water (2000) *Planning Frameworks State Review in Burkina Faso*. Permanent Secretariat of the National Council for Environmental Management. (<http://www.nssd.net/pdf/bf02.pdf>)

Ministry of State for Environmental Affairs (2001) *The Syrian National Strategy Report for Sustainable Development: For the 2002 World Summit on Sustainable Development*, Johannesburg, South Africa. National Technical Committee for Sustainable Development, Syrian Arab Republic. (http://www.rrcap.unep.org/projects/nsds/pub/syria_natl_asses.pdf)

Nima, F. (2006) *National Assessment Report – Federated States of Micronesia*. (<http://www.un.org/esa/agenda21/natlinfo/wssd/micronesia.pdf>)

Nita, A. (2006) *Papua New Guinea National Assessment Report*. Prepared for UN Department of Economic and Social Affairs Commission on Sustainable Development. (http://www.un.org/esa/sustdev/natlinfo/nsds/pacific_sids/png_nar.pdf)

Organization for Economic Cooperation and Development (OECD) (2000) *Environment Performance Reviews (1st Cycle) – Conclusions and Recommendation 32 Countries (1993-2000)*. Organization for Economic Cooperation and Development, Paris. (<http://www.oecd.org/dataoecd/19/56/2432829.pdf>)

OECD (2001) *The DAC Guidelines: Strategies for Sustainable Development*. Organization for Economic Cooperation and Development, Paris. (<http://www.oecd.org/dataoecd/34/10/2669958.pdf>)

OECD (2006) *Good Practices in the National Sustainable Development Strategies of OECD Countries*. Organization for Economic Cooperation and Development, Paris.

OECD (2007) *Environmental Performance Review of China: Conclusions and Recommendations (Final)*. Organization for Economic Cooperation and Development, Paris.

OECD/DAC (2000) *National Strategies for Sustainable Development: A Guide to Key Issues and Methods of Analysis*. Rolling Draft. Donor-Developing Country Dialogues on National Strategies for Sustainable Development. (<http://www.nssd.net/pdf/Topic7.pdf>)

OECD/DAC (2001a) *Pakistan Country Report: OECD/DAC Country Dialogue on NSSDs Final Workshop*: Santa Cruz, Bolivia, 12-16 February 2001. (<http://www.nssd.net/pdf/paw301.pdf>)

OECD/DAC (2001b) *Country Dialogue Report for Tanzania*. OECD/DAC Country Dialogue on NSSDs. (<http://www.poptel.org.uk/nssd/pdf/tz08ch12.pdf>)

Pinter, L. (2006) *International Experience in Establishing Indicators for the Circular Economy and Considerations for China*. Report to the World Bank, East Asia and Pacific Region. (http://www.iisd.org/pdf/2006/measure_circular_economy_china.pdf)

Pinter, L. and Swanson, D. with Barr, J. (2004) *Strategic Environmental Assessment: A Concept in Progress*. Annotated Training Module Prepared for the World Bank Institute. (http://www.iisd.org/pdf/2006/measure_strategic-env.pdf)

Pinter, L., Bartelmus, P. and Hardi, P. (2005) *Indicators of Sustainable Development: Proposals for a Way Forward*. United Nations Division for Sustainable Development Expert Group Meeting on Indicators of Sustainable Development, New York, 13-15 December 2005. (http://www.iisd.org/pdf/2005/measure_indicators_sd_way_forward.pdf)

Republic of Nauru (2006) *National Sustainable Development Strategies: National Assessment Report*. (http://www.un.org.esa/sustdev/natlinfo/nsds/pacific_sids/nauru_nar.pdf)

Shah, R. (2004) *CSD Indicators of Sustainable Development – Recent Developments and Activities*. Assessment of Sustainability Indicators Workshop, 10-14 May 2004, Prague, Czech Republic. A SCOPE/UNEP/IHDP/EEA Project. (http://www.un.org/esa/sustdev/natlinfo/indicators/scopepaper_2004.pdf)

Skillius, A. and Wennberg, U. (1998) *Continuity, Credibility and Comparability: Key Challenges for Corporate Environmental Performance Measurement and Communication*. Report

Commissioned for European Environment Agency. (<http://www2.bren.ucsb.edu/~delmas/courses/esm210/SKILLIUS%20AND%20WENNERBERG.pdf>)

Swanson, D., Bregha, F., Jacob, K., Pinter, L. and Volkery, A. and (2004) *National Strategies for Sustainable Development: Challenges, Approaches and Innovations in Strategic and Co-ordinated Action – Based on a 19-country Analysis*. (http://www.iisd.org/pdf/2004/measure_nat_strategies_sd.pdf)

Swanson, D. and Pinter, L. (2006) *Governance Structures for National Sustainable Development Strategies – Study of Good Practice Examples*. Prepared for Organization for Economic Cooperation and Development, Paris. (http://www.iisd.org/pdf/2006/measure_gov_structures.pdf)

Thailand Environmental Institute (TEI) (2007) *Sub-Regional Sustainable Development Strategy for the Greater Mekong Sub-Region (First Draft)*. United Nations Environment Programme, Bangkok, Thailand.

United Kingdom Government (2005) *Securing the Future: Delivering UK Sustainable Development Strategy*. (http://www.sustainabledevelopment.gov.uk/publications/pdf/strategy.SecFut_complete.pdf)

United Nations (UN) (2001) *Environmental Management Accounting Procedures and Principles*. Prepared for Expert Working Group on Improving the Role of Government in the Promotion of Environmental Management Accounting. (<http://www.un.org/esa/sustdev/publications/proceduresandprinciples.pdf>)

UN (2001a) *Indicators of Sustainable Development: Guidelines and Methodologies*. United Nations, New York. (http://www.un.org/esa/sustdev/publications/indisd_mg2001.pdf)

United Nations-Department of Economic and Social Affairs (UNDESA) (2002) *Guidance in Preparing a National Sustainable Development Strategy: Managing Sustainable Development in the New Millennium. Background Paper No. 13*. (http://www.un.org/esa/sustdev/publications/nsds_guidance.pdf)

UNDESA (2006a) *Report: Workshop on National Sustainable Development Strategies in Pacific Island Developing States, 4-5 May 2006*. UN Department of Economic and Social Affairs, Division for Sustainable Development, New York. (http://www.un.org/sustdev/natinfo/nsds/workshop/final_report.pdf)

UNDESA (2006b) *National Assessment Report – Solomon Islands*. Support for the Formulation of National Sustainable Development Strategies in Pacific Small Island Developing States. (http://www.un.org/esa/sustdev/natinfo/nsds/pacific_sids/solomon_islands.pdf)

UNDESA (2006c) *National Assessment Report of Commitments to Sustainable Development Programmes in the Cook Islands*. (http://www.un.org/esa/sustdev/natinfo/nsds/pacific_sids/cook_islands.pdf)

UNDESA (2006d) *Niue National Assessment Report on Strategic Sustainable Development*.

http://www.un.org/esa/sustdev/natinfo/nsds/pacific_sids/niue_nar.pdf

United Nations Development Programme (UNDP) (2000) *Sustainable Development Indicators in Mongolia: Report of the Study on Sustainable Development Indicators*. (<http://mirror.undp.org/mongolia/publications/survey%20report.pdf>)

UNDP (2007) *Thailand Human Development Report 2007: Sufficiency Economy and Human Development*. United Nations Development Programme, Bangkok, Thailand. (<http://www.undp.or.th/NHDR2007/index.html>)

United Nations Environmental Programme (UNEP) (2004) *Environmental Indicators Southeast Asia*. United Nations Environment Programme, Bangkok, Thailand.

UNEP (2006) *National Performance Assessment and Subregional Strategic Environment Framework in the Greater Mekong Subregion*. Terminal reports from ADB TA 6069-REG. United Nations Environment Programme, Bangkok, Thailand.

UNEP (2007) *Governance Approaches to National Sustainable Development Strategy in Asia and the Pacific*. Presentation to Workshop on Developing Sustainability Strategies in Asia. OECD/UNDESA/UNESCAP, Bangkok, 8-9 March 2007.

United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) (2003) *Regional Workshop on National Sustainable Development Strategies for Asia and the Pacific – Final Report*. United Nations Economic and Social Commission for Asia and the Pacific, Bangkok, Thailand. (http://www.un.org.esa/sustdev/natinfo/nsds/Report_Bangkok03.pdf)

United States Agency for International Development (USAID) (2005) *Vietnam 2005: Rapid Country Assessment Report: Environmental Compliance and Enforcement Program*. United States Agency for International Development, Washington DC.

Verfaillie, H. and Bidwell, R. (2000) *Measuring Eco-Efficiency: A Guide to Reporting Company Performance*. World Business Council for Sustainable Development. (<http://www.wbcsd.org/DocRoot/SB8NSMPPNP52h08GXunY6/MeasuringEE.pdf>)

Vordzorgbe, S. and Caiquo, B. (2001) *Report on Status Review of National Strategies for Sustainable Development in Ghana*. OECD/DAC Dialogues with Developing Countries on National Strategies for Sustainable Development. (<http://www.nssd.net/pdf/gh02.pdf>)

World Conservation Union (IUCN) (2001) *Summary Report on Nepal's Initiatives: National Strategies for Sustainable Development*. (<http://www.nssd.net/pdf/nepro.pdf>)