

**Integrated Economic, Social and Environmental Planning in the  
Pacific Region**

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# Integrated Economic, Social and Environmental Planning in the Pacific Region

## 1. INTRODUCTION

### 1.1 Background<sup>1</sup>

Governments and development specialists in Asia and the Pacific are struggling with a new paradigm. In one century, the world appears to have gone from a state of boundless nature to one constrained by emerging resource limits. The emergence of global and national environmental degradation of an unprecedented scale has triggered a belief that past development strategies and planning approaches were too narrow and short-sighted. Not only human-made capital is limited but also the capacity of nature to provide raw materials and waste sinks (or natural capital) is limited, and in some cases may be the most limiting constraint. The traditional image of a social “paradise” in the Pacific region is gradually being replaced by the journalistic “arc of instability” (and one could add vulnerability).

This complex intertwining of economic factors, natural resources, and environment protection is no longer adequately handled by traditional planning techniques. Development planners and decision makers are now expected to integrate social<sup>2</sup>, economic, and environmental factors at all levels of planning. In the Pacific region, this realization is at the highest political level. In the region, the Forum Economic Ministers Meeting (FEMM) in 2002 has considered the importance of links between environment imperatives and economic development, and has made this a theme for the 2003 annual meeting of FEMM. The SPREP Environment Ministers’ Statement (in Guam 2000) called for a collaborative framework for mainstreaming environmental protection within the region’s development agenda. This plea was reiterated at the 13<sup>th</sup> SPREP Environment Ministers’ Forum in Majuro in 2002. Of course, planning alone, no matter how integrated, will not be sufficient for sustainable development to emerge. The fruits of integrated economic and environmental planning are only likely to be enjoyed in a social, cultural, and political milieu that is fully supportive.

This review examines the practice of integrated economic and environmental (E-c-E)<sup>3</sup> planning in the Asian Development Bank (ADB) member countries at all levels and concludes that a nested hierarchy (a connected series from global to project levels) of integrated E-c-E planning could play a pivotal role in sustainable development in the region. Furthermore, evidence from ADB case studies suggests that E-c-E planning may be most affordable and effective at the sub-national level.

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<sup>1</sup> For the sake of brevity, all references have been deleted. A selected list of key references is attached and the full list is available from the author.

<sup>2</sup> Throughout the discussion on sustainable development, the shorthand term “social” is assumed to include all forms of human to human interaction. Thus “social” includes community formation, stakeholder participation, institutional settings, ethnicity, cultural groups and traditions, political processes and conflict mediation, etc.

<sup>3</sup> Integrated economic and environmental planning integrates socio-cultural, economic, natural resource, and environmental objectives, incorporates stakeholder participation, and develops an integrated package of policies, programmes, and plans to achieve those objectives in a sustainable manner.

The review draws from the literature (i) the historical evolution of integrated economic and environmental planning; (ii) a description of the application of integrated economic and environmental planning from the global level to the project level, with particular emphasis on applications in Asia; (iii) an outline of the planning methodologies used at each level; and (iv) a brief review of supporting tools and techniques. The review (Sections 2-9) is followed in Section 10 by a potential model for E-c-E planning at the sub-national level in the Pacific region.

## **2. EVOLUTION OF INTEGRATED ECONOMIC AND ENVIRONMENTAL PLANNING**

### **2.1 Driving Factors**

Economic, social and environmental factors must be thoroughly integrated at all levels of society, to avoid the unintended consequences of unilateral development in any one factor and to contribute to sustainable development. Excessive emphasis on economic development tends to lead to major pollution problems, which tend to have greatest impact on poor communities. Excessive attention to nature conservation at the expense of economic development, would not generate enough national income to protect natural ecosystems.

Planning is undertaken because a society wishes to envision and influence the future rather than simply let it emerge. A plan may be defined as a purposeful, forward looking strategy or design, often with coordinated priorities, options and measures, that elaborates and implements policy. Planning involves setting goals or targets, refining policies, setting minimum standards, allocating resources and providing funds for measures to achieve the stated aims and objectives. Implementation involves decisions about which priority programmes or projects should receive scarce funds, as well as carrying out those programmes or projects.

### **2.2 Historical Perspective**

The integration of economic and environmental planning has a long history, possibly starting with the French sociologist Le Play in 1877, who recognized the need to integrate "folk-work-place" or in modern parlance "communities-economic activities-ecosystems". In the late nineteenth century, Patrick Geddes saw a parallel formulation of "ecosystem-function-organism" and coined the term "valley section" to encapsulate this integrative classification, later encompassed by the term "human ecology". Lewis Mumford extended the rural human ecology analysis by pointing out that the cities are an extension of the countryside. In the 1960's, Ian McHarg applied the principles of Geddes and Mumford to design ecological living spaces in suburban USA, using techniques that anticipated the development of computerized Geographic Information Systems.

Modern environmental consciousness in mainstream planning activities dates from a string of environmental disasters in the 1960s, highlighted by mercury poisoning in Minamata, Japan, the pesticide revelations of Rachel Carson's "*Silent Spring*", the Torrey Canyon oil spill and others. These disasters captured the imagination and concern of the public through vigorous media attention. Previous environmental disasters, such as the Dust Bowl of the 1930s, had generated similar outpourings of concern, but the environmental issues of the 1960s and 1970s did not fade as quickly as previous environmental issues had done. The institutional response to such crises

predictably led governments to establish new organizations, such as the US Environment Protection Agency and Council on Environmental Quality, but also spawned new planning tools and techniques, most notably EIA. However, throughout the 1970s and 1980s, the impacts of successive environmental disasters demonstrated that contemporary planning techniques and the new environmental agencies (even when armed with their new tools and techniques) were incapable of protecting the environment.

### **2.3 Planning for Sustainable Development**

Since the 1970's, an emerging expectation was that planning should recognize the linkages between human-made and natural capital and integrate social, cultural, political, economic and environmental issues. The Stockholm Conference on the Human Environment in 1972 called for comprehensive planning to incorporate environmental concerns. In 1980, the United Nations Environment Programme (UNEP), International Union for the Conservation of Nature (IUCN) and World Wildlife Fund (WWF) launched the *World Conservation Strategy*, linking living resource conservation and sustainable development. This was followed by the United Nations (UN) General Assembly adoption of a *World Charter for Nature* in 1982. The World Commission on Environment and Development (WCED) in 1987 concluded that sustainable policy paths require the ecological dimensions of policy to be considered at the same time as economic and other dimensions. Subsequently, the United Nations Conference on Environment and Development (UNCED) at Rio de Janeiro in 1992, *Agenda 21*, endorsed by more than 150 nations, called for national sustainable development strategies to be developed which would integrate social and economic development with the environment.

*Agenda 21* and earlier strategies did not prescribe methods of producing such integrated plans, but assumed that sustainability would be built into existing planning processes. As exposed by the 1987 Brundtland Commission's report, *Our Common Future*, these excellent environmental strategies and plans were rarely linked to economic development plans, were never adequately financed, had little political support, and barely influenced major infrastructure or natural resource development plans. Until today, there is little evidence that this integration has occurred in either mainstream development planning or environmental planning. Economic planners and ecologists continued to work in separate worlds until very recently.

In the Pacific region, considerable attention has been paid in the late 1980's to environmental planning as a stand-alone activity, especially in the preparation of National Environmental Management Plans prior to the 1992 Earth Summit. Less attention has been paid to implementation of these plans and the environmental problems they were intended to address have not gone away. Therefore, while it is encouraging to observe that the notion of integrated economic and environmental planning is still on the Pacific agenda, the challenge of actualizing the concepts remains.

### **2.4 A New Paradigm of Eco-Development**

In the 1980s, a new paradigm of ecological economics and "eco-development" began to emerge. The evolutionary shift in paradigm to "ecological economics" has (i) a space frame from global to local (with a hierarchy of scales), (ii) a time frame from days to aeons (with multi-scale synthesis), (iii) a species frame that connects humans and nature at the ecosystem level, and (iv) a primary macro-goal of seeking a sustainable

ecological-economic system. The activist slogan "think globally, act locally" reflected a new ecocentric paradigm. Based on the global-local space frame, integrated E-c-E planning can be viewed as a nested hierarchy of plans (Figure 1), which is used as the organizing principle for the remainder of this paper.

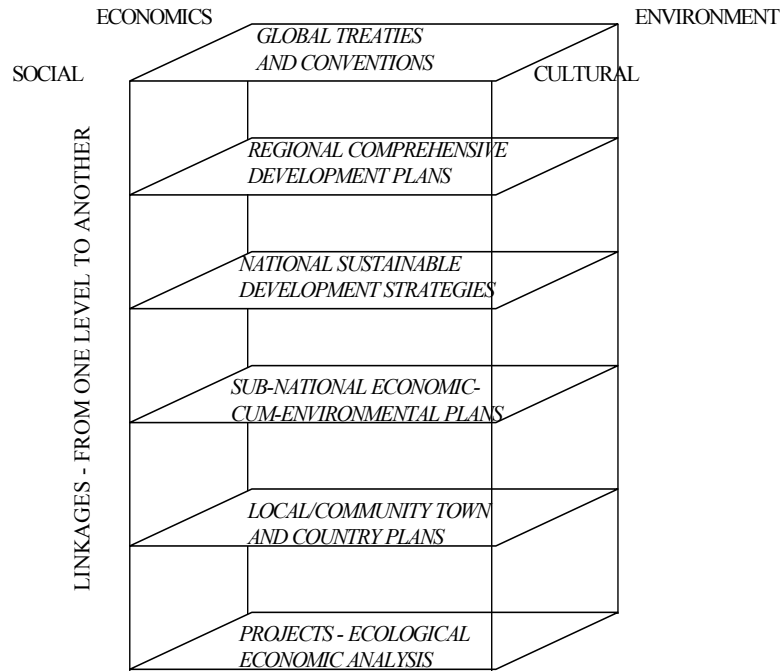


Figure 1. Integrated Economic-cum-Environmental Planning System - Global to Project Levels

### 3. GLOBAL PLANNING LEVEL

**3.1 Strategic, Sector and Action Plans** - As the paradigms have shifted, NGOs and political activists have attempted to bring the concept of thinking globally and acting locally into the international decision making arena and have worked towards achieving a global consensus on integrating economic and environmental concerns. Table 1 highlights the global plans and strategies, which have benefited from the incorporation of this new concept.

Table 1 Global Plans and Strategies

Plan or Strategy	Year
<b>Thematic Plans</b>	
World Population Action Plan	1974
Plan of Action to Combat Desertification	1977
Global Strategy for Health for All by the year 2000	1981
World Charter for Nature	1982
Strategy for Protection of the Marine Environment	1983
Tropical Forest Action Plan	1987
Strategy and Agenda for Action for Sustainable Agriculture and Rural Development	1991
Global Biodiversity Strategy	1992
<b>Comprehensive Plans</b>	
Stockholm Conference Action Plan	1972
World Conservation Strategy	1980
Our Common Future	1987
Caring for the Earth: A Strategy for Sustainable Living	1991
Agenda 21	1992

**3.2 Treaties and Conventions** – At the policy level, global consensus has been largely achieved for environmental issues which do not threaten the fundamental economic basis of modern existence, such as ozone reduction, trade in endangered species, preservation of wetlands, pollution from ships, and long range transboundary air pollution. For more fundamental issues, such as global carbon dioxide reduction and climate warming, which impinge on national economic development options, consensus has been more elusive.

Table 2 Subjects of Global Legally Binding Treaties (UNEP 1991)

Subject of Treaty	Number of Treaties	Percent
Antarctica	4	2.8
Atmospheric Pollution	7	5.0
Biological Diversity – Fauna	35	24.8
Biological Diversity – Flora	20	14.2
Cultural Heritage	3	2.1
Energy	3	2.1
Fisheries	20	14.2
Forest Resources	3	2.1
Marine Environment	88	62.4
Nuclear Energy and Materials	13	9.2
Ozone Layer Protection	4	2.8
Peace and Environment	6	4.3
Pests and Diseases	6	4.3
Toxic and Hazardous Substances	6	4.3
Water Resources Management	12	8.5
Working Environment	7	5.0
Total Number of Treaties*	141	100

\* Note some treaties deal with more than one subject

Dating from the 1933 London Convention Relative to the Preservation of Fauna and Flora in their Natural State, there are currently several thousand treaties/agreements/conventions/protocols on environmental issues. UNEP publishes an on-line database on Selected Multilateral Treaties in the Field of Environment. Classification of the subject matter of treaties in the database is summarised in Table 2.

Asian and Pacific nations have a propensity to enter into international agreements concerning environmental issues that would (if implemented) have a significant impact on economies of the region, although the record to date in implementing such agreements is less than laudable. International instruments can be divided into (i) legally binding, entered into force, and changed behaviour; (ii) entered into force, but not changed behaviour, often because no enforcement mechanism was included; and (iii) non-legally binding texts, which are in the majority. Governments are conscious of pressure from domestic interest groups to progressively move from type (iii) agreements to type (i) and thus strongly defend their positions even over non-legally binding text.

The Pacific region has adopted many, if not most, of these treaties and conventions. The dates of accession of some of the corresponding key regional instruments are as follows:

- **Convention for the Conservation of Nature in the South Pacific** - Entry into Force 26 June 1990. Depository: Samoa [Art XII as revised Guam 2000].
- **Convention for the Protection of the Natural Resources and Environment of the South Pacific Region** - Entry into Force 22 August 1990. Depository: Director (Secretary-General): [Pacific] Forum Secretariat [Art 29 and 2(h)].
- **Protocol for Prevention of Pollution of the South Pacific Region by Dumping** - Entry into Force 22 August 1990. Depository: Director (Secretary-General): [Pacific] Forum Secretariat [Art 29 and 2(h)].
- **Protocol Concerning Cooperation in Combating Pollution Emergencies in the South Pacific Region** - Entry into Force 22 August 1998. Depository: Director (Secretary-General): [Pacific] Forum Secretariat [Art 29 and 2(h)].
- **Convention to Ban the Importation of Hazardous and Radioactive Wastes and to Control the Transboundary Movement and Management of Hazardous Wastes within the South Pacific Region.** Depository: Secretary-General, South Pacific Forum Secretariat [Art.27]

**3.3 Methodologies** - To the extent that there is a common approach to planning and implementation of global/regional agreements and conventions, strategic and thematic plans, it is generally as shown in Figure 2, in a highly simplified description of the international diplomacy involved. Implementation of the agreements may be according to a time frame set down in the document or may rely on follow-up meetings or protocols or subsequent national legislation and government programmes. Following the failure to implement many previous global agreements, public commitments of funding arrangements for implementation have been sought during recent international summits or meetings. For comprehensive agreements, such as *Agenda 21*, separate organizations may be

established to monitor implementation, or an existing organization, such as a UN body may be assigned this role.

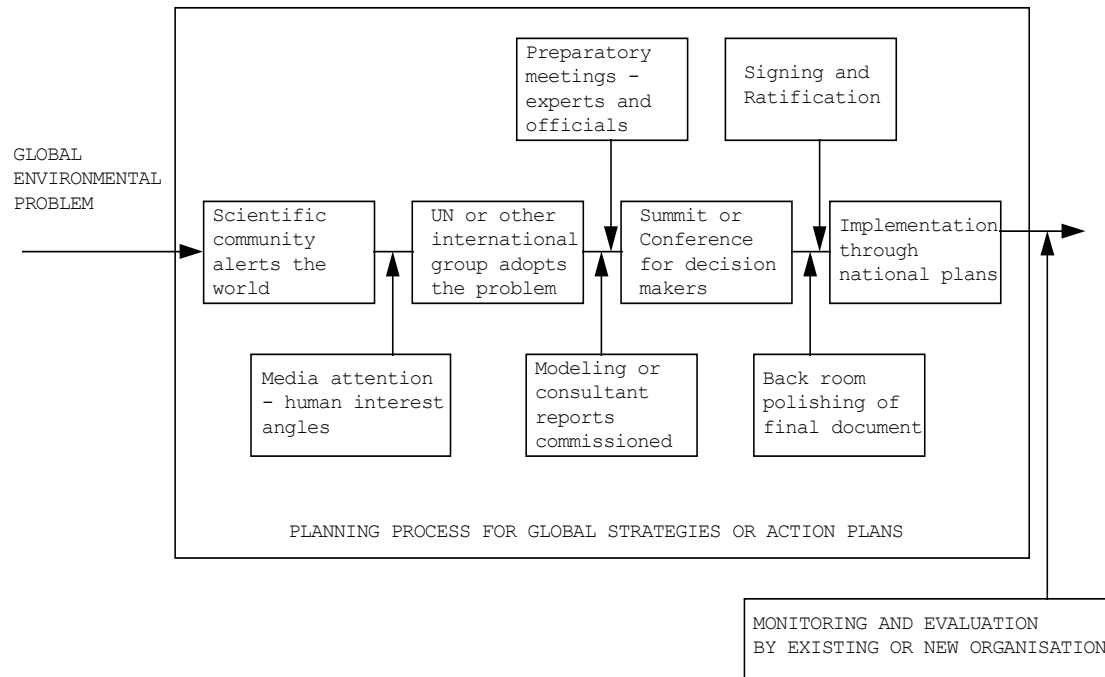


Figure 2 Planning Approach for Global Strategies and Action Plans

**3.4 Supporting Tools and Techniques** - Underpinning several of the global agreements and plans are complex computer models that have served to alert the scientific community of potential and emerging global crises. Some of these models integrate economic and environmental parameters. For example, the World3 model, which underpinned *The Limits to Growth*, consists of 149 equations and tables, including 18 on population, 81 on economics, and 18 on natural resources and pollution. This model is one of the most criticized models ever produced, primarily because such models can be made to produce continued growth or collapse depending on assumptions about unknown, and possibly unknowable, parameters. Nudging a parameter here or tweaking one over there, and collapses give way to continued growth. Newer models include a hard-wired segment (without doubts about the relationships) and a soft level, utilizing scenario setting. Much of the recent work on global climate change depends on coupled atmospheric-oceanic models, only possible with modern computing power.

#### 4. REGIONAL PLANNING LEVEL

**4.1 Regional Sustainable Development Plans** - Leading up to the 1992 Earth Summit, several regional comprehensive economic and environmental plans were prepared, such as:

- |  |      |
|--|------|
| (a) <i>Our Own Agenda</i> - Latin America & Caribbean                        | 1990 |
| (b) <i>Economic Policies for Sustainable Development</i><br>- Southeast Asia | 1990 |
| (c) <i>The Pacific Way</i> - Pacific Islands                                 | 1991 |

*Our Own Agenda* was supported by the Inter-American Bank and United Nations Development Programme (UNDP). It clearly recognized the linkages between developed and developing countries, claiming that industrialized countries have incurred an ecological debt with the world and based much of its analysis towards an anticipated negotiation with the "North" to recover this debt at Rio de Janeiro.

*Economic Policies for Sustainable Development* was seen as the Asian regional response to the Brundtland Commission's challenge, laid down in *Our Common Future*, to prepare regional and national plans for sustainability. With funding from ADB and co-financing by Denmark, Finland, Norway and Sweden, seven developing countries, Indonesia, Korea, Malaysia, Nepal, Pakistan, the Philippines and Sri Lanka agreed to participate.

*Environment and Development: A Pacific Perspective* and the companion volume *The Pacific Way: Pacific Island Developing Countries' Report to UNCED* grew out of a process initiated by the South Pacific Regional Environmental Program (SPREP) and was financially supported by ADB and UNDP. The process enabled SPREP's 27 member countries, as a region, to prepare a consolidated position for UNCED. In particular, *The Pacific Way* contains the priority actions for sustainable development for the 14 Pacific Island Developing Countries (PIDCs).

#### **4.2 Regional Growth Plans**

In addition to regional plans involving entire countries, there is a subset of regional plans that involves parts of countries combining to prepare "regional growth plans". Throughout the Asian region, there are many growth triangles (or quadrangles), which seek to combine the comparative advantages of adjacent countries, including (i) Golden Quadrangle - Burma, Laos, China and Thailand, (ii) Northern Triangle - Peninsular Malaysia (Kedah, Perak, and Perlis), southern Thailand (Satun, Songkhla, Yala, Narathiwat, and Pattani) and North Sumatra and Aceh in Indonesia, (iii) Southern Triangle - Johore, Singapore and the Riau Islands of Indonesia, (iv) Eastern Triangle - Malaysia, Brunei, Indonesia, and southern Philippines, (v) South China Triangle - Taiwan, Hong Kong and southern PRC, and (vi) Tumen River Triangle - North Korea, northern China, Mongolia, and Russia. Generally, these plans cannot be regarded as integrated economic and environmental plans, although they could benefit from the approach.

#### **4.3 International River Basin Plans**

As a defined ecosystem, international river basins offer the potential for an integrative economic and environmental planning approach. Possibly the earliest international river basin plan in Asia was for the Mekong River Basin, initially involving the lower riparian countries of Thailand, Laos, Cambodia and Vietnam. The Interim Committee for the Development of the Mekong River Basin was established in 1957. One of the earliest regional plans prepared for the basin was the *Indicative Basin Plan for the Mekong River*. A Revised Indicative Plan for the development of land, water and related resources of the lower Mekong Basin was released in 1987. Since then more than \$70 million has been spent on planning and management in the Basin. In 1995, the lower riparian countries agreed to reconstitute the Mekong River Commission (MRC) and the upper riparian countries, Myanmar and PRC were invited to join. Less comprehensive plans have been prepared for the Ganges and Salween Rivers.

#### 4.4 Regional Environmental Plans

The Association of South East Asian Nations (*ASEAN Strategic Plan of Action on the Environment* 1994-98) is an example of the perceived benefits from regional cooperation on environmental issues. The ASEAN Plans began in 1977 and have been revised four times since then. The objectives of the current plan are to (i) respond to Agenda 21 recommendations requiring priority action in ASEAN; (ii) encourage integration of environmental factors in all development processes at national and regional levels; (iii) harmonize environmental quality standards; (iv) harmonize policy directions and undertake joint actions to address common problems; and (v) study the implications of the ASEAN Free Trade Area on the environment, and integrate sound trade policies with sound environmental policies. The Plan contains ten strategic thrusts and 27 supporting actions to attain the objectives. Similar to many other international plans, the ASEAN Plan is under-funded, despite creation of an ASEAN Environment Trust Fund.

#### 4.5 Methodologies

##### (a) Regional Sustainable Development Plans

The planning approach taken by *Our Own Agenda* was essentially descriptive, starting with a comprehensive inventory of environmental and natural resources degradation, representing a hundred years of non-sustainability. The strategy to deal with these issues was seen as requiring a set of guidelines to selectively act on the conditions preventing sustainable development. These conditions were (i) eradication of poverty, (ii) sustained use of natural resources, (iii) agroecological zoning, (iv) technological development compatible with social and natural reality, (v) a new economic-social strategy, (vi) social organization and mobilization, and (vii) government reform. Each condition generated a set of recommended actions. To develop the details of the strategy, a follow up Environmental Action Plan in Latin America and the Caribbean was to be developed with UNDP assistance.

For *Economic Policies for Sustainable Development*, country studies were commissioned to examine the extent to which recent development policy and practice took sustainability into account. Particular attention was paid to the relative importance of pressures on the resource base from the combined effects of population growth and the intensity and type of economic activities. Each country report recommended policy modifications to protect the needs of future generations as well as to enhance current economic welfare. The country studies were incorporated into a synthesis report for the region and debated at a Ministerial-level Conference on Environment and Development in Asia and the Pacific, which resulted in a regional declaration of political support for sustainable development, carried forward to the Earth Summit in 1992.

A similar planning process was adopted in *Environment and Development: A Pacific Perspective*. To start the process, national reports were compiled by a task force of government officials, consultants and NGOs for each PIDC. These were mostly based on the format provided by the UNCED Secretariat for country reports. The synthesis report, *Environment and Development* consists of summaries of the country reports, followed by a synthesis chapter and then priorities for future action. *The Pacific Way* is a shorter executive summary summarizing the issues and constraints to sustainable development and the consensus on priority actions. Looking back on these documents

reminds us that comprehensive environmental plans for the Pacific region have been available for more than a decade. We must ask why they were not implemented.

(b) Other Regional Plans

The other forms of regional planning appear not to have been as comprehensive in either the economic or environmental dimensions. Regional growth plans have concentrated on economic parameters, international river basin plans have concentrated on water resources management, and regional environmental plans have generally ignored the economic dimension. Hence there are few useful methodological insights to be drawn from these planning approaches.

## 5. NATIONAL PLANNING LEVEL

### 5.1 National Environmental Plans

The wide variety of national plans with varying degrees of integration of economic and environmental factors has been characterized as follows (Table 3).

Table 3. Types of National Plans Covering the Environment

Type of Plan	Brief Description
Sectoral Master Plans (SMP)	Sectoral expression of Five Year Development Plans, for sectors such as forestry, water resources, and agriculture.
National Tropical Forestry Action Plans (TFAP)	Sponsored by FAO as part of the Tropical Forestry Action Programme
National Plans to Combat Desertification (NPCD)	Sponsored by the Permanent Committee for Drought Control in the Sahel
State of the Environment Reports (SER)	Status reports, rather than strategies, but often identify emerging environmental and natural resource problems
Conventional National Economic Development Plans (NEDP)	Usually 5-year plans, focusing on fiscal management and infrastructure, but may mention the environment sector
National Conservation Strategies (NCS)	Provide cross-sectoral analysis of conservation and resource management issues.
National Environmental Action Plans (NEAP)	Provide a framework for integrating environment into a nation's overall economic and social development programmes, sponsored by World Bank.
Green Plans (GP)	Comprehensive, national programmes for environmental improvement and resource stewardship
National Environmental Management Plans (NEMS)	Similar to National Environmental Action Plans but applied to Pacific Island developing countries.
National Sustainable Development Plans (NSDS)	Comprehensive plans based on the structure and format of <i>Agenda 21</i> .

Virtually all countries in the Asia Pacific region have undertaken some form of national plan covering the environment. These plans have been donor-driven and focus on environment, with economics as a minor consideration

## 5.2 Methodologies

To overcome the problems of previous national sustainable development plans (especially the lack of integration with national economic planning), National Strategies for Sustainable Development (NSDS) have been proposed by IUCN as the ideal planning approach to implement *Agenda 21*. A NSDS is defined as a participatory and cyclical process of planning and action to achieve economic, ecological and social objectives in a balanced and integrated manner.

To prepare a NSDS, the IUCN *Guidelines* set out ten steps (i) define goals, targets and standards; (ii) analyze ecological, economic and social issues, clarifying linkages, identifying policy gaps; (iii) prepare sectoral and cross-sectoral policies and plans; (iv) identify and apply practices to sustain the resource base of the economy; (v) determine priorities for action, evaluating costs and benefits and the trade-offs; (vi) allocate limited resources; (vii) build capacities to handle complex and interrelated issues; (viii) rationalize legislation; (ix) improve decision making through better information and analytical techniques, and by enabling those most affected by decisions to contribute to them; and (x) develop understanding and build consensus so that decisions have strong support. However, there is little guidance on how to carry out each step.

A unique approach has been adopted by the Netherlands in drawing up its National Environmental Policy Plan (NEPP) 2. Firstly, it was based on the earlier NEPP1, which drew up a strategic, long term policy plan and set out policy objectives for 2000 and 2010. Secondly, it evaluated experience with implementation of NEPP1, as the basis for drawing up NEPP2. Thirdly, it explicitly linked international, regional, national, and local objectives. Finally, it was based on consultation and written agreements with specific target groups, responsible for implementation of mutually agreed, quantitative targets, linked to the overall carrying capacity of the environment. It also clearly recognized the financial implications for each target group and explicitly highlighted the macro-economic impacts.

In the Pacific region, various national environmental plans were under preparation in the lead up to and following the World Summit on Sustainable Development, and no doubt additional work will be undertaken to prepare for the Barbados+10 meeting. Surprisingly, these efforts are generally not backed by a comprehensive assessment of why previous plans were not implemented. They also rarely focus on issues affecting implementation.

## 5.3 Supporting Tools and Techniques

Recognizing that much of the statistical data in developing countries, especially in the Pacific region, is of little use for planning integrated economic and environmental futures at the national level, sustainable development planning may need to be supported by (i) environmental information systems, (ii) state of the environment reports, (iii) natural resources accounting, and (iv) environmental indices. Of these, data collection leading to reliable state of environment reporting is most important. Few Pacific countries can be expected to have national accounts systems sophisticated enough to include natural resource accounting, when even some of the economic information is of dubious provenance.

(a) Environmental Information Systems

The NSDS *Guidelines* recommend a Sustainable Development Information System to be developed as an integral step in the planning process, comprising (i) trends in resources and ecosystems, their quality and quantity, and ecological limits; (ii) policy and economic signals underlying resource/ecosystem use; (iii) responses of different sectors and population groups to these policy and economic signals; (iv) the importance and relevance of the resource base and ecosystems for different groups; (v) detailed sectoral analyses on forestry, agriculture, human settlements, fisheries, energy, transport, industry, and tourism; (vi) cross-sectoral analyses; (vii) provisional assessment of the sustainability of resource/ecosystem use by major economic sector or population groups; (viii) the principal functional/institutional constraints to sustainability; (ix) definition of priority issues; and (x) outline policy recommendations.

(b) State of Environment Reports

The major aims of SERs are (i) to improve understanding by decision makers of the state of the environment over time, so that they can evaluate the results of past actions and identify emerging problems; (ii) to improve public understanding about the state of the environment, to foster the necessary mandate for action; and (iii) to incorporate environmental considerations more fully into the decision making process. Although few developing countries have legislation requiring regular reports on environmental quality, there is a trend towards annual reports of varying quality and coverage.

Generally the scope of SERs includes (i) discussion on the adverse effects of economic activities on the environment; (ii) the status of resource use and population pressures; (iii) changes in environmental quality over time; (iv) effectiveness of previous policies, plans, or legislation; and (v) emerging problems requiring attention. Most SER reports compile and analyze existing environmental data.

In addition to the statistics collected nationally, UNEP has produced annual SERs since 1974 and a Global State of Environment Report (1972-1992). UNEP is also committed to release biennial Global Environment Outlook (GEO) reports, leading up to decadal Global State of the Environment reports. Its first report, GEO-1 was released in 1996. The Economic and Social Commission of Asia and the Pacific (ESCAP) has produced similar reports for the Asia-Pacific region. UNEP's Environment Assessment Program - Asia Pacific has been working towards a common framework for national SERs.

(c) Natural Resource Accounting

Natural resource accounting or environmental accounting<sup>4</sup> involves modifying the UN System of National Accounts (SNA) to reflect environmental and natural resource issues. Major adjustments to the SNA to reflect these broader dimensions involve inclusion of defensive expenditures to protect or restore the environment, and deductions for the depletion and degradation of natural resources. The UN Statistical Commission, mandated to revise the SNA, decided to maintain consistency and recommended interim satellite accounts linked to the SNA. *A Handbook of Integrated*

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<sup>4</sup> Natural resource accounting attempts to correct national accounts for the depletion of natural capital, while environmental accounting is a broader exercise involving more complex issues of defensive expenditures, damage repair costs etc.

*Environmental and Economic Accounting* has been prepared (and tested in Mexico, Papua New Guinea and Thailand) and has become the international standard for this approach (Meyer 1993).

In Asia-Pacific, some empirical work on satellite accounts has been undertaken. Natural Resource Accounting efforts were undertaken in Indonesia, India, Thailand, Papua New Guinea, Nepal, Pakistan, PRC, and Sri Lanka, but to date, no country has overhauled its core national accounting system to incorporate natural resource depletion, or include other environmental valuations. The main purpose of the PNG study was to test the methodologies rather than to attempt to give an accurate assessment of the trends regarding key modified economic indicators in PNG. Three experts visited the country for two and a half weeks collecting information available in various ministries and other governmental and non-governmental institutions and then processed that information without further involvement of the Government. The study did not attempt to institutionalize satellite accounts within the Government.

(d) Environmental Indices

An Index of Environmental Quality, which would measure the defensive and repair costs to achieve international minimum environmental quality standards, would be a useful complement to the Human Development Index and GNP.

However, acceptable national standards vary from country to country, casting doubt on the damage repair cost approach. Also, the costs of remediation imply a technology choice and the repair mechanism itself may have unintended side effects, which may lead to double counting of benefits or under-estimation of costs. It is also difficult to incorporate social issues such as equity or gender differences, although these may have a major bearing on perceptions of environmental quality. Finally, the large amounts of data required may not be available in many developing countries.

These methodological problems have led to a simpler "environmental diamond" approach, based on principal components analysis, akin to the World Bank's "development diamonds". These diamonds scale factors on vertical and horizontal axes for each country, compared to an accepted standard. The South Pacific Applied Geoscience Commission (SOPAC) has also completed extensive work on an Environmental Vulnerability Index (<http://www.sopac.org.fj/Projects/index.html>) and maintains a database on the component criteria.

## **6. SUB-NATIONAL PLANNING LEVEL**

### **6.1 Sub-National Plans**

"Regional" and "bio-regional" planning in the literature is incorporated under this heading, but the term sub-national is used to distinguish it from the multi-national regions discussed above and the occasionally mystical connections with bio-regions. While regional economic development planning has a long history, environmental aspects tended to be omitted until the late 1970s. Geographically based sub-national plans in Asia-Pacific have been undertaken at the level of river basins, integrated area development regions, provinces, islands, and biosphere reserves.

(a) River Basin Plans

During the 1960s, large-scale river basin plans were popular, many funded by the World Bank, such as the Cisanggarung, Brantas River, and the Citanduy River Basin Plans in Indonesia. For the Ganges River in India, a Central Ganga Authority was created and an Action Plan prepared in 1986. In 1995, the Indian Supreme Court stopped further funding of the plan implementation because costs were twice as high as originally estimated, many installations exist only on paper, and those that were built are not operating.

In Bangladesh, the Flood Plan Coordination Office (FPCO), under a nation-wide Flood Action Plan (FAP), commissioned a series of regional water resources studies, corresponding to major river basins. The total cost of the 26 FAP studies and pilot projects was about US\$150 million over a period of 5 years. It resulted in 65 investment proposals in the water sector amounting to US\$3 billion. However, it too has been largely abandoned by the Government as being too infrastructure oriented, too costly, and inequitable.

One of the few examples in the Pacific region is WWF's Kikori Integrated Conservation and Development Project in Papua New Guinea, which operates within one of the largest remaining tracts of undisturbed tropical forest in the southern hemisphere. The Kikori Basin covers an area of 2.3 million hectares and stretches from the extensive mangrove wetlands of the Gulf Province to the alpine grasslands of Doma Peaks in the Southern Highlands Province.

(b) Integrated Area Development Plans

In the 1970s, recognizing that rural development was extremely complex and involved many government departments and cross-sectoral activities, integrated area development projects became fashionable, such as the Nusa Tenggara Timor Integrated Area Development Project, Indonesia; Pahang Barat Integrated Area Development Project, Malaysia; and Palawan Integrated Area Development Project, Philippines. Typically, these projects involved large study areas with investment plans in infrastructure, institutional capacity building, beneficiary participation etc., but limited attention to environmental issues. Few, if any, such projects were undertaken in the Pacific region.

(c) Integrated Economic-cum-Environmental Plans

In the 1980s, ADB built on the long established regional planning processes in Latin America and commissioned a series of integrated E-c-E plans (Table 4).

Table 4 Summary of Sub-National E-c-E Studies in Asia

Case Study (Country)	Area (‘000 km <sup>2</sup> )	Cost of Study (US\$)	Dates
Han River Basin (Republic of Korea)	24	125,000	1982-84
Laguna Lake Basin (Philippines)	3.8	250,000	1976-78 1984
Palawan Integrated Area Development (Philippines)	12	350,000	1983-84
Eastern Seaboard (Thailand)	13	n.a.	1985-86
Songkhla Lake Basin (Thailand)	9.1	3,500,000	1984-85
Samutprakarn (Thailand)	0.9	295,000	1987
Klang Valley (Malaysia)	2.8	350,000	1986-87
Segara Anakan (Indonesia)	0.2	1,700,000	1982-85
Haihe Basin (PRC)	43.1	1,240,000	1993-94
Hainan Island (PRC)	34	600,000	1992-93
Coastal Environment (Indonesia)	n.a.	1,200,000	1994-95
Daro-Mukah Coastal Zone (Malaysia)	8.9	600,000	1996-97

## 6.2 Methodologies

In 1969, Kates defined comprehensive environmental planning as planning, over extensive space, the conscious organization and manipulation of all aspects of the physical environment for human ends. Kates recognized the need to incorporate economic considerations into environmental planning, but concluded that the necessary tools and techniques were not yet available. In the late 1960s and 1970s, assuming a rather simplistic mathematical formulation of the planning process, "regional scientists" attempted to develop a systems approach to planning based on general systems theory and cybernetics. This was seen as a response to a situation where urban and regional planners had not been clear what they were doing: practice and theory, ideology and mythology, inter-professional and intraprofessional dispute, all intermingled to produce a confusion of thought and effort. This modeling approach led to several supporting tools and techniques discussed later, but is no longer used as the only approach.

The Department of Regional Development of the Organization of American States (OAS) prepared one of the most influential reports on the incorporation of environmental considerations into regional development planning. Since 1969, OAS had assisted 25 Latin American and Caribbean countries to prepare 75 integrated E-c-E studies at the sub-national level. These studies cost more than US\$50 million and formulated about US\$3.8 billion in development projects, about half of which were under implementation. The OAS planning process, as documented in 1984, is synthesised in Table 5.

Table 5 Process of Executing a Regional Development Planning Study

	<b>Phase I Development Diagnosis</b>	<b>Phase II Project Formulation and Preparation of Action Plan</b>
<b>Activities</b>	<b>Diagnosis of Region</b> * sectoral analysis * spatial analysis * institutional * environmental * synthesis: needs, problems, potentials, constraints <b>Relation to National            Plans, Strategies,            Priorities.</b> <b>Development Strategies</b> * formulation and analysis of alternatives * identification of project ideas	<b>Project Formulation</b> (profile or pre-feasibility study) and evaluation. * production sectors * support services * social development * infrastructure * urban services * natural resources management <b>Action Plan Preparation</b> * project packages * policies * incentives * investment timetable * funding sources * training and institutional development
<b>Products</b>	<b>Interim Report</b> * diagnosis of region * preliminary development strategy	<b>Final Report</b> * development strategy * action plan * projects * supporting actions
<b>Time Frame</b>	9 to 12 months	12 to 18 months

At its core, the OAS process consists of the following steps (i) compare information on natural resource development potential with existing uses of resources; (ii) analyze population growth and projected demands for good and services, especially social services; (iii) interview local people during field studies to identify new project ideas; (iv) determine which needs are being fully satisfied by existing natural resources and whether they need to be enhanced or protected; (v) identify a small number of projects for immediate implementation, before the study is completed; and (vi) involve the private sector as early as possible to facilitate prompt action on promising projects.

In Asia-Pacific, ADB departed slightly from the OAS approach. The key difference is that OAS recommends that all groups likely to conflict over resource allocation should be invited to participate in the analysis phase, and conflicts should be resolved through third party mediation, before positions harden. Perhaps reflecting greater sensitivity to public participation in the Asian and Pacific regions, the ADB approach places less weight on conflict resolution and suggest (rather timidly) that conflicts should be sorted out by decision makers.

### 6.3 Supporting Tools and Techniques

The development of the mathematical line of investigation in sub-national planning in the 1960s led to increasingly complex models, such as Forrester's Urban Dynamics Model,

although contemporary computer limitations hampered such developments. While mathematical modeling has remained a useful adjunct to integrated economic and environmental planning at the sub-national level, there are few proponents today who would advocate modeling as the only tool. Reality has proved to be more complex than the most complex of models. More qualitative approaches, in which quantitative models may be embedded, are now favoured. The development of GIS software, which can manipulate massive amounts of spatially related data, and data-rich remote sensing images has led to a resurgence of interest in modeling approaches.

## **7. LOCAL/COMMUNITY/URBAN PLANNING LEVEL**

### **7.1 Local Sustainable Development Plans**

One of the successes following the Earth Summit in 1992, has been the number of Local Agenda 21 plans prepared. The International Council for Local Environmental Initiatives (ICLEI) found that more than 2,000 local governments from 49 countries had prepared local Agenda 21s. The best practices were placed on Internet as part of the United Nations Conference on Human Settlements (Habitat II). Over 330 European cities signed the Aalborg Charter "Towards Sustainability" and the Lisboa Action Plan: From Charter to Action, in October 1996. The CSD concluded that local level strategies and plans have proved more successful than many of those at the national level in terms of making a direct impact, primarily because of the NGO/grassroots participation in decision making.

### **7.2 Comprehensive Local Plans**

Five categories of local planning can be defined: (i) rational (centralized, comprehensive, mechanistic), (ii) incremental (politically influenced marginal adjustments), (iii) mixed scanning (situational, combining both of the above), (iv) general systems (interactive, integrative, and iterative), and (v) adaptive learning (decentralized, participative, humanistic, futures oriented). Some hybrid of the general systems and adaptive learning approach would satisfy the legitimate concerns of small communities, although there have been few practical applications to date and many regulatory agencies are intensely resistant towards adaptive learning approaches. Comprehensive local planning envisages that urban areas and their hinterland would be covered.

### **7.3 Urban Plans**

Virtually all countries in the Asian region require local structure plans to be prepared, particularly for major urban development, although this is not necessarily the case in the Pacific area. Nonetheless, increasing problems arising from urbanisation in the Pacific will see the need for greater priority being given to urban planning in time.

### **7.4 Methodologies**

#### **(a) Local Sustainable Development Plans**

The Aalborg Charter of European Cities and Towns Towards Sustainability (1994) states that Local Agenda 21 action plans should include (i) recognition of existing planning and financial frameworks, (ii) systematic identification, through extensive public consultation, of problems and their causes, (iii) prioritisation of tasks to address the problems, (iv) creation

of a vision for a sustainable community, through a participatory process, (v) consideration and assessment of alternative strategic options, (vi) a long term action plan towards sustainability, with measurable targets, (vii) programming for implementation of the plan and allocation of responsibilities, and (viii) systems and procedures for monitoring and reporting on implementation.

(b) Comprehensive/Urban Plans

A comprehensive local planning system for urban areas generally starts with a long-term general plan, specific plans, and zoning and subdivision controls. These plans are needed in order to identify important community issues, project future demand for services, anticipate potential problems, and establish goals and policies for directing and managing growth (especially where land mobilization in the hinterland is required). Public hearings form an important element of plan formulation.

The General Plan is a blueprint of the county or city's future development, identifying the types of development that will be allowed, the spatial relationships among land uses, and the general pattern of future development. A general plan is prepared following an eight step process (i) identifying issues, opportunities, and assumptions; (ii) formulating goals; (iii) collecting and analyzing data; (iv) revising goals and determining objectives; (v) developing and evaluating alternative plans, including alternative policies and implementation measures; (vi) selecting and adopting the preferred plan; (vii) implementing the general plan; and (viii) monitoring implementation and amending the general plan. The process explicitly recognizes that planning is a political game and a process of compromise. The prize is supposed to be a well planned, successful community. The general plan should be revised every five years and an annual report on implementation progress is submitted to the relevant legislative body. All zoning and subdivision plans must be internally consistent as well as consistent with the provisions of the general plan.

## **8. PROJECT SPECIFIC PLANNING LEVEL**

### **8.1 Project Planning**

Traditionally, decisions on which projects to fund and implement relied on a combination of political decisions and calculation of rates of economic return from alternative projects, compared to the opportunity cost of money. Economic analysis was aimed at the single objective of economic efficiency, in the belief that this would lead to overall improvements in social welfare or quality of life. Environment and ecology were separate worlds of scientific endeavour and if they were taken into account at all, it was as an add-on or separate investigation and largely peripheral to the decision making process.

Today, integrating environmental considerations into economic development projects<sup>5</sup> is being approached from three supportive directions. First, impacts are identified and mitigation measures proposed through environmental impact assessment (EIA). Second, strategic environmental assessment (SEA) addresses the environmental impacts of policies and development strategies, sectoral plans, and the cumulative impacts of a

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<sup>5</sup> Other project planning tools such as Logical Framework (Logframe) Analysis (which links objectives, scope, inputs and outputs) and Project Management software, while important for project design, implementation, and monitoring are not reviewed here.

series of projects. Third, externalities are internalized in the economic analysis, through environmental economics techniques.

## **8.2 Environmental Impact Assessment**

In the early 1970s, industrialized countries introduced EIA as a powerful tool to incorporate environmental considerations into project design, passed new environmental laws, and created environment protection agencies.

More recently, it has become obvious that while EIAs as separate, stand-alone exercises could play a useful, supporting role for development planning, there was a need to incorporate environmental considerations more directly into other planning mechanisms. The first step in this process was to integrate EIAs into feasibility studies, so that proposed remedial measures could be built into the project design and the costs of mitigation and monitoring plans could be incorporated into the project cost-benefit analysis prior to funding decisions. However, the choice of which projects to study (and ultimately fund) was still based mainly on economic criteria and the EIA could only modify the project design or, in extreme cases, recommend against the project proceeding.

Despite these limitations, EIA has remained as the leading tool for incorporation of environmental considerations into project design and implementation. At the Earth Summit+5, the CSD reported that about 70 percent of countries now use EIA. In the Pacific, most countries require some form of EIA, but the legislation is often missing or weak, and there is little enforcement (especially at the level of building environmental mitigation requirements into contracts).

Over the past 30 years, the supporting tools and techniques for EIA have become more sophisticated, involving expert systems, modeling, hypermedia, geographic information systems etc. However, a review of these techniques is beyond the scope of this investigation.

## **8.3 Strategic Environmental Assessment**

The success (or in some views, failure) of EIA at the project level has led to attempts to extend the use of EIA to sector reviews, for strategic plans, public investment programmes, and for policy assessment. Extension of EIA approaches to encompass strategic environmental assessment can be rationalized on the grounds that policy formulation and implementation infrequently benefit from wider review and many countries, like the United Kingdom, from the 1970s onward have abandoned comprehensive national planning. Countries which appear to be moving in the direction of insisting on SEA for policies, plans and programmes include the European Union, parts of the USA (more than 130 programmatic environmental impact reports are produced annually in California), Germany, New Zealand (as a requirement under the 1991 Resource Management Act), Netherlands (since 1987), and Canada. To date there are no developing countries in Asia-Pacific which have a mandatory requirement for SEAs. An ongoing SEA of Fiji's National Tourism Master Plan by WWF, under ADB funding, promises to be a useful test of the utility of SEA in the Pacific region.

## 8.4 Environmental Economics

At the other end of the environment-economics spectrum, economists have begun to realize that conventional project economic analysis may be flawed and environmental considerations provides systematic evidence of market failures. Gradually, economic tools are being developed to account for the environmental implications of development projects. These tools use (i) the market value of directly related goods and services (changes in productivity, loss of earnings, opportunity cost, cost effectiveness analysis, preventive expenditures); (ii) surrogate market values (property value, wage differential, travel cost, marketed goods as environmental surrogates); (iii) potential expenditures (replacement costs, relocation costs, shadow projects); and (iv) contingent valuation (bidding games, take it or leave it experiments, trade-off games, costless choice, delphi techniques, input-output models, linear programming). Few of these techniques have been used in project planning in the Pacific region to date. To guide planners in using these new techniques, there are several manuals such as OECD's *Manual for Policy Analysts* and ADB's *Workbook for Environmental Economics*.

Development of environmental economics techniques is moving towards comprehensive computer modeling, combining general ecosystem models and economic models. Ecological-economic models include (i) extended cost benefit analysis, (ii) extended physical-economic models with resource inputs and waste output, (iii) ecological evaluation models, and (iv) resource and pollution impact models. It seems unlikely that these tools will be adopted in the Pacific in the near term.

## 9. VERTICAL LINKAGES

Lewis Mumford always stressed that the human relationship to environment should extend simultaneously on various environmental levels, such as the small community, the village, the town, the region, the country, and the world. If one of these links is missing, the interaction between the individual and the larger community is invalidated, and the human relationship to the environment is degraded to one of isolation or disruption. However, there appears to have been no systematic attempt to develop mechanisms to provide strong vertical linkages between different planning levels or to even test that they exist.

Comprehensive planning at one level may be futile if the other levels are not planned with the same consistency and aimed at common goals. The failure of centrally planned economies, where local initiative and pragmatic planning were actively stifled for the larger national cause, provides ample warning that assumptions about global goals must be constantly tested against local realities. National, regional, and global political authority need to be better balanced and integrated with local levels of governance.

Consistency between all planning levels and an ability to aggregate or disaggregate plans is an essential characteristic of a truly integrated planning approach. The simplest check is to ensure that each plan (except for project and global levels) is at least linked into the levels above and below. However, there are no well developed tools or techniques to systematically test these linkages. While genuine consultative processes at the local level are essential, merely aggregating thousands of local plans cannot form the basis of global action. Civic consciousness, ecocentric attitudes, and a truly democratic social environment are pre-requisites for sufficiently fertile ground for the

seed of integrated economic and environmental planning to take root. Thinking globally and acting locally must be balanced by acting globally and thinking locally!

#### **10. A PROPOSAL TO INTEGRATE SOCIAL, ECONOMIC AND ENVIRONMENTAL PLANS AT A SUB-NATIONAL LEVEL IN THE PACIFIC REGION**

There appears to be a missing link in the nested hierarchy of sustainable development plans in Asia-Pacific, which may be one reason why good intentions at the global, regional, and national levels are not being translated into sustainable development at the local level (which is where flesh and blood social-economic-environmental linkages are most commonly realized). This missing link is integrated E-c-E planning at the sub-national level.

The World Commission on Environment and Development (WCED) concluded that the ability to choose sustainable policy paths requires that the ecological dimensions of policy be considered at the same time as economic and other dimensions - on the same agendas and in the same institutions. In 1987, there was no consensus on how this integration should be performed. As a major outcome of the United Nations Conference on Environment and Development (UNCED) at Rio de Janeiro in 1992, *Agenda 21*, which was endorsed by more than 150 nations, called for national sustainable development strategies to be developed that would integrate social and economic development with the environment. *Agenda 21* did not prescribe methods of producing such plans, but assumed that, in most countries, sustainability would be built into existing planning processes. However, there is little evidence that this integration is occurring in either mainstream development planning or environmental planning. However, as outlined above there are plentiful E-c-E methodologies to choose from, with considerable experience in their application.

While integrated economic and environmental planning is not the only constraint holding back the adoption of sustainable development, it is a problem worthy of attention by the planning profession. *A priori*, one would expect relatively few global integrated economic and environmental plans, such as Our Common Future or Agenda 21, and their corresponding international treaties and agreements. These would then be translated into a larger number of regional and national integrated economic and environmental plans (perhaps numbering in the tens and hundreds respectively). For each national plan, there might be 5-20 bioregional or sub-national plans and even larger numbers of local plans, including urban plans for each major city. At the very bottom of this nested hierarchy or truncated pyramid of integrated economic and environmental plans, there should be several thousand project level plans, which incorporate economic, environmental, and social dimensions of analysis.

However, the Asia-Pacific region has a remarkable paucity of integrated economic and environmental plans at the sub-national level. The nested hierarchy looks more like an hourglass (with the middle pinched at the sub-national level), rather than the expected truncated pyramid. Moreover, the sub-national level may ultimately be pivotal in contributing to the attainment of sustainable development, at least to the extent that a nested hierarchy of integrated economic and environmental planning is a crucial element in achieving sustainable development. At one end of the hierarchy, global, regional, and national sustainable development strategies, while often titled as plans, are rarely sufficiently detailed to implement directly. They tend to set out general principles, lofty

objectives, and ambitious strategies (often unfunded and without clear implementation arrangements). At the other end, project and local plans are usually too remote from the national, regional and global strategies to have more than local significance. Local scale plans are also notoriously difficult to scale up to an island or provincial level.

### 10.1 The Prototype Model

The ideal E-c-E planning approach as developed by the Organization of American States and revised by the Asian Development Bank is illustrated in Figure 3. The key planning steps are as follows:

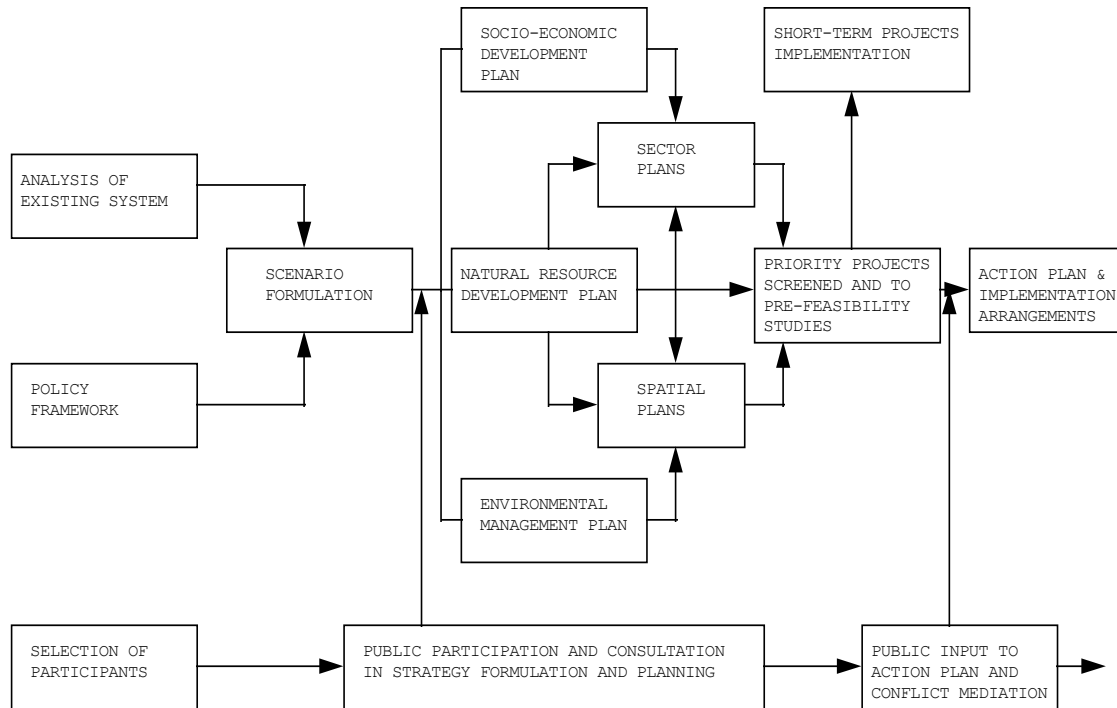


Figure 3 Sub-National E-c-E Planning Model

**Analysis of the Existing System** - The boundaries of the planning area may be a river basin, an island or group of islands, sea or lake region, an administrative region, an ecosystem or biosphere reserve, or some other ecologically defined “bio-region”. Ideally, the study region should be defined as one of a series of plans which together would cover the entire nation. The planning study generally starts with a comprehensive description of the existing social, cultural, economic, natural resources and environmental systems, in sufficient detail to gain a thorough understanding of how all these dimensions interact. This description provides a synthesis of all previous investigations in the study area. Generally based on available data, the description may include some mathematical models, which can be used for subsequent projections or predictions. Included in the description of the study area is an inventory of projects that have been planned, approved, or are waiting in the pipeline of sectoral agencies.

**Policy Framework** - The next step is to document all relevant policies in the study area, both explicit and implicit. These policies are analysed to highlight any overlaps or conflicts between policies applied to different sectors. Generally the multi-disciplinary

study team must stick to broad dimensions of the policy debate as detailed refinements may take much longer than the study period to resolve. Policy instruments such as legislation, regulations, planning guidelines, and standards are also documented. To the extent possible, decision making processes in the study area, including political systems and influences, are investigated and reported.

Scenario Formulation - Once the study area is well understood and the policy framework is clear, then alternative development scenarios are constructed. Three or four scenarios are formulated to provide an envelope around realistic development options, rather than representing unachievable extremes. The scenarios are projections from the baseline derived in the description of existing conditions, and cover social, economic, natural resource, and environmental dimensions. The social, economic, and environmental implications of each scenario are then presented in terms that decision makers can understand. In consultation with the Government and stakeholders, a preferred development scenario is chosen as a consensus vision of the long term future for the study area. Revised projections are then made for various key aspects of the preferred scenario, such as economic growth rates, population growth, employment generation, natural resource depletion rates, pollutant loads etc.

Plan Formulation - The study team then prepares detailed plans consistent with the preferred scenario, comprising a socio-economic development plan, natural resources development plan, and an environmental management plan. The interactions between the plans are documented to illustrate the integrated approach that is needed to attain the vision encompassed by the preferred development pathway.

Spatial and Sector Plans - The spatial context of the preferred scenario is presented so that the impact on specific locations or groups of beneficiaries can be identified. Similarly, for each sector (agriculture, mining, forestry etc.) the various plan components are amalgamated to give a comprehensive sectoral view. For example, an agriculture sector plan will contain social, economic, and environmental strategies consistent with the preferred scenario. At this stage, refinement of the strategies and plans may be desirable following consideration of separate sector studies and presentations to sectoral agencies and interest groups.

Selection of Priority Projects - During preparation of the scenarios, a surfeit of project ideas are discussed. To be included in the ultimate development plan, each project concept must pass through a screening mechanism which assesses economic viability, resource demands, social and environmental impacts. The contribution of the integrated package of projects selected to the macro-economic targets for the study area is analysed. Along with economic evaluation at the pre-feasibility study level, there should be an Initial Environmental Examination and preliminary Social Impact Assessment (SIA) for all selected projects. Terms of reference are drawn up for full SIAs and EIAs for socially or environmentally sensitive projects included in the Action Plan. These SIAs and EIAs are undertaken as part of the feasibility studies for these projects in Phase II of the planning process.

Action Plan and Implementation Arrangements - The various plan components are amalgamated and presented as a synthesis development plan, covering the goals, objectives, strategies, and vision for the future. To enable the vision to be attained, an action plan of all priority projects and programmes, is presented as a consolidated public investment plan. The action plan demonstrates the scale and phasing of investment

required over the plan period. The administrative arrangements and responsibilities are documented and linkages to the national and local levels are established. The synthesis development plan is presented in draft form for public comment and consultation. Seminars and workshops may be needed for specific sector groups or groups of stakeholders affected by the plan.

Maintaining Momentum - A constant battle in any integrated planning effort is to avoid the tendency for carefully integrated project packages to fall apart, often due to intervention of special interest groups after the plan is finalised. Short-term “do-able” projects, which can proceed even before the plan is finally accepted, help to maintain the momentum. Arrangements are made for the feasibility studies and detailed design in Phase II. Consideration may also be given to strengthening the regional and local implementation agencies. Arrangements for monitoring implementation progress and plan revision are made so that the plan remains a process, rather than a static exercise with a defined end point. Additional effort may be needed to present the plan in a format that facilitates its incorporation into national economic development plans and/or local plans.

Expected Outputs - A synthesis development plan for the study region, comprises a Socioeconomic Development Plan, Natural Resources Development Plan, and Environmental Management Plan, all of which are linked. These, in turn, are presented as a consolidated, implementable Action plan, divided into short-term, medium-term, and long-term phases. At this stage, the selected short-term, priority projects of the Action Plan go forward into detailed feasibility studies in Phase II. To maintain momentum, funding must be arranged for the Phase II feasibility studies.

## **10.2 Comparative Analysis of the Case Studies**

Five sub-national case studies funded by the ADB since 1983, which claimed to have integrated social, economic and environmental dimensions, were carefully selected for detailed analysis (Table 6). The case study analysis started with the Songkhla Lake Basin Planning Study in Thailand because it has been regarded as the most complete and successful exemplar conducted in the Asian region to date. Another four cases (Klang Valley, Malaysia; Hainan Island, PRC; Haihe River Basin, Peoples Republic of China (PRC); and Coastal Environment Management and Planning (CEMP), Indonesia) were then examined to determine if the less complete versions of the E-c-E planning technique detract from or add to the findings from the Songkhla case. The Asian results were then compared with an earlier analysis of six Latin American case studies. No Pacific projects were available for analysis.

In selecting the cases, careful thought was given to the distinguishing, or unique characteristics of the E-c-E planning approach. One of the five cases is regarded as an exemplar of the OAS/ADB model, another deliberately rejected the “received wisdom” from previous integrated economic and environmental plans, another accomplished the environmental component only, another attempted to introduce some quasi-economic improvements in the approach, and the fifth attempted to faithfully replicate the approach in a transitional economy. While hesitating to claim that they represent the “best” to the “worst” of such studies in the Asia-Pacific region, the cases do fall along that spectrum and, to the extent that they are representative, could be expected to yield both positive and negative or disconfirming data.

Table 6 The Case Studies - Comparative Data

	SONGKHLA	KLANG	HAINAN	HAIHE	CEMP
Country	Thailand	Malaysia	PRC	PRC	Indonesia
Study Area (sq. km.)	9,100	2,800	34,000	43,100	n.a.
Study Period	1984-1985	1986-1987	1992-1993	1993-1994	1994-1995
Study Team Input (p-m)	360 - total 113 - master plan	41	68 - master plan and action plan	193 plus 134 local counterpart staff	105
Budget US\$	3,500,000	350,000	600,000	1,240,000	1,200,000
Executing Agency	National Environment, National Economic	Department of Environment	International Advisory Council	River Basin Agency	Ministry of Environment
Major Theme	Lake Management	Environment	Resource Mgt.	Water Resources	Environment
Scenarios	Three	Three	None	Three	Three
Vertical Integration	Limited	No	No	No	Limited
Investment Plan (US\$' million)	195 (short-term) 1,300 (long-term)	800	22	2,100	311 (short-term) 2,600 (long-term)
Affordability Analysis	Yes	Yes	No	Yes	No
Public Participation	Limited	No	No	No	No
Spatial Zoning	Urban areas only	No	No	No	No
Extended E-c-E Analysis	Ecological models	No	No	No	Damage Functions

The Songkhla Lake ecosystem comprises four interconnected lakes (Thale Sap Songkhla, Thale Sap, Thale Luang and Thale Noi), ranging from saline to freshwater, located on the east coast of southern Thailand. The lake area covers 1,081 sq. km and discharges through Thale Sap into the Gulf of Thailand. More than 20 streams flow into the lakes from a catchment area covering 6,938 sq. km. The Basin contains a mixture of land uses ranging from wet and dry season rice, rubber plantations, tropical evergreen forests, wetlands and *Melaleuca* swamp, villages and urban areas, and several important wildlife habitats. The Songkhla Lake Basin Planning Study (SLBPS) was undertaken to implement the southern Thailand portion of the Government's policy at that time regarding decentralization of national development into five economic

development zones. As the 9,119 sq. km. study area also contained an extensive and unique lake system important for the agriculture and tourism sectors, it was recognized from the outset that economic and environmental planning would need to be thoroughly integrated.

The Klang River Valley comprises the largely urbanised area surrounding Kuala Lumpur. The Klang Valley study concentrated mainly on environmental (and to a lesser extent, natural resource) objectives. The key social issue concerning underserved squatter communities was addressed by proposing a feasibility study for providing sanitation to these communities. The fundamental social issue of why the squatters were there and how squatter communities could eventually be eliminated was not addressed.

In the late 1980s in Malaysia, there was considerable debate about privatisation of public services such as solid waste collection and disposal and water supply and sanitation. The private companies were strongly pushing incineration as the best means of disposal of solid waste and opposed the concept of interceptors and an ocean outfall for sewerage. Instead of co-opting these private companies into the planning process, according to one informant the consultants were frequently asked by the Ministry of Science, Technology and Environment to prepare special reports to “shoot down” their proposals. Given that the Government, a few years later, wholeheartedly adopted privatisation of these services and proceeded with an incineration proposal, it seems that the opportunity for a solid public/private sector coordinated plan was missed.

To a certain degree, the Klang study was backward looking, concentrating on how to clean up the existing sanitation problems and emerging environmental problems like air pollution. As the focus was on environmental improvement, study of economic issues was restricted to affordability of the proposed measures, an important topic, but not the only economic issue that needed to be addressed. If economic scenarios had been developed to a greater extent, it would have become obvious that Kuala Lumpur could not keep growing at 5-10 percent per annum growth rates, without land shortages and increasing difficulty in maintaining environmental quality. The Government has responded to these economic growth pressures by developing a new city outside the Klang Valley, near the new international airport (Putra Jaya), where the Government offices are being moved, linked by a high technology Silicon Valley or Multi-Media Corridor, to Kuala Lumpur. This kind of external event was not anticipated, yet is why such plans need to be revisited at regular intervals.

Hainan Island is a rapidly developing tropical island in the south of PRC, often described as the Hawaii of the South China Sea. The Hainan study set the following objectives - “to promote sustainable management of Hainan’s environment and natural resources within a rapid socio-economic development scenario”. Accordingly, the question of a wise balance between social, natural resource and environmental dimensions was abandoned from the outset of the study. Discussion of economic issues was dealt with in five pages in the 500 page final report. The incongruence between proposed growth rates of 12-15 percent per annum and the environmental and natural resource management objectives was noted in a separate chapter on Integrated Environmental Management and Planning System. The consultants noted that “the linkages between sound environmental protection, wise resources management, and economic development are not clearly understood by policy makers, planners and managers”. Unfortunately, the study did little to transfer such knowledge to provincial officials. Further, the Hainan study stopped well short of any project being ready to proceed, thus

robbing the study of any chance of maintaining its momentum. The pre-feasibility studies were not much more than broad concepts or project profiles that one would associate with a reconnaissance level investigation. There was no concerted attempt to investigate the likely amount of total investment needed nor the affordability of the investment in the light of such rapid rates of economic growth.

The Haihe River Basin includes the capital Beijing and important cities such as Tianjin in the northern part of PRC. The Haihe study focused on one tributary, the Daqinghe River, which is highly polluted. The Haihe Basin study achieved a considerably higher level of achievement on the economic front, with a separate 70 page volume on socio-economic development. This study did attempt to balance social, natural resource and environmental planning. The stated objective was to carry out a sustainable E-c-E study for the Daqinghe River sub-basin, which would provide policy guidelines, strategies and a socio-economic framework for future development within the whole basin and action plans addressing the key issues. It is still too early to tell whether the proposed programmes and projects will achieve the stated objectives and strategies, but implementation is proceeding.

The Coastal Environment Management and Planning Project (CEMP) in Indonesia was perhaps the most ambitious of the five case studies, embracing the whole coastal zone of a huge, heterogeneous archipelago. The study objectives were to refine policies, standards and guidelines to ensure that coastal resources are not degraded and to identify a series of suitable investments that will contribute to the further development of integrated coastal zone management planning. These objectives were essentially the same as for the good plans expected from E-c-E planning. In practice, the task was simply too big for the resources (and perhaps the consultant capabilities) allowed for in the study. This is perhaps best illustrated by the ambitious, theoretical extensions to the E-c-E approach that were proposed but ultimately foundered on a lack of reliable data, such as dose-response relationships.

### **10.3 Findings**

Generally, the case studies fell considerably short of the ideal planning approach illustrated in Figure 3. As an emerging planning technique over the past decade, one would have expected successive groups of planners to progressively add new layers and methodologies to the OAS and ADB guidelines, building on the pioneering efforts of those who had learned by trial and error. In fact, no consistent improvement was detected. Comparison of the probable success factors and constraints derived from the Asian studies with six previous cases from Latin America found that almost 50 percent of the factors were common to both sets of case studies, with greater commonality in impeding factors than in success factors. Given that the studies were separated in time (most of the Latin American studies were completed by 1983) and space, the extent of commonality suggests that the common factors may be important generic design and implementation considerations for future E-c-E studies at the sub-national level. The commonly repeated mistakes were as follows:

Key Institutions Providing Support - Several of the case studies show that either the wrong participants or an insufficient representation of key agencies were selected to participate in and guide the case studies. All of the case studies had secondary objectives of strengthening central government and/or regional institutions involved in

integrated economic and environmental planning. However, little attention was paid to strengthening local institutions and they were usually not involved to any serious extent.

Human Resources - As most of the E-c-E case studies in Asia-Pacific were under the control of central government environmental agencies, there was inadequate prior assessment of their capability to meet the challenges of E-c-E planning. Too often, the response of the environmental agency was to (i) put a relatively junior officer in charge of the project, who was outranked in any inter-departmental meetings; (ii) assign junior counterpart staff who thought their main role was to monitor and supervise the consultants; and/or (iii) fail to buy into the strategies being developed, thus preventing their staff from becoming “champions” to maintain the momentum after the consultants had departed. The weakness of the relatively new environmental agencies and inexperienced staff manifested itself in several other ways. Counterpart staff did not leap at the chance to learn more about E-c-E planning techniques, rather they saw their role as supervisors and monitors. Language and cultural differences exacerbated these problems. The lack of experience of environmental agency staff also meant that they had considerable difficulty in assessing significance and priorities. They simply did not have sufficient wealth of experience to make these subjective judgements. Stronger leadership and commitment from the environmental agencies would have improved the probable outcomes of the case studies.

Funding - The E-c-E case studies were donor inspired and promoted by a multilateral development bank, and therefore intended from the outset to provide a pipeline of investment projects, albeit environmentally sound ones. However, none of the case studies obtained prior (or subsequent) commitment from the Government of a budget limit for capital investment in the study region. Songkhla and, to a lesser extent, Klang estimated the affordability of the proposed investment plan, based on prior government expenditure in the study area, the gross regional product, estimates of willingness to pay (as a partial effort to estimate cost recovery potential), and capital investment as a percent of gross regional product.

Political Support - An important group of stakeholders, the politicians, was consistently ignored in the case studies. In no case were politicians regularly briefed directly by the study teams on progress or policy issues. Whatever information the politicians did receive, it was filtered through senior officials in the central government agencies, who were similarly remote from the every day activities of the study teams. The lack of political will to push through with the identified strategies and programmes resulted in a loss of momentum and the inability to raise the necessary funds for implementation, in the face of competing public investment priorities.

Stakeholder Participation - The case studies generally failed to select and involve key non-government stakeholders. There were no well planned series of public meetings, no non-government representatives were included on project steering committees, no simple newsletters explaining the objectives or outputs of the studies, no public awareness campaigns, and no attempt to segregate the stakeholders so that information could be precisely targeted to their needs and interests. In the lead up to the planning studies, no analysis was made of the extent of civic engagement or willingness of community groups to participate. No attempt was made to determine the interest of the private sector in cooperating with the planning procedure or to assess whether there were particular economic interest groups that felt threatened by integrated E-c-E planning. No analysis was made of racial, religious, or economic similarities in

neighbouring regions or whether those communities felt threatened by focusing on an area which could draw economic growth away from their region.

Plan Preparation - Most of the case studies were developed in two phases, with the first preparing a Master Plan and the second, an Action Plan. However, maximum advantage of the first phase report was not taken to build political and stakeholder support for the subsequent action plan. Generally, there was too much effort devoted to the planning product (voluminous reports and over-ambitious programmes) and not enough on the planning process and ensuring that the plan would be implemented. Priority projects were taken to the pre-feasibility study stage, but then assumed to take on a life of their own. There was little effort devoted to building sufficient commitment or ownership of the projects to ensure that feasibility studies, EIAs, detailed design, and implementation would proceed as planned.

Description of the Existing System - The lack of consensus on environmental goals is compounded by the serious lack of baseline environmental data throughout Asia. As environmental agencies are relatively new, the baseline data that do exist are rarely sufficient for trend analysis and are rarely available in a spatially distributed form, such as provided by geographic information systems. Therefore, it is extremely difficult to conclusively prove that environmental conditions are degrading at a certain rate, a rate which can be utilized in predictive models with confidence. One of the features of sub-national E-c-E planning is that it should take an ecosystem as the planning unit. To make maximum use of this choice, E-c-E plans should demonstrate an adequate understanding of (i) the ecosystem boundaries and material and energy fluxes across that boundary, (ii) the critical ecological processes within the ecosystem, and (iii) the ecological services that the ecosystem provides to its human inhabitants. It is these ecological services that provide the bridge between ecology and economics, which is so essential to integrating the two domains. The case studies varied considerably in this respect, with Songkhla demonstrating the most intensive effort.

Modeling - The lack of baseline data was compounded by significant disagreement and debate in the case studies over the appropriate models to use for environmental prediction. Many of the models available reduce ecological complexity to gross simplifications, thus raising questions about the validity of the results. In the Songkhla study, external criticism of the water balance and water quality modeling in the lake ecosystem, resulted in several models being used to demonstrate that the expected changes were consistent, whichever model was used. The use of simple models that are easy to understand can help decision makers to accept the results of confirming analysis from more complicated, sophisticated computer models.

Scenarios - The integrated E-c-E planning approach suggests that the technique of building alternative scenarios, which cover the complete envelope of development possibilities, provides decision makers with adequate information about the implications of policy choices, thus guiding them away from undesirable or unsustainable futures. As the counterpart staff often did not understand the role of scenario building, they were not comfortable with drawing a very wide envelope around development possibilities and often insisted that key variables (such as population) be held constant across all scenarios. A strong visual display of each scenario, matched by a slogan or emotive title, helped to convince decision makers that each scenario was entirely plausible. There was also a common misunderstanding that one of the scenarios should be selected, unvaried, as the preferred development path.

Project Screening - One of the desirable characteristics of the sub-national E-c-E approach is the ability to prepare a carefully balanced package of projects. The danger is to stop the integrated package of projects from unravelling in the implementation phase, given the preference of most governments for infrastructure projects over environmental projects. All of the case studies included EIA methods as a project screening tool. In practice throughout Asia-Pacific, the EIA process has been adopted with more attention to form than substance. EIAs are routinely approved for projects that are neither sustainable nor environmentally sound. In the case studies, the level of analysis was generally at a pre-feasibility level, thus leaving full EIAs to a subsequent feasibility study, often under the exclusive control of the Government, with all its attendant dangers. The case studies conducted partial cumulative impact assessments and strategic environmental assessments, but these could have received more systematic attention. Emerging environmental economics techniques should improve project selection and analysis, but these were rarely used in the case studies.

Vertical Linkages - A truly integrated economic and environmental planning process should link the various planning levels from "project" to "global" in a consistent, cohesive, transparent framework. The test for such linkages should be that the planning level being considered clearly relates at least to the planning levels above and below. Practice in the Asian case studies shows that such linkages are extremely rare, to the point that the problem itself is barely recognized, let alone any attention given to possible techniques or solutions. In practice, integrated E-c-E planning in the Asian case studies is partial, uncoordinated between levels, and tends to consist of one-off studies rather than being part of a routine, cyclical process of planning.

Cyclical Planning Process - The long gap between planning and implementation and the potential influence of external and unexpected events make the need for institutionalization of a cyclical planning process and routine revision extremely important. In no case, with the possible exception of the Haihe Basin, is there an institution that has taken firm ownership of the plan and intends to revise the plan on a routine basis.

Implementation - All of the case studies demonstrated the need to strike a careful balance between planning and implementation. If at all possible, some recommended activities (short term "do-ables") should commence while the study is ongoing. While this may divert the planning team's attention, immediate implementation would help to maintain morale and enthusiasm of the planning team. Finally, there were no explicit economic or administrative sanctions for failure. Most of the planning funds were grants, with the exception of Songkhla. Executing agencies could, with impunity, simply lodge the planning reports in the library or on a shelf in the offices of the counterpart staff and life could go on as normal. There is no lobby group beating down the doors of executing agencies demanding to know why the studies have not been implemented. There were no contractual obligations or negotiated agreements between the government and the stakeholders. There was no commitment to the private sector to give them a role in implementation, through Build-Own-Operate-Transfer (BOOT) schemes. The external funding agency did not demand that the government follow through with the plan, or no loans would be provided in future. In short, the failure to follow through was not something that really concerned anyone.

## **11. DISCUSSION AND RECOMMENDATIONS**

The recommended improvements to the process of preparing integrated E-c-E plans at the sub-national level include:

- (a) More extensive baseline data to enable better description of existing social, economic, and ecological systems;
- (b) More reliable models which link environmental and economic parameters and which generate results that can be monitored and verified, or fed back into further refinement of the models;
- (c) More effective use of the scenario approach so that decision makers and stakeholders can easily envision alternative futures;
- (d) Increased use of environmental economics and social impact assessment in project screening, further development of cumulative environmental assessment and strategic environmental assessment, as well as continued and more effective use of EIAs to screen projects before their inclusion in Action Plans;
- (e) Increased public participation and involvement of political stakeholders; and
- (f) Continued research and development of the E-c-E approach to overcome some of the existing weaknesses.

We are still a long way from having a cohesive, integrated economic and environmental planning approach that can be uniformly applied at the sub-national level in the Asia-Pacific region. However, experience is starting to emerge which will provide the basis for an integrated economic and environmental planning system involving improved planning at all levels. This experience should guide planning professionals in the Pacific region. However, be warned that E-c-E planning can be quite expensive and it may be better to start with one small sub-national area, such as a single island, before embarking on a nationwide effort.

There is no uniform planning approach that would integrate economic and environmental issues at all levels from global to projects. However, there are some common elements, such as (i) the need for increased stakeholder participation in the planning process, (ii) the concept of shelf life or sunset clauses to be introduced, so that dated plans trigger an appropriate level of revision, (iii) the question of affordability, with no plan being regarded as complete unless this question is adequately addressed, (iv) the need to provide explicit linkages between upper and lower planning levels, (v) the need to articulate the costs and benefits of implementation in a simple manner, to win the hearts and minds of the general public and decision makers, (vi) the need to realistically assess the absorptive capacity of institutions charged with implementation of plans and to provide capacity building assistance as part of the plan, (vii) more robust data and models to support integration of economic and environmental dimensions, and (viii) increased specificity in setting objectives of the plan, possibly using a Logical Framework matrix.

The most important area of further investigation is to explore the link between integrated economic and environmental planning and sustainability. At the present time, it is an untested assumption that an integrated package of policies, programmes, and projects delivered by the E-c-E approach, vertically integrated in the nested hierarchy of plans,

will inevitably lead a nation towards sustainability. A profitable area of investigation would be to compare sustainability indices in sub-national regions with no planning, those with traditional regional economic planning, and those with integrated E-c-E planning. The investigation would need to be designed to test the hypothesis that the regions with E-c-E planning are more likely to lead to sustainable development than other regions.

The case studies point to the need for additional investigation on the most effective methods of public participation in the E-c-E planning approach. There are some lessons that can be adopted from sub-national E-c-E planning in Latin America and the Caribbean and from Local Agenda 21 studies in Europe, but social and cultural differences in the Pacific region may necessitate different approaches.

Additional research is needed on E-c-E models and decision support systems in which the probable outcomes of policy or project decisions can be quickly demonstrated in visually effective displays. Decision makers are generally not interested in detailed print-outs of computer models and are content to accept the “black box” nature of the models, provided that the information content accords with their intuitive understanding. Of particular importance in the development of new integrated economic and environmental planning models will be the need for scalability, i.e. the ability to build up to national level plans from local plans as the basic building blocks, with additional dimensions added at each level. Operationalising the concept of negotiating outwards from Local Agenda 21 plans, as advocated in Europe, appears to be a promising approach.

There can be little doubt that integrated economic and environmental planning is needed, particularly at the sub-national level, in the Pacific region. Integrated economic and environmental planning techniques offer the promise of integrating the formerly disparate dimensions of development at global, regional, national, sub-national, local and project levels. However, practice in ADB’s member countries shows that planning at all levels remains flawed and economic and environmental planning continues to be more or less separate. Turning theory into practice is not easy. The five case studies in integrated E-c-E planning at the sub-national level illustrate the potential of this planning technique and where improvements could be made. However, additional resources need to be devoted to training experts in the integrated economic and environmental planning approach, additional baseline data collection, development of environmental prediction models, preparation of planning guidelines and manuals, development of tools to vertically link sub-national plans to national and local plans, and more effective public participation and mediation of conflicts. Governments at the highest level must be convinced that sub-national E-c-E planning is needed and commit the necessary human and financial resources to carry the plans through to execution. Without strong political will, backed by assured financing, even the most brilliant sub-national E-c-E plan will languish on a dusty shelf.

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