

Integrated Coastal Management (ICM): Concept, Methods and Application for Achieving Sustainable Coastal Development

統合沿岸管理—沿岸の持続可能な開発を達成する ための概念・手法及び応用

Dr. Chua Thia-Eng
チュア・ティア・エング
Visiting Fellow
客員研究員
Ocean Policy Research Foundation, Japan
海洋政策研究財団




Partnerships in Environmental Management
in the Seas of East Asia

ICM: concept, method and application for achieving sustainable coastal development

統合沿岸管理—沿岸の持続可能な開発を達成するための概念・手法及び応用

Lecture series (2008, Japan)

1. ICM: Relevance, concept and sustainable coastal development framework (SCDF) (June 19).
統合沿岸管理: 関連性・概念および沿岸の持続可能な開発枠組み (6月19日)
2. The ICM cycle, ICM code and State of Coasts Reporting (June 26)
統合沿岸管理サイクル・統合沿岸管理コードおよび沿岸状態の報告 (6月26日)
3. ICM: Information gathering, analysis and use (July 3)
統合沿岸管理: 情報収集・分析および利用 (7月3日)
4. ICM application, case studies and scaling up (July 10).
統合沿岸管理応用および拡大 (7月10日)



Partnerships in Environmental Management
in the Seas of East Asia

ICM lecture series no. 1

Integrated Coastal Management: Relevance, concept and sustainable coastal development framework

統合沿岸管理: 関連性・概念および沿岸の 持続可能な開発枠組み



Partnerships in Environmental Management
in the Seas of East Asia

ICM lecture series no. 1

Cautionary statement 注意書き

"ICM has a relatively short history compared to many other sectoral management mechanisms, the concept of integrated management arises from the practical needs to resolve many competing and conflicting uses of natural resources and to increase the cost-effectiveness of management interventions.

The concept and operation of ICM is evolving with experiences and time into a more process-based, target-oriented management system which has yet to reach its full maturity "




Partnerships in Environmental Management
in the Seas of East Asia

Contents 内容

- Relevance of ICM
統合沿岸管理の関連性

(in the context of environmental management, multiple use conflict resolution, transboundary issues, implementation of convention, and addressing management complexity of the coastal areas)

- Evolution of ICM concept and its application: successes and failures
統合沿岸管理概念の展開およびその応用: 成否
- Sustainable Coastal Development Framework (SCDF) and application
沿岸の持続可能な開発枠組みおよびその応用




Partnerships in Environmental Management
in the Seas of East Asia

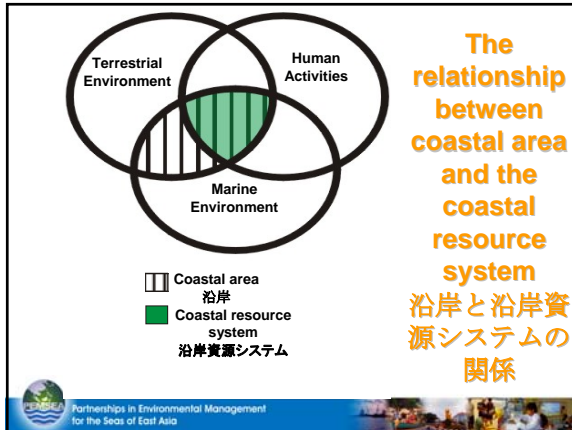
Integrated Coastal Management (統合沿岸管理)

Interpretation of term

- Integrated—policy and functional integration
- Coastal —land- sea interface
- Management —regulate human economic activities affecting environment



Partnerships in Environmental Management
in the Seas of East Asia



What is ICM ? (統合沿岸管理は何?)

Definition
 定義

ICM is a coastal management system to regulate human behaviours and preserve functional integrity of terrestrial and marine ecosystems for achieving sustainable development of the coastal areas

Partnerships in Environmental Management for the Seas of East Asia

What is ICM ? (統合沿岸管理は何?)

Characteristic features (1)
 特性

- It adopts an integrative, holistic natural resource and environmental planning and management framework to balance competing and conflicting uses in a coastal area;
- It uses interactive, multi-disciplinary, process-oriented program development and implementation approach;
- It follows an incremental but strategic program management approach ;

Partnerships in Environmental Management for the Seas of East Asia

What is ICM ? (統合沿岸管理は何?)

Characteristic features (2)
 特性

- It ensures stakeholder ownership and participation
- It improves coastal governance
- It protects functional integrity of the ecosystems and
- It regulates human activities to ensure economic and environmental sustainability.

Partnerships in Environmental Management for the Seas of East Asia

Relevance (関連性)

1. Environmental Management Framework
 環境管理体制

- protect, restore habitats and conserve biodiversity
- reduce pollution and improve environmental quality;
- speedy response to disasters to save lives and properties
- enhance water supply and manage water resources
- contribute to food security in coastal areas and preserve livelihoods of coastal poor.

Partnerships in Environmental Management for the Seas of East Asia

Relevance (関連性)

2. Multiple use conflict resolutions 複合的利用の問題解決

- Conflicts arising from multiple uses in the coastal and marine areas;
- Conflicts arising from change of consumption and use patterns manifested by globalization and
- Increasing coastal urbanization;



Partnerships in Environmental Management
in the Seas of East Asia

Relevance (関連性)

3. Resolve transboundary issues 境界問題の解決

- Cross boundary issues (pollution, biodiversity, fisheries,) within and across national jurisdictions;
- Growth triangles environmental issues;
- Increased shipping movements arising from trade globalization: health, ecosystem and safety issues at ports



Partnerships in Environmental Management
in the Seas of East Asia

Relevance (関連性)

4. ICM as a recognized international approach

認められている国際取り組みとしての統合沿岸管理

• UN Conferences/ Conventions and Action Plans (UNCED/WSSD, UNICPOLLOS, CBD, IPCC, Agenda 21, GPA) for addressing pollution, natural resource management, biodiversity, MPAs, climate change, etc

• International & UN Organizations (IUCN, GEF, UNDP, UNEP, UNIDO, FAO, IUCN, WWF, CI, etc)

Financing and Aid Agencies (World Bank, ADB, USAID, EU, DANIDA, DANCED, UK, etc)



Partnerships in Environmental Management
in the Seas of East Asia

Relevance (関連性)

5. Decentralization and Urbanization 地方分権および都会化

- Increasing trend of decentralization of responsibilities by central to local governments
- Rapid rate of coastal urbanization resulting in imbalance of economic development, widening gap between rural and urban areas, increasing social disorders, etc
- demand for local actions



Partnerships in Environmental Management
in the Seas of East Asia

Relevance (関連性)

6. Demand for "soft approach" to coastal management

沿岸管理へのソフト・アプローチに関する要求

- paradigm shift from "hard" (engineering) to "soft" approach
- build public awareness, secure public opinion, promote integration, encourage stakeholders participation, develop new legislation and ordinances



Partnerships in Environmental Management
in the Seas of East Asia

Relevance (関連性)

7. Applicability 適用性

- ICM application vary: demographic, socioeconomic & ecological conditions
- Administration of ICM influenced by: population density, space availability, priority and level of economic development: Europe, America, Asia, Africa, Latin America



Partnerships in Environmental Management
in the Seas of East Asia

Evolution of ICM Concept and Practices (統合沿岸管理概念および実施の展開)


Forms
(eg. CRM, CZM, ICZM, CAM, ICAM, ICM, ICOM, IWRM, EBM, EM, EBM-ICOM)

Geographical Scales
(e.g. local vs national / regional scale; habitat vs large marine ecosystem)

Level
(e.g. community vs municipality/ state)

Purpose
(e.g. , pollution, sustainable fisheries, MPAs, adaptation to climate change)

Stages
(e.g. fixed site and then scaling up across boundary)



**ICM and Ecosystem-based Management
統合沿岸管理および生態系管理**

Similarity : goals, objectives, principles, approach

Vary in priority:


ICM : people and sustainable development focus

EBM: Ecosystem focus



**Past ICM related practices
これまでの統合沿岸管理の実施**

“ Some successes and many failures ”




**Past ICM related practices
これまでの統合沿岸管理の実施**

**Factors contributing to failures (1)
失敗に寄与する要因**

1. Approach

- donor driven, project-based, short-term (3-4 years), very few sustained beyond funding support;
- lack project and stakeholder ownership, too much dependent on consultants or other external technical expertise;
- no standardized ICM approach or methodology, mainly depend on the capability of the consultants
- poorly documented process or outputs and outcomes;
- confusion in terms of concept, mode of operation and standard of practices




**Past ICM related practices
これまでの統合沿岸管理の実施**

**Factors contributing to failures (2)
失敗に寄与する要因**

2. Attitude and system

- interagency rivalry or competition for budget and authority—protecting turf
- lack of or insufficient devolution of authority from central to local government
- concerned government official unwilling to “ change” and prefer “status quo”
- concerned government official unwilling to see the “problem”
- ignorance on how to implement integrated management
- no culture for cooperation and sharing of resources
- over-relying on “hard” approach




**Past ICM related practices
これまでの統合沿岸管理の実施**

**Factors contributing to failures (3)
失敗に寄与する要因**

3. Stakeholders participation

- insufficient public awareness, lack of an “informed public” to keep watch on government actions;
- insufficient involvement and participation of all concerned stakeholders
- lack involvement of the private sector and communities
- no common visions amongst the concerned key stakeholders



Past ICM related practices これまでの統合沿岸管理の実施

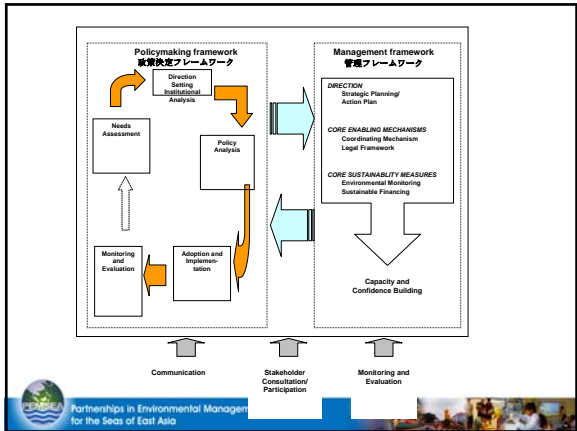
Lessons Learned (1)
学んだ教訓

1. improve local government ownership
 - a) strengthen the leadership role of the local government
 - b) mobilize stakeholder participation under common vision and strategies;
 - c) let the locals make their own decisions
 - d) build local capacity to increase confidence and
 - e) effective use of local resources;
2. External facilitator's role (projects, consultants, donors) is to help established the needed institutional mechanism and legal framework, clarified management issues, provided management options and capacity building;

Past ICM related practices これまでの統合沿岸管理の実施

Lessons Learned (2)
学んだ教訓

3. Strengthening coordination & integration of policy and functions is essential to reduce interagency conflicts and overlapping responsibility, but strengthening implementation and enforcement;
4. Standardize practices is needed to use common ICM framework and process; improve quality management procedures;
5. Sea-use zoning can be an effective management approach to reduce multiple use conflicts, promote user's right (instead of property right), better regulation on sea use.



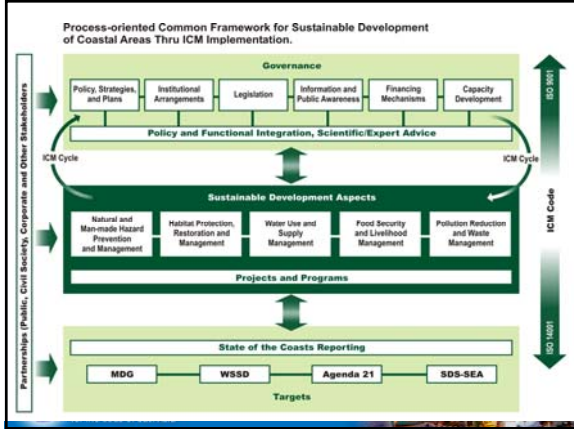
PEMSEA ICM SYSTEM PEMSEAの統合沿岸管理システム

ICM program consists of

A comprehensive, overarching Sustainable Coastal Development (SDCA) framework and platform for interagency cooperation and stakeholder participation

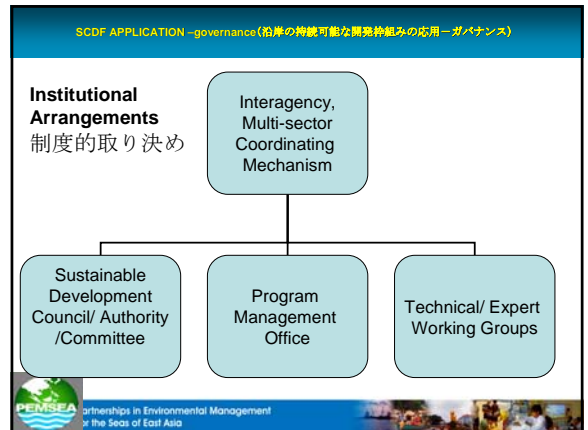
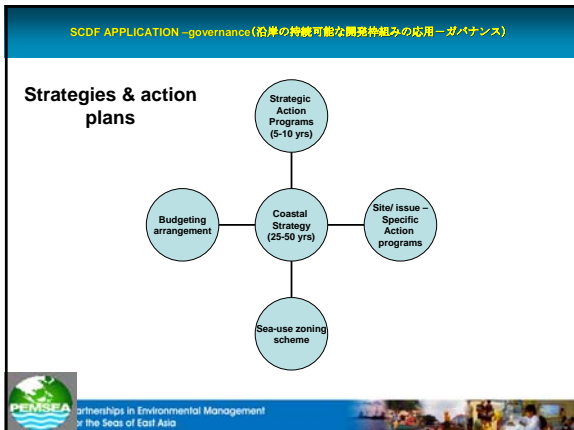
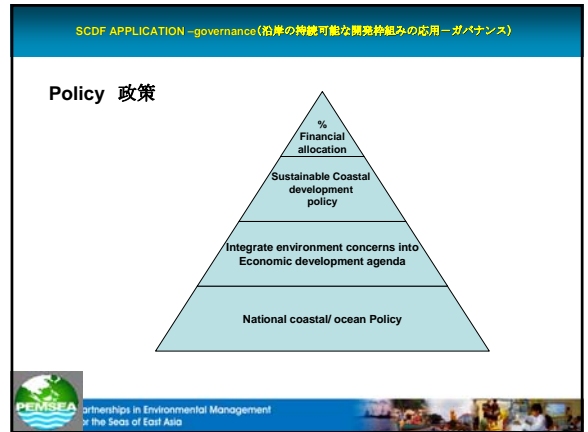
- a) governance component
- b) sustainable development aspects

- 2) ICM development and implementation cycle
- 3) State of the coasts reporting
- 4) ICM code for quality assurance



SCDF APPLICATION –governance (沿岸の持続可能な開発枠組みの応用 –ガバナンス)

- policy, strategies and action plans; 政策・戦略・行動計画
- institutional arrangements; 制度的取り決め
- legislation/ ordinances; 法律・条例
- information/ public awareness; 情報・社会の認識
- financing mechanism; 融資メカニズム
- capacity development. 能力開発



SCDF APPLICATION --governance (沿岸の持続可能な開発枠組みの応用 - ガバナンス)

Legislation 法律

Partnerships in Environmental Management for the Seas of East Asia

SCDF APPLICATION --governance
沿岸の持続可能な開発枠組みの応用 - ガバナンス

Public Awareness and Information Management
社会の認識・情報管理

- Target-oriented communication plans
- Public awareness campaigns/ activities
- Informed public/ stakeholder
- Integrated Information Management System

Partnerships in Environmental Management for the Seas of East Asia

Stakeholder's Consultation Mechanism (SCM)
利害関係者協議メカニズム

Bataan, Philippines Danang, Vietnam
Chonburi, Thailand Sihanoukville, Cambodia

Partnerships in Environmental Management for the Seas of East Asia

SCM: Roundtable Meetings with Investors, Partners and Stakeholders
利害関係者協議メカニズム：投資者・共同出資者・利害関係者の懇談会

Partnerships in Environmental Management for the Seas of East Asia

SCM: Involving stakeholders
利害関係者協議メカニズム：利害関係者の参加

Oil spill response

Beach Clean up in Manila

Promoting coastal tourism and investment

Partnerships in Environmental Management for the Seas of East Asia

SCM: Involving religion in Sustainable Tourism Development - Bali
利害関係者協議メカニズム：持続可能な観光開発に宗教を関与させる - バリ

Tri Hita Karana Award
Bali, Indonesia

Partnerships in Environmental Management for the Seas of East Asia

SCDF APPLICATION --governance 沿岸の持続可能な開発枠組みの応用—ガバナンス

Capacity Development 能力開発

- Build critical mass of expertise through vertical and horizontal learning program
- Develop interdisciplinary team to provide expert advice to local government
- Provide technical skill training to local staff
- Provide managerial skill training to managerial personnel

Capacity Building (能力開発)

Information Networking

Internship program

Marine laboratory

Trainings

SCDF APPLICATION --governance (沿岸の持続可能な開発枠組みの応用—ガバナンス)

Financing Mechanism 融資メカニズム

- Upstream-down stream Compensation scheme
- Pollution pay principle

Financing ICM (統合沿岸管理融資)

- Not limiting factor, ICM initiated through existing budget
- Pool line agency budget: disaster, water, habitat, pollution and fisheries management
- External funding helpful but co-financing essential
- Large funding needed for strategic action programs government budget private sector funding multilateral/ bilateral loans
- Strategic partnerships—eg. World Bank/ PEMSEA

Promoting public-private partnership 官民のパートナーシップを推進する

Sewage treatment system for Puerto Galera

Existing situation

Proposed project

SCDF: Governance (SCDF : ガバナンス) Incorporating science into ICM processes (統合沿岸管理プロセスに科学を取り入れる)

1 PREPARING

2 INITIATING

3 DEVELOPING

4 ADOPTING

5 IMPLEMENTING

6 REFINING AND CONSOLIDATING

Documents: IIMS, Danang Coastal Strategy Implementation Plan, etc.

SCDF

Strategic Action Plans Component
戦略的行動計画ポイント

- Natural and man-made disaster management;
 自然災害・人災管理
- Natural habitats and cultural heritage protection, restoration and management;
 自然生息地および文化遺産の保護・回復・管理
- Water use and supply management;
 水利用・給水の管理
- Food security and livelihood management;
 食糧安全保障・生活管理
- Pollution reduction and waste management.
 汚染削減・廃棄物管理

Natural and Man-made disasters (自然災害・人災)

Partnerships in Environmental Management for the Seas of East Asia

SCDF APPLICATION –Strategic Action Programs
沿岸の持続可能な開発枠組みの応用－戦略的行動計画

Integrated Natural and man-made disaster management at local level
地方レベルで統合自然災害・人災管理

- Mitigation and adaptation response to climate change;
- Implementation of OPRC Convention
- Red tides detection and response

SCDF APPLICATION –Strategic Action Programs
沿岸の持続可能な開発枠組みの応用－戦略的行動計画

Natural habitats protection, restoration & management
自然生息地の保護・回復・管理

- MPAs, fish sanctuary / refuges --networks
- Rehabilitation of mangroves, sea grass beds, corals
- Watershed protection and management
- Vegetation covers in urban areas

Mangrove Replanting Program, Xiamen
マングローブ植林行動計画 (厦門)

Partnerships in Environmental Management for the Seas of East Asia

Restoring sandy beach ecosystem (砂浜生態系の回復)

Partnerships in Environmental Management for the Seas of East Asia

Turned sewage into a resource by its re-use (廃水再利用)

Xiamen Municipal Government has been active in the trial projects wastewater recycling while encouraging the industrial enterprises to recycle waste water and to reduce waste water to "zero-discharge".

The recycle and reuse of sewage water is not only good for saving fresh water, but also plays an important role in reducing pollution discharge into the sea pollutants and pollution from land-based activities.

SCDF APPLICATION –Strategic Action Programs
沿岸の持続可能な開発枠組みの応用 –戦略的行動計画

Food security and livelihood management
食糧安全保障・生活管理

- Sustain fish protein supply especially for lower income group;
- Protect livelihoods for small-scale fishers and fish farmers;
- Promote sustainable fishing and aquaculture practices;
- Implement FAO Code of Conducts for Responsible fisheries
- Create alternative livelihoods.

SCDF APPLICATION –Strategic Action Programs
沿岸の持続可能な開発枠組みの応用 –戦略的行動計画

Pollution reduction and waste management.
汚染削減・廃棄物管理

- Assess and identify types, source, load of pollution and associated risks to human health and economy;
- Develop and implement integrated waste management program;
- Develop and Implement site-specific pollution load reduction and management program;
- Develop coastal water quality monitoring program

East Asian Seas: A Global Pollution Hotspot (東アジア海域：地球汚染ホットスポット)

Social vulnerabilities

- Human population of 1.9 billion
- Major coastal settlements have developed into cities; rapid coastal urbanization – 8 megacities within the next 15 years
- Changing consumption and use patterns
- Poverty

Sewage treatment plants, Xiamen
下水処理場(廈門)

Xiamen continued to maintain an average GDP growth of 18.3%
US\$13.39 B investment in 6,088 current (2003) projects

Urban sewage treatment rate 57.63%(2001)
Solid waste treatment rate 95.46%(2001)
Recycling rate of solid industrial waste 89.80%(2001)

Volume of Released Industrial Sewage per 10 thousand Industrial Output

Year	Volume of Released Industrial Sewage (Tons/10 thousand Industrial Output)
1992	28.72
1993	17.05
1994	16.40
1995	11.74
1996	8.87
1997	4.95
1998	5.50
1999	4.29
2000	4.69
2001	3.01

State of the Coasts Reporting (沿岸状態の報告)

The diagram illustrates a flow from Governance (Policy, Strategies, and Plans; Institutional Arrangements; Legislation; Information & Public Awareness; Financing Mechanisms; Capacity Building) through Conditions and Responses to Sustainable Development Aspects (Natural and Man-made Hazard Prevention and Management; Habitat/cultural heritage Protection, Restoration and Management; Water Use and Supply Management; Food Security and Livelihood Management; Pollution Reduction and Waste Management). This leads to another set of Conditions and Responses, which are linked to Targets and Indicators (MDG, WSSD, AGENDA 21, SDS-SEA). The entire process is supported by Partnerships (Public, Civil Society, Corporate and Other Stakeholders).

State of the Coasts Reporting (沿岸状態の報告)

Part I: General demographic, socioeconomic information

Part II: Summary of Target and Responses

Part III: Detail information on Targets and Responses

Indicators: MDG, WSSD, SDS and other sustainable development indicators.

ICM Code (統合沿岸管理コード)

ISO 9001: Quality Management System (QMS)

ISO 140001: Environmental Management Systems (EMS)

Level 1: Governance
Level 2: Strategic Action Programs
Level 3: Impacts (Recognition)

ICM program development and implementing Cycle (revised, 2007) 統合沿岸管理プログラム開発および実行サイクル (2007年の改訂版)

1 PREPARING

- Project management mechanisms
- Workplan and budget
- Human and financial resource arrangements
- Stakeholder identification and preliminary communication
- Training of core project staff
- Project monitoring program
- Assess requirement for ICM Code
- Assess requirement for the Code

2 INITIATING

- Environmental and coastal profiling
- Issues identification and prioritization
- Biodiversity/habitat protection
- Land and sea-based pollution/risks
- Climate change/hazard
- Fisheries
- Water
- Risk assessment
- Integrated information management system
- Public awareness
- Stakeholder consensus building/ communication plan preparation
- Coastal Strategy outline

3 DEVELOPING

- Refined risk assessment
- Coastal Strategy and Implementation Plan
- Local level of plan or specific action plans
- Local and municipal level of prevention and management
- Local practices, restoration and management
- Water use and supply management
- Food security and livelihood management
- Pollution reduction and waste management
- Financing/ investment plan
- Environmental monitoring plan
- Stakeholder participation/ communication plan

4 ADOPTING

- Organizational and legal mechanisms
- Coastal policy, strategy and 3-5 year action plans
- Funding mechanisms

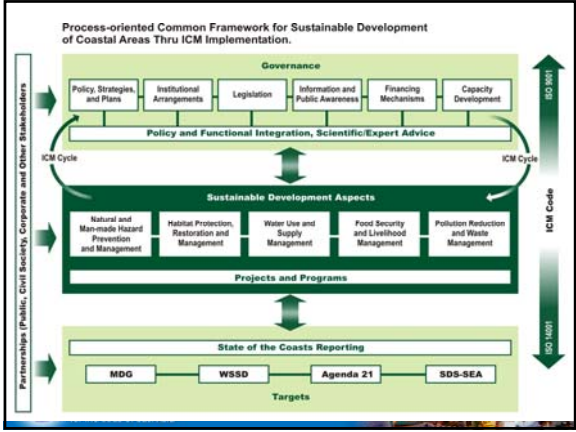
5 IMPLEMENTING

- Coordinating and program management mechanisms
- Environmental monitoring program
- 3-5 year action plans

6 REFINING and CONSOLIDATING

- Review institutional setup
- Program monitoring and evaluation
- Review strategies and action plans
- Scaling up strategy
- Planning for next program cycle
- Updating SOC
- Targeting ICM Managers/ certification

ICM cycle (2007)
統合沿岸管理サイクル



Key Messages 主要メッセージ

1. ICM is a coastal area management system which employs an integrative, holistic, proactive management approach and in interactive planning process in addressing the complex management issues through implementation of the SCDF to achieve the goal of sustainable development.

Key Messages 主要メッセージ

2. ICM approach is doable, relevance, practical and comprehensive enough for managing the complex coastal problems in both developing and developed nations with variation depending on socioeconomic, political, demographic and ecological conditions of the coastal areas

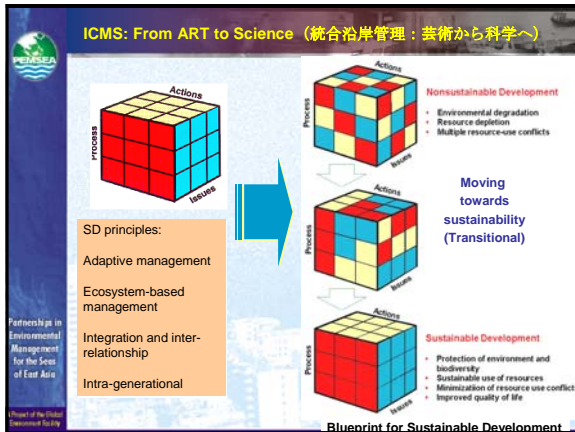
Key Messages
主要メッセージ

3. ICM has evolved from loosely coordinated, poorly documented, experience-based management approach into a process-oriented, well-documented, indicator-based institutionalized management system



Key Messages
主要メッセージ

4. ICM is internationally recognized coastal and marine management approach in implementing various provisions of the international conventions such as Agenda 21, UNCED, WSSD plan of implementation, Biodiversity, Climate Change, GPA and others



Thank you

