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National Workshop Proceedings

THE APPLICATION OF MARINE AND COASTAL SPATIAL PLANNING IN VIET NAM

An Ecosystems based Management Approach

The estuary in Quang Nam province © Bui Thi Thu Hien, IUCN Viet Nam

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1Floor, 2A Building, 298 Kim Ma Street, Van Phuc Diplomatic Compound
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Tel: ++844-37261575/ Fax: ++844-37261561

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LIST OF ABBREVIATIONS

APDC	Asian Disaster Preparedness Center
Aqua	Aquaculture
BR	Biosphere Reserve
CBD	Convention on Biological Diversity
CM	Coastal Management
COBSEA	Coordinating Body of the Seas of East Asia
CRSD	Coastal Resources for Sustainable Development
DANIDA	Danish International Development Agency
DEFRA	British Ministry of Environment, Food and Rural Affairs
DONRE	Department of Natural Resources and Environment
ECO	Ecosystem
ECLUP	Enhanced Comprehensive Land Use Plan
ESI	Ecosystem Sensitivity Information
GRP	Geographic Response Plan
IMO	International Marine Organization
IOC	Intergovernmental Oceanographic Commission
IUCN	International Union for Conservation of Nature
MAB	Specialist Group of Man and Biosphere
MCD	Center for Marine Conservation and Community Development
MFF	Mangroves for the Future in Viet Nam
MONRE	Ministry of Natural Resources and Environment
MSP	Marine Spatial Planning
NOAA	National Oceanic and Atmospheric Administration

Norad	Norwegian Agency for Development Cooperation
NRD	National Resource Document
NP	National Park
PC	People's Committee
PEMSEA	Partnership in Environmental Management for the Sea of East Asia
PSSA	Particularly Sensitive Sea Area
QN-HP	Quang Ninh - Hai Phong
RRD	Regional Resource Document
SEA	Strategic Environmental Assessment
Sida	Swedish International Development Agency
SLIQ	System thinking, Landscape planning, Inter-sectoral coordination, Quality economy
UNDP	United Nation of Development Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
VDF	Viet Nam Directorate of Fisheries
VNU	Viet Nam National University, Hanoi
WB	World Bank
WWF	World Wildlife Fund

Marine spatial planning
A tool for marine integrated state management in Viet Nam

Vice Minister Chu Pham, Ngoc Hien
Ministry of Natural Resources and Environment

On behalf of leaders of the Ministry of Natural Resource and Environment, I warmly welcome delegates from central bodies and coastal provinces to attend the workshop on "Marine Spatial Planning Application in Viet Nam" in Hai Phong today.

It is necessary for a developing country like Viet Nam to carefully consider the sustainability in its policy, strategy and long-term economic development plans. Moreover, being a coastal country, Viet Nam is moving in the right direction in centering the economic development strategy around sustainable marine development.

In order to achieve the marine strategic goals for 2020, Viet Nam must establish a sustainable marine economy and a modern marine industry and the application of marine spatial planning is considered a high priority.

Integrated marine spatial management requires the establishment of an inter-sectoral, inter-organizational, and inter-regional cooperative mechanism in marine management to comprehensively address conflicting relationships within marine spaces and promote sustainable development.

Marine Spatial Planning is an effective tool for space-based marine management that has seen global success over the past fifteen years and shows strong planning potential Viet Nam. As economic and development conflicts increase in coastal regions throughout the country, the need for integrated MSP has never been greater.

Although integrated MSP in Viet Nam is new to managers, policy makers, scientists, and planners, with adequate planning, the management strategies can be successfully adapted. With the technical support from international organizations and projects, MONDRE has recently implemented capacity building activities to prepare for MSP.

Today, the Ministry of Natural Resources and Environment, in collaboration with the Hai Phong People's Committee, the Mangroves for the Future Initiative in Viet Nam and the World Bank Funded Sustainable Management of Coastal Fisheries Project under the coordination of the Ministry of Agriculture and Rural Development, jointly organize the national workshop on "Application of Marine and Coastal Spatial Planning in Viet Nam - An ecosystem-based management approach".

This workshop has 3 main objectives: 1) learning and sharing experiences on the application of marine spatial planning in the region and in the world; 2) Introducing the status and application of marine spatial planning process in Viet Nam; and 3) recommending solutions to a broader application of marine spatial planning in Viet Nam in the future.

I hope that through the shared international experience and our recent national efforts, we will focus our discussions on solutions and measures to ensure the official application of MSP in Viet Nam; marking an important milestone in the successul application of the MSP process in Viet Nam.

On behalf of the Ministry of Natural Resources and Environment, I would like to convey our sincere thanks to the UNESCO (IOC-UNESCO), the National Oceanic and Atmospheric Administration (NOAA), the Coordinating Body of the Seas of East Asia (COBSEA), the United Nation of Development Program (UNDP), the Swedish International Development Agency (Sida), MFF, IUCN, and the World Bank, for their support in strengthening the MSP capacity of Viet

Nam. I would also like to thank the Hai Phong People's Committee for not only leading the MSP process in Viet Nam, but also for supporting this important workshop. Thank you to the media for their attendance.

Last but not least, I would like to thank our international guests and all participants for coming all the way to the workshop and for their valuable time.

I wish the workshop a great success!

Implementation of marine spatial planning - A high priority solution for Hai Phong city

Do Trung Thoai
Vice Chairman of Hai Phong People's Committee

Marine spatial planning (MSP) is an innovative management strategy that, over the past fifteen years, has gained increasing success in effectively supporting coastal development around the world. In attempt to deal with the increasingly destructive activities in Viet Nam's coastal areas, the Ministry of Natural Resources and Environment, with the support of international organizations, has initiated preparatory activities to enhance the application of MSP in Viet Nam. The conference today emphasizes Viet Nam's efforts to promote the widespread adoption of MSP at a provincial and national level.

On behalf of the Hai Phong People's Committee, I would like to warmly welcome all the distinguished and local guests participating in the important conference and I wish the meetings great success.

The marine based economy represents a large proportion of the economic structure in Hai Phong. A coastal port city, Hai Phong plays a vital role in the trading and fishing economy of Northern Viet Nam and is considered a leader in industry and development. Hai Phong is one of twelve coastal economic zones that will receive prioritized government investment until 2020. The area is also a center for marine tourism and has great potential to further develop the eco-tourism sector associated with the natural conservation areas around Cat Ba National Park in neighboring Quang Ninh province.

Extensive economic development and reliance on marine services has increased the demand for coastal and marine areas. Subsequently, conflicts over the development of areas, particularly in the estuarine-coastal areas around the city, are increasing. Moreover, Hai Phong is highly vulnerable to the effects of climate change and sea level rise, which is already causing an escalation in severe flooding throughout the area. These short term and long term challenges are impacting the goal for sustainable development of seas, coastal regions, and islands around the province. Hai Phong must prepare to meet these challenges and responds to conflicts effectively while ensuring the environmental values and marine resources are not damaged. The adaptation and integration of MSP is a high priority solution and the city is currently a pioneer in the application of this approach. In 2007, Hai Phong city and Quang Ninh province leaders signed a pledge to coordinate the implementation of an integrated coastal management framework. This year, the city has commenced the implementation of "Marine Spatial Planning in Hai Phong City: towards 2025, with views to 2050".

The conference in Hai Phong today represents an important step in the city's progress towards implementing MSP and provides encouragement towards furthering the goal of promoting the sustainable use of seas, coastal areas, and islands.

On Behalf of Hai Phong City People's Committee, I would like to express our sincinere thanks to the Ministry of Natural Resurces and Environment and the international organizations that have helped Hai Phong to understand and implement MSP. We would also like to thank all guests for their participation and hope that you all have a great stay in the city of Red Flamboyance - Hai Phong. I would like to thank the organizers, interpreters, and media agencies for helping to organize such a successful event.

I wish the conference great success!

Figure 1. The participants at the National Workshop on Application of Viet Nam's Marine and Coastal Spatial Planning in Hai Phong

Application of coastal and marine spatial planning (MSP) in coastal fisheries management in Viet Nam

Nguyen Thi Trang Nhung
Viet Nam Directorate of Fisheries

The Viet Nam Directorate of Fisheries (VDF) would like to send our warmest greetings to the distinguished delegates attending this seminar on the "Application of Coastal and Marine Spatial Planning (CMSP) in Viet Nam - An Ecosystem-based- Management Approach". VDF would like to thank the Hai Phong People's Committee (Hai Phong PC), International Union for Conservation of Nature (IUCN), The Mangroves for the Future in Viet Nam (MFF), for inviting VDF and the project "Coastal Resources for Sustainable Development" to participate in the seminar and give the opening speech.

Sustainable development of the coastal economy and local livelihoods is essential in the management of conflicting issues such fisheries resource reduction, environmental degradation, and the overexploitation of coastal and marine resources. CMSP offers strategic solutions for balancing the encouragement of the coastal economic sector with environmental protection and social welfare.

Coastal development planning is a central issue affecting the sustainable development of the fisheries sector. Current planning strategies, which have not adapted to the current situation, often fail to fully consider the long-term environmental and ecosystem problems. Without the adoption of an intergrated approach to coastal planning, the current inefficient and inconsistent methods will continue to fail.

Integrated coastal spatial planning requires multi-sector participation: aquaculture, fisheries, tourism, agriculture and rural development, urban, infrastructure and energy, etc. It is important that all coastal provinces incorporate integrated coastal zone management strategies into fisheries development plans to establish consistency in multi-sectorial coastal planning.

However, this is a new approach to the fisheries sector and Viet Nam. The adoption of coastal and marine spatial planning will require the collaboration of all specialists and sectors involved in coastal management and planning.

The national workshop on the "Application of Coastal and Marine Spatial Planning (MSP) in Viet Nam - An Ecosystem-Based Management Approach" has been organized to discuss the applicability of coastal and marine spatial planning in Viet Nam.

It is an opportunity for those working on the "Coastal Resources for Sustainable Development" (CRSD) project in the Ministry of Agriculture and Rural Development, to work with others in related sectors in sharing knowledge, raising awareness, and proposing solutions for CMSP application.

Participating in the workshop today as a co-organizers VDF, the CRDS, and the Agriculture Projects Management Board, would like to thank Mangroves for the Future, International Union for Conservation of Nature, Ministry of Natural Resources and Environment, and the People's Committee in Hai Phong City for designing the content and providing logistical arrangements for the workshop.

Wishing you good health and the workshop great success!

Marine Spatial Planning: What have we learned from international experience?

Charles N. Ehler
Intergovernmental Oceanographic Commission, UNESCO

Today the ecosystem approach has become widely accepted as a key framework for delivering sustainable development in the terrestrial, coastal, and marine environment. It provides an important framework for assessing biodiversity and ecosystem services, and evaluating and implementing potential responses. The Convention on Biological Diversity (CBD) refers to the ecosystem approach as ‘‘a strategy for the integrated management of land, water, and living resources that promotes conservation and sustainable use in an equitable way.’’ Application of the ecosystem approach involves a focus on the functional relationships and processes within ecosystems, attention to the distribution of benefits that flow from ecosystem services, the use of adaptive management practices, the need to carry out management actions at multiple scales, and inter-sectoral cooperation. A number of other established approaches, such as integrated water resources management and integrated ocean and coastal area management, are consistent with the ecosystem approach and support its application in various sectors or biomes, including coastal and marine environments. The application of ecosystem approaches in the marine and coastal areas builds on the concept of integrated management, already widely used for the management of these areas.

However, a feasible method for translating this concept into operational management practice is yet to emerge. Concepts regarding both integrated and ecosystem-based management are often too broad, too abstract, and too complex for marine managers to enable effective implementation. One way to achieve more effective implementation of ecosystem-based management in the marine environment is through the use of marine spatial planning (MSP).

The most commonly used definition of MSP is one developed by UNESCO’s Intergovernmental Oceanographic Commission (Ehler & Douvere 2007):

“A process of analyzing and allocating parts of three-dimensional marine spaces to specific uses, to achieve ecological, economic, and social objectives that are usually specified through the political process; the MSP process typically results in a comprehensive integrated plan for a marine region. MSP is an element of sea use management”.

Ecosystem-based management is place or area-based strategy focused on a specific ecosystem and the range of human activities and pressures affecting it. This emphasis on managing places is a key characteristic of ecosystem-based management and is a marked departure from existing approaches that usually focus on a single species, sector, activity or concern. Where sectoral management implies that each sector regulates particular activities or projects taking place at a particular location within a certain area, the management of areas implies that, after a certain area has been defined, sustainable development and use will be established for all activities in the whole area. OSPAR and HELCOM, European regional commissions for the protection of the marine environment, have jointly defined an ecosystem approach for sea use management as:

“The comprehensive integrated management of human activities based on the best available scientific knowledge about the ecosystem and its dynamics, in to identify and take action on influences that are critical to the health of marine ecosystems, thereby achieving sustainable

use of goods and services and maintenance of ecosystem integrity".

An in-depth review of the application of the ecosystem approach, carried out by the CBD, revealed that various barriers prevent actual implementation of ecosystem-based management. Despite its broad acceptance and wide range of principles, definitions and guidelines, the ecosystem approach is still more a concept, widely discussed at scientific fora, but with few examples of actual practice. It is increasingly clear that governments and stakeholders lack the necessary tools to make an ecosystem approach operational in the marine environment, especially with regard to cross-sectoral integration. In particular, the concept lacks concrete guidance that allows balancing conservation and the sustainable use of natural resources. The CBD review recognizes that the implementation of an ecosystem approach to coastal and ocean management is a complex and demanding process, and that among other needs practical tools need to be developed that can make this process more tangible. Other research conducted to evaluate current practice and application of ecosystem-based management resulted in similar conclusions and confirmed the need for more operational tools that can move implementation forward.

A range of tools and measures will be needed to achieve the multiple objectives of an ecosystem-based management approach, but a focus on the spatial and temporal aspects of ecosystem-based management is one way to make this approach more tangible. MSP can do this because it:

- Addresses the heterogeneity of marine ecosystems in a practical manner. MSP takes into account that some things only occur in certain places. Important ecological areas, for example, are located in areas of high diversity, endemism or productivity, spawning and nursery areas, and migration stopover points. At the same time, economic activity can and will only take place where the resources are located, as for example, oil and gas deposits, sand and gravel deposits, and areas of sustained winds or waves;
- Focuses on influencing the behavior of humans and their activities over time. Although goals and objectives for a certain area are usually set for both ecosystem/natural processes and human activities, it is only the human component (human activities and resource use) that can be managed, not the ecosystem itself, e.g., through management measures or actions that change behavior of humans and their activities over time;
- Provides a management framework for new and previously inaccessible scientific information. Through remote sensing, tracking technologies, and global positioning technologies, science is making visible what had previously been hidden or inaccessible and increases the need for a management framework that allows the effective integration and use of new scientific information in decision-making processes;
- Makes conflicts and compatibilities among human uses visible, and therefore tangible. Through the mapping of ecosystems, ecologically and biologically significant areas, and human activities affecting them one can see where conflicts are or will be located; and
- Guides single-sector management toward integrated decision-making and management. The development of marine spatial plans for an entire region visualizes alternative scenarios (drawn from a specified set of sectoral goals and objectives) for ecosystem-based management, which in turn can provide guidance to a range of decision-makers, each responsible for only a particular sector or activity of the entire area, e.g., fisheries managers will see what conflicts and compatibilities their management plans will have with plans for the offshore development of wind farms.

MSP provides a process for a strategic and integrated plan-based approach for marine management that makes it possible to look at the "bigger picture" and to manage current and potential conflicting uses, the cumulative effects of human activities, and marine protection. MSP provides an opportunity to not only improve management and understanding of the marine

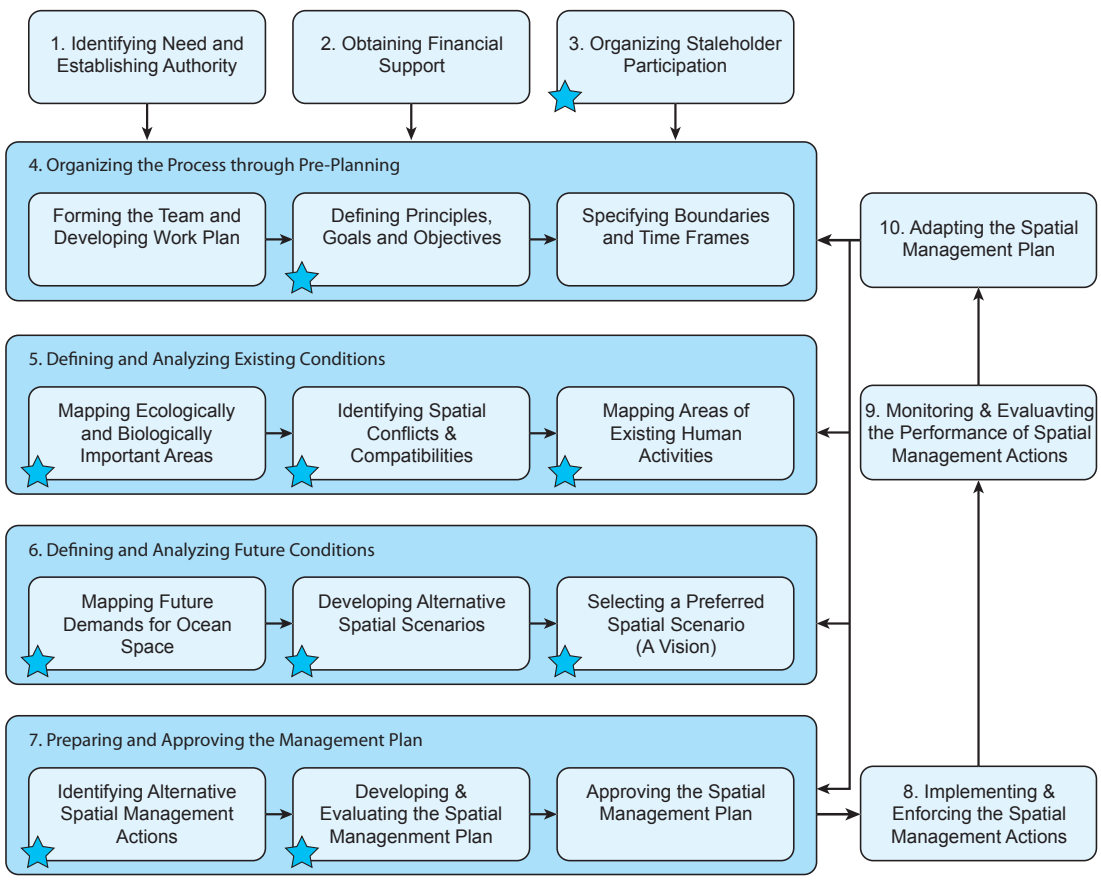
environment, but also allows long-term planning in a way that processes become more transparent with greater certainty in permitting, planning and allocating for both developers and environmental managers. In doing so, it can replace the current piecemeal view, and monitor commitments made in a number of important international and national marine policy and legislation, including commitments to apply an ecosystem approach.

The development and implementation of MSP involves a number of steps including:

1. Identifying need and establishing authority;
2. Obtaining financial support;
3. Organizing stakeholder participation;
4. Organizing the process through pre-planning;
5. Defining and analyzing existing conditions;
6. Defining and analyzing future conditions;
7. Preparing and approving the spatial management plan;
8. Implementing and enforcing the spatial management plan;
9. Monitoring and evaluating performance; and
10. Adapting the marine spatial management process.

These 10 steps are not a linear process that moves sequentially from one step to another. Many feedback loops should be built into the MSP process. For example, goals and objectives identified early in the planning process are likely to be modified as costs and benefits of different management actions are identified later in the planning process. Analyses of existing and future conditions will change as new information is identified and incorporated in the planning process. Stakeholder participation will change the planning process as it develops over time. Planning is a dynamic process and planners have to be flexible in accommodating change as the process evolves.

Figure 1. A Step-by-Step Approach to Marine Spatial Planning



Note: The star symbol (✧) indicates a step in the MSP process in which stakeholders should be actively engaged.

To be effective, MSP needs to be conducted as a continuous, iterative, and adaptive process and consists of at least three ongoing phases:

1. ***Planning and analysis:*** Generating and adopting one or more integrated, comprehensive spatial plans for the protection, enhancement and sustainable use and development of the sea and its resources. The planning and analysis phase will be based on a set of research initiatives (including mapping) that address both environmental and human processes;

2. ***Implementation:*** Implementing the plan through the execution of programmed works or investments, enabling change, encouraging improvement and through regulation and incentives, and enforcement of proposed changes and ongoing activities in, on, over and under the sea, in accordance with the plans; and

3. ***Monitoring and evaluation:*** Assessing the effectiveness of the plans, their time scales and implementation mechanisms, considering ways in which they need to be improved and establishing review and adaptation procedures. Results of evaluation are fed back into the planning and analysis element of management, and the process begins again.

The ultimate decision on what space will be allocated for what use (or non-use) is a matter of societal and political choice. People are central to the decision-making process and relevant stakeholders, including the wider public, need to be effectively involved throughout the MSP process. Stakeholder buy-in is critical to a successful outcome. Finally, all steps of this process need financing on a continuing basis to achieve management goals and objectives.

1. What is the status of MSP for an international perspective?

Over the past decade MSP has been increasingly recognized i as an operational process that can lead to ecosystem-based management of marine areas. At least six countries (Belgium, The Netherlands, Germany, Norway, Australia, and China, and three American states (Massachusetts, Rhode Island, and Oregon) have approved and implemented spatial plans for their marine jurisdictions. In two cases, Norway and the Netherlands, MSP is already in its second or third, generation. Three other countries (England, Portugal, and Sweden) will implement marine spatial plans for their marine waters over the next few years. Over the next decade at least 30 countries, possibly including Viet Nam, will have produced and approved 60-70 marine spatial plans at the national (EEZ), sub-national (territorial sea), and state/provincial levels that will cover approximatly one-third of the surface area of the world's EEZs.

2. What have we learned from international experience?

Some important lessons learned from international experience include:

1. ***Political will*** - MSP is most successful when a political champion is available to provide political support;

2. ***Clear authority to plan and implement*** - without legal authority to plan and implement, MSP implementing plans will be difficult or impossible;

3. ***Adequate and sustained financing*** - MSP planning and implementation is not free. Adequate resources must be available to make it work;

4. ***Effective stakeholder participation*** - MSP will always involve social and political choices; without stakeholder participation long-term success of any MSP will be in doubt;

5. ***Clear, measurable objectives*** - without clear and measurable objectives, the "success" of a plan will be difficult to determine;

6. ***Best available information*** - MSP depends on the use of the best available information including traditional or local knowledge in addition to scientific information; however, lack of information should not be an excuse to start planning;

7. ***Ecologically and biologically significant areas*** - early identification of ecologically and biologically significant areas (EBSAs) will provide a basis for ecosystem-based planning and management;

8. ***Alternative futures and a vision*** - only the future can be changed and there are alternative futures for the development of any marine region; identifying alternative futures, depending on different goals and objectives, should be the basis for identifying a "preferred future" or vision for the plan;

9. ***Implementation and enforcement*** - existing authorities can often be used to implement and enforce plans;

10. ***Monitoring and evaluation*** - the two essential management activities must be built into the MSP process is plans are to be "adaptive"; and

11. ***Adaptive management*** - since the future is unknowable and change is inevitable, any MSP process and plans must be open and adaptive to these changes.

The status of coastal and marine spatial planning application in Viet Nam

Nguyen Chu Hoi
Hanoi University of Science (HUS)

Abstract

The views expressed in this paper do not necessarily reflect the views of the Government of Viet Nam.

Coastal and marine development is expanding rapidly throughout Viet Nam. Shipping, industrialization, tourism, agriculture, and aquaculture is spreading along the 3260km coastline and leading to unsustainable urban expansion.

This paper presents an overview of Viet Nam's coastal development potential, the need and status of coastal and marine spatial planning (CMSP) and integrated coastal management (ICM). Although Viet Nam has been working towards an ICM system for the past fifteen years, coastal management remains the responsibility of fifteen different sectors and ministries, making it conflicting, contradictory, and inefficient. In order to deal with these challenges, the Viet Nam Administration of Seas and Islands (VASI) under the Ministry for Natural Resources and Environment (MONRE) has been appointed by the government to implement a unified coastal management strategy through the inclusion of functional zoning , CMSP, and sea-use planning. The paper will also emphasize the government policy response and lessons learnt from the initial CMSP implementation to strengthen Viet Nam's commitment towards sustainable development, cross-sectoral management, and local engagement.

Key words: coastal and marine spatial planning, marine spatial management, coastal zoning, sea use planning, integrated governance.

1. Background

The current expansion of offshore wind energy, fishing and aquaculture, dredging, mineral extraction, shipping, and the need to meet international and national commitments to biodiversity conservation, are putting increasing pressure on marine resources and are leading to increasing interest in sea use planning and CMSP. Coastal degradation throughout the world has led to the widespread adoption of CMSP which has seen success in the management of fragile marine areas. CMSP is a crucial first step in the development of ecosystem-based sea use management that balances social welfare, economic development, and environmental conservation.

Despite the widespread application of CMSP for multi-use areas in biologically sensitive areas, the scope and legal position of CMSP has not been clearly defined and there are many definitions and terms employed for this strategy. This paper presents the status of the CMSP application in Viet Nam and identifies the opportunities, challenges, and legal basis for future further implementation.

2. Needs of MSP application in Viet Nam

The sea area of Viet Nam is approximately three times larger than the land area and stretches across 20 coastal and marine ecosystems belonging to six marine biodiversity zones [19, 27]. Viet Nam's seas include approximately 2,773 near-shore islands, 12 coastal lagoons (in Central Viet Nam), 44 coastal bays, 114 river mouths and estuaries, and two offshore archipelagos [14, 20].

Nearly 11,000 species of marine animals, plants and seabirds recorded in the region. Among them there are: 2,038 species of fish, 110 of which have commercial value; 6000 species of benthos; 653 species of seaweed; 657 species of zooplankton; 537 species of phytoplankton; 225 species of marine shrimp; 94 species of mangrove plants; 14 species of sea-grass; 14 species of sea-snake;

12 species of marine mammal; 5 species of sea-turtle; over 43 species of sea-bird; and over 1,300 species of island organisms. Approximately 1,122 square kilometres of coral reef boarder the islands and central coast. Mangrove forests cover 252.500 ha along the coastline, particularly in the Mekong lowlands. Fourteen species of sea-grass are distributed from north to south [19].

The key coastal ecosystems in Viet Nam provide US$60-80 million ha/year (ADB Report, 1999 [28]). Since 1994, oil and gas have been exploited along the continental shelf and there is potential for a gas-hydrate methane industry. In coastal areas, the production of heavy mineral deposits, construction materials, and 50,000 hectares of salt fields are developing. At present, 80 per cent of the country's tourists visit the coastal regions and islands (about 10 million tourists in 2011). Viet Nam also has a great potential to develop sea-ports along its long coastline and navigation sector [16, 20].

Figure 1. Quang Nam's coastline

The coastal and marine economy represents 48% of the national GDP; with oil & gas, marine fisheries, navigation and coastal tourism activities contributing 22% [2, 20]. Viet Nam has 28 coastal provinces, over 125 coastal districts and 12 island districts in which over half of Viet Nam's major cities are located and more than half the population (88,000,000 as of 2012) live. Viet Nam's coastal area is one of the most densely populated regions in South East Asia and twenty million Vietnamese livelihoods rely on coastal and marine resources [15, 20]. As the population increases, the area is becoming increasingly degraded and over-exploited [26]. Over-fishing, biodiversity loss, ecosystems destruction, heavy pollution, and frequent oil spills are repercussions of the rapid, unchecked development [23]. According to the IPCC (2007), Viet Nam is one of the top five most vulnerable countries for climate change. With a sea level rise of 0.5m, approximately 16% the coastal region will be underwater; threatening 35% of the population and GDP [24].

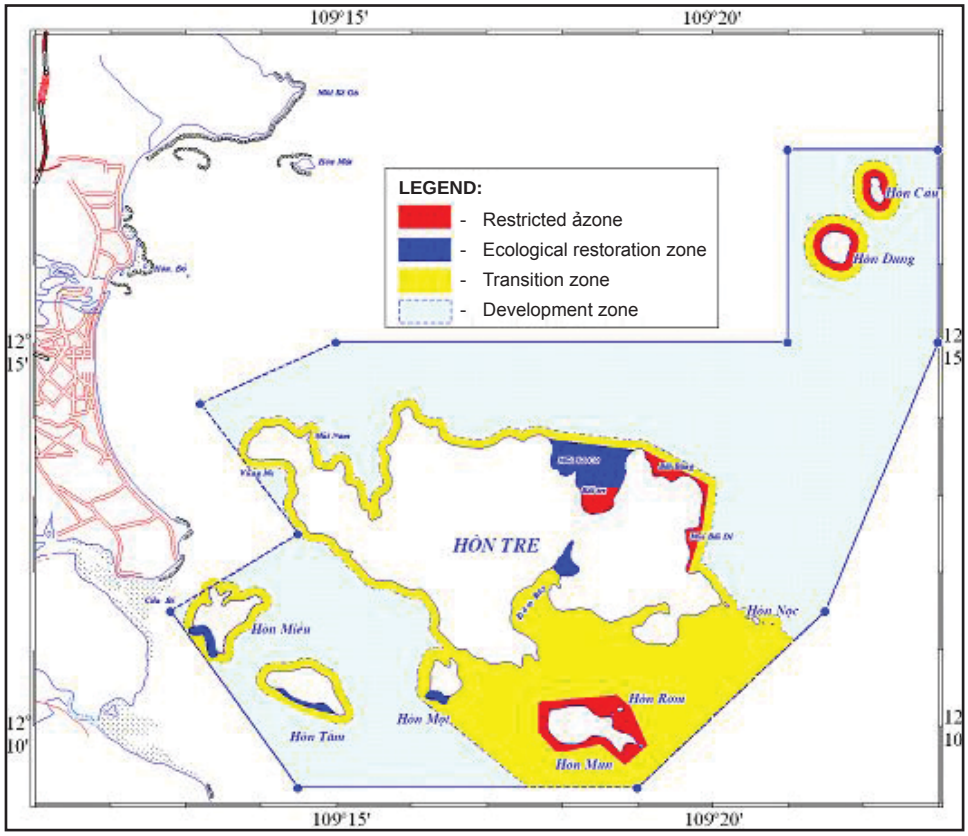
The seas, islands, and coastal areas around Viet Nam offer opportunity for an integrated multi-sector management approach. The current inefficient and segregated management strategy is leading to increasing resource use conflict and unsustainable development. A new direction is needed to bring all stakeholders together to form an integrated and collaborative strategy that will minimize conflict and promote environmental, social and economic development.

Over the past decade, Viet Nam has attempted to develop an integrated marine management approach and the integration of CMSP offers a step forward in conflict mitigation, coastal governance, and sustainable development [21].

3. Status of the MSP application in Viet Nam

CMSP in Viet Nam has become integrated into functional zoning for marine protected areas (MPA) and ICM. Functional zoning, the first step in the CMSP cycle, has been used in land use planning for over a decade. The Hon Mun MPA (Khanh Hoa province) has been divided into following zones: core zone, ecological restoration zone, transition zone and development zone (Fig. 1). The zoning plan has been approved by city authorities and incorporated into the urban socio-economic development plans.

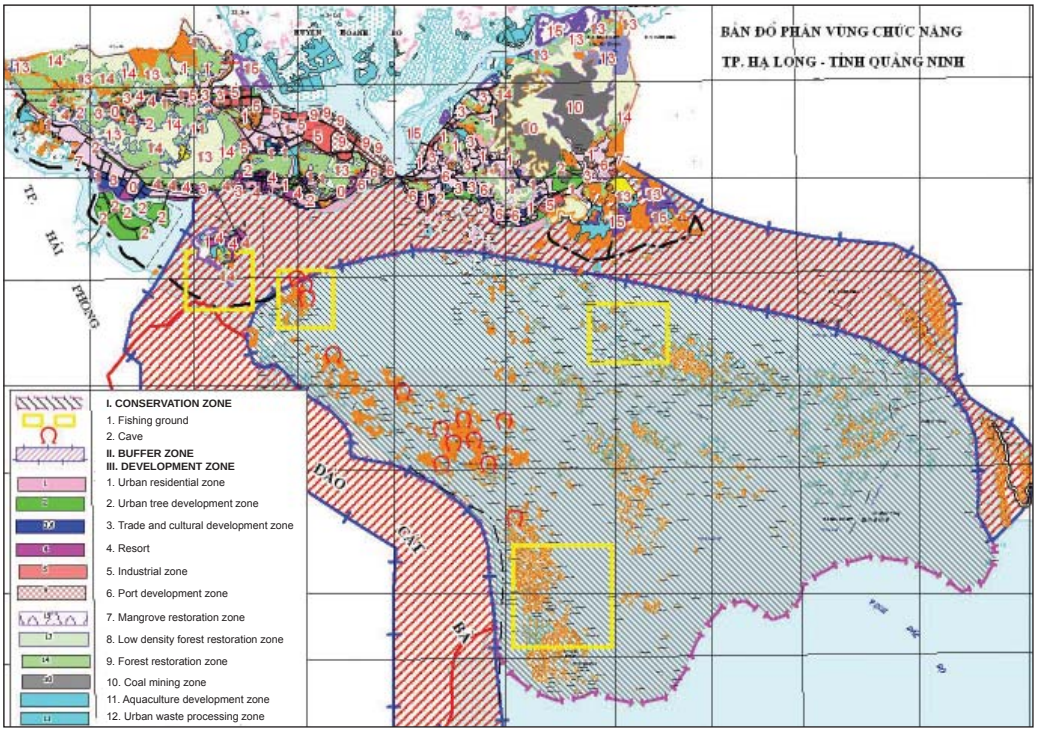
Figure 2. The management zoning plan of the MPA Hon Mun, Khanh Hoa province [21]



(Note: Red color-core zone, green-ecological restoration zone, yellow-transition zone and blue-development zone)

CMSP offers new opportunities for resource use in Viet Nam. However, there are also many challenges due to: a) The dynamic nature of the physical marine environment in terms of biological migration and fisheries resources, b) the mix-ability of marine ecological, environmental and resource factors in 3-dimensional space, c) the complex stakeholder relationships in the high resource, multi-use area that often leads to competitiveness and conflicting interests, d) the sensitive interactions between the highly influential, resource exploitation industries. In 2004, in attempt to overcome these difficulties, Danang implemented a spatial use zoning plan under the technical assistance of PEMSEA. Likewise, in 2007, the Ha Long Bay coastal area designated three zone groups with fifteen spatial sub-zones under the NOAA-IUCN-Viet Nam project framework (Figure 2).

Figure 3. Function zoning for coastal area of Halong bay, Quang Ninh province [24]



(Note: I-conservative zones including fishing grounds and limestone island caves, II-Buffer zone, and III-Development zones, including 13 sub-zones)

Based on the practical experiences and lessons learnt from the coastal spatial use zoning plan of Halong Bay, the NOAA-Viet Nam project was expanded (2011-2013) as a prioirity action under the ICM framework in the Quang Ninh-Hai Phong region. The project, developed under NOAA-IUCN support, has been approved by government leaders in Quang Ninh province and Hai Phong city.

CMSP in Viet Nam is defined as a public process of analyzing and allocating the spatial and temporal distribution of human activities in marine areas (marine space) to achieve ecological, economic, and social objectives that are usually specified through a political process [4]. CMSP, functional zoning, and sea use planning form a supportive relationship: functional zoning is a tool which CMSP which further develop to improve the legal definition for the utilization and management of each zone, as well as the development of a marine spatial use management plan within other sectoral strategies. Moreover, CMSP is the first step in the sea-use planning process [21].

There are 15 ministries and sectors relating to the state management of seas, islands and coasts. In 2008, the Government established the Viet Nam Administration of Seas and Islands (VASI) under Ministry of Natural Resources and Environment (MONRE) with the function of integrated and unified state management for seas, coasts and islands in Viet Nam. VASI oversees all marine and coastal concerns, especially for national coastal and marine sustainable development. At the central level, VASI acts as the national coordinating agency for ICM and sea-use management. At local level, the provincial Department of Natural Resources and Environment (DONRE) is a focal point to coordinate ICM and marine initiatives [20]. To manage sea use and exploitation, VASI is promoting intersectoral collaboration in the implementation of a national masterplan for coastal and marine utilization over coming decade (sea-use planning for next 10 years).

In 2009 VASI had implemented the small grant of comment and test to complete the IOC-UNESCO Guidelines of MSP: Step by Step Approach

towards Ecosystem-based Management. In 2010, with support from UNDP Viet Nam, the English Guidelines were translated into Vietnamese for broader application.

From 2011-2013, the Sida-COBSEA-UNEP project on "Spatial Planning in the Coastal Zone-Disaster Prevention and Sustainable Development" in East Asia Seas (EAS) was implemented in 3 phases:

- Phase I - Development of a Regional Resource and Guidance document which was the outcome of the first phase of the project;
- Phase II - Consultations with participating countries on their needs and priorities for how to adapt the Regional Guidance document to their national settings;
- Phase III – Capacity building, national adaptation and demonstrations.

The Regional Resource and Guidance document has been developed under the title: "Spatial Planning in the Coastal Zone of the EAS Region: Integrating Emerging Issues and Modern Management Approaches". The purpose of this document is to provide coastal planners and those participating in the processes with suggestions on how [5]:

- New approaches in planning can be adopted and how these differ from 'traditional' methods;
- To encompass the principles of ecosystem-based management into the planning process;
- To incorporate issues of disaster-risk reduction and climate-change impacts into the planning process; and
- To integrated land- and sea-spatial planning.

The following documents have bee translated into Vietnamese: (i) the Regional Resource Document (RRD) on Spatial Planning in the Coastal Zone of the EAS Region: Integrating Emerging Issues and Modern Management Approaches. In the same time, Viet Nam has developed and published (ii) the National Resource Document (NRD) on MSP for the planners and (iii) Training Syllabus on MSP for Viet Nam.

CMSP is an integrated and holistic coastal and marine management strategy that will be used in collaboration with coastal and marine management tools. From 2011-2015, the World Bank will support Viet Nam's fisheries sector to conduct a project on "Coastal resources for sustainable development" in eight coastal provinces and assist in mainstreaming CMSP into coastal resource investment plans.

A national project in the Ninh Thuan-Binh Thuan provinces and a "Study of scientific baselines in the service of MSP in Viet Nam's Southwest areas of the Gulf of Thailand" are on going initiatives under the National Program on Marine Science and Technology (2012-2015). The Sida small-grant project for the management of the Red River coastal biosphere reserve developed a local CMSP Training Manual as a tool for coastal management in this project [23].

MSP training is a priority for effective coastal management and the Vietnamese government has supported this advancement through: (1) good practice study-visits in USA-NOAA, China-PEMSEA, R. Korea, Philippines and Europe; (2) CMSP training workshops under cooperative projects framework in Viet Nam and overseas; (3) a regional and international forum on coastal zone and ocean managment (EAS congress, Ocean Days at Nagoya and Rio+20 and recently APEC on MSP etc.). CMSP has been incorporated into a Hanoi University of Science (HUS) post-graduate training program on marine resources and environmental governance.

Functional zoning is a CMSP support tool in the implementation of ICM initiatives. This can be divided into two periods [15,18]: Prior to 1995 ICM have not yet been formulated. After 1995, ICM initiatives were formulated at the central level and implemented at local level through pilot projects supported by government and international organizations. The following actions were taken to improve ICM awareness and develop a practical approach [18, 25]:

- National project to look at the development of ICM to maintain ecological safety and environmental protection (1996-2000).

- Viet Nam-Netherlands project on integrated coastal zone management (ICZM) for 2000-2005 with financial support of Netherlands government and conducted in 03 case-studies in coastal provinces: Namdinh (northern), Thuathien-Hue (central) and Baria-Vungtau (southern).
- Viet Nam-USA project to build ICM capacity in the Tonkin gulf, supported by the US (NOAA) and IUCN. The project was implemented from 2003 in three phases.
- Viet Nam-World Fish Center project on the facilitation of ICM in Viet Nam (2005-2006) which focused on the development of a ICM training manual at the coastal provincial level.
- Viet Nam-PEMSEA project on marine pollution and integrated coastal management: a two phase regional pilot site in Danang city: (2001-2008). From 2001-08 The project implemented a coastal use zoning plan for the city. From 2009-12 the project expanded ICM into other coastal provinces.
- National ICM program 14 provinces in Central Viet Nam toward year 2010 and vision 2020 (from Thanhhoa down to Binhthuan province). The project is focused on the local level and in being financially supported by Decision No 158/2007/QD-TTg of the PM dated in October 2007.

Legally, CMSP should be applied in spatial scheme of 04 national marine waters and continental shelf of Viet Nam defined by UNCLOS 1982.

In order to comply with the United Nations Convention of Law of the Sea 1982 (UNCLOS 1982), Viet Nam needs to implement CMSP in four national marine waters and along the continental shelf. At national level, the Government enacted a Strategy for Viet Nam's Seas towards 2020, focusing on marine economic development in relation to other sectors (in 2007). The 2009 Governmental Decree No.25/2009/ND-CP on Integrated Marine Resources Management and Environmental Protection was the first integrated governance policy for coasts, seas and islands [27]. The policy offers some guidance towards ICM implementation, CMSP, and coastal function zoning. The Law of Viet Nam's Seas (2012) will facilitate sustainable development towards a blue economy in Viet Nam. The Law of Marine Resources and Environment, currently in preparation, is will be a legally document ICM and marine resources conservation. Viet Nam has also implemented the Strategy on Sustainable Development of East Asia Seas (SDS-SEA) which was signed in 2003 under the PEMSEA framework. The 2016-2020 plan includes CMSP application to facilitate ICM implementation in key coastal provinces.

4. How move forward?

In order to successfully adapt and apply CMSP, Viet Nam will continuously:

- Identify and official name: function zoning, CMSP and sea-use planning; then integrate this into the national planning system;
- Define the legal foundation and position of CMSP in the national legal system and international treaties, notably UNCLOS 1982. It is suggested that in first period, application of MSP will be conducted in national sovereign marine waters before expanding throughout the country seas.
- Identify how CMSP will be implemented at the national, regional, and provincial levels.
- Prepare a set of CMSP technical guidelines for all levels and scales;
- Prepare a CMSP Text-book for the relevant post graduate courses;
- Support the human resource capacity for the effective application of CMSP;
- Apply CMSP at pilot sites which can then be expanded to high levels;
- Promote international and regional cooperation of CMSP application.

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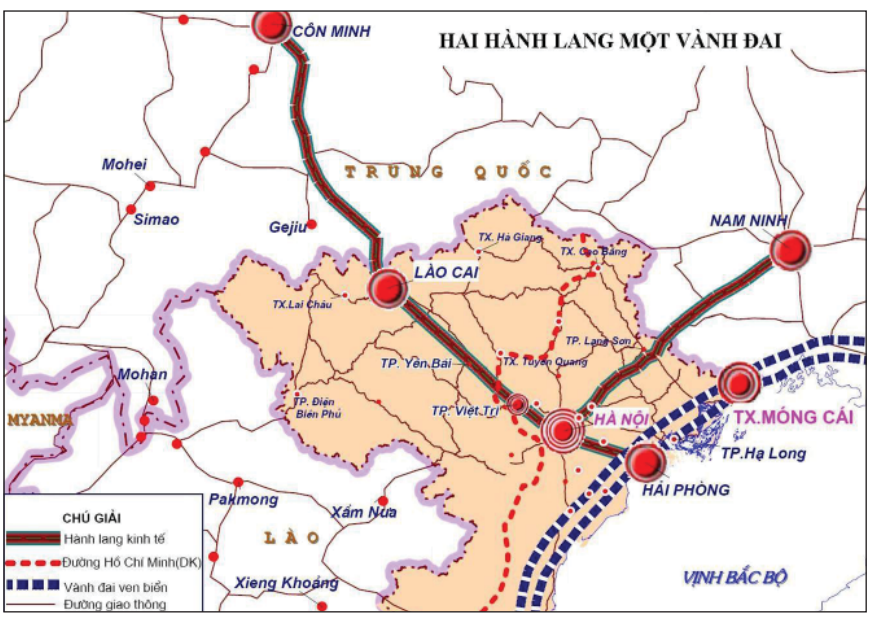
Marine spatial planning: Demand and application direction in Hai Phong

Nguyen Van Thanh
Chairperson of Hai Phong People's Council

1. Background

Hai Phong is Viet Nam's third largest city. Located on the Gulf of Tonkin, the city contains seven urban, eight rural, and two island districts; with 43% of the 1.9 million residents living in the urban areas. At a distance of 102km from Hanoi and 200km from the Chinese border, the city is located at a strategic development gateway along the Western Tonkin Coastal Belt (Ha Long - Hai Phong - Thai Binh - Nam Dinh - Ninh Binh); Hai Phong - Kunminh Corridor; and Hai Phong - Nam Ninh (China) Corridor (Figure 1). The natural beauty and ecological significance of the coastal area is drawing increasing number of tourists and the limb-caster archipelagos of Cat Ba and Long Chau respresent great potential for further conservation and the development of an eco-tourism industry.

Figure 1. The West Tonkin coastal belt and two trading corridors between Viet Nam and China



Hai Phong' economy is primarily marine focused and in the next two decades, the existing ports and trade are set increase, pushing the city to the forefront of Viet Nam's industrialization and increasing demand for marine spatial use. Current development and industrialization is focused on short-term gain and there is an increasing need to shift towards a more efficient, long-term approach. The sustainable development and effective planning of the surrounding coastal environment is of great importance to reduce stakeholder conflict and prevent over-exploitation

of this biologically important region. Marine Spatial Planning (MSP) can assist in reaching the city's three core objectives of: conservation, socio-economic development; and effective management.

2. Awareness and Application of Marine Spatial Planning in Hai Phong

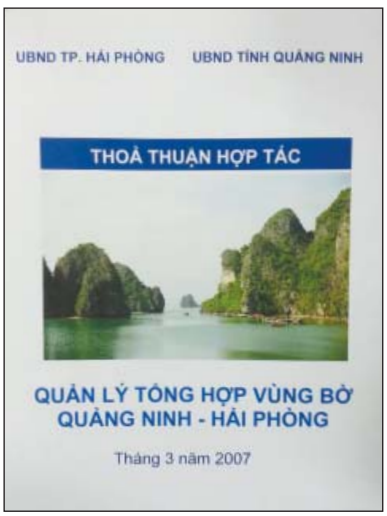
Over the past fifteen years, MSP has been successfully applied in many countries and Viet Nam is now preparing the technical conditions and legal foundation for local application. Hai Phong's conflicting management priorities between industrial development, tourism expansion, and natural conservation could benefit greatly from an integrated MSP approach. There is great potential for Hai Phong to develop a multi-purpose blue-sea economy and eco-urban area that is adaptable a resilient to a changing environment and economic conditions.

Although the city has taken preparatory steps towards developing a more efficient and sustainable economy, the natural resources depletion, particularly around the estuaries, has undermined long-term economic objectives. Agricultural activities in the Nam Trieu area around the Bach Dang estuary are leading to sedimentation of the deep sea port which was built by the French a century ago.

In reality, the City is pushed to choose the future main entrance for Hai Phong Port and its gateway in Lach Huyen Reek. Leaving the "entrance" to take the "reek" will place the City on a position to conduct a special measure so that Lach Huyen Reek will not make the same mistakes etc.

If implemented correctly, MSP has the potential to deal with these challenges in a sustainable and integrated manner. The city has already participated in the "Building capacity for Integrated Coastal Management in North West Tonkin Guff, Viet Nam" project. The project, which ran from 2005-2013, was implemented under the Viet Nam-American and IUCN cooperation framework. Furthermore, an MOU has been signed between Hai Phong City and Quang Ninh province on integrated coastal area management (Figure 2). The MOU represents Viet Nam's first inter-provincial policy on marine coastal management and provides a shared vision for conducting MSP in each province. With emphasis on capacity building for environmental assessment and integrated marine management, the MOU increases support for sectoral needs, such as: sustainable tourism, local economic development, climate change resilience, and oil spill response. This cooperation with strengthen coastal management, harmonize economic development, promote social wellbeing, and support conservation. Moreover, it will increase working relationships between city leaders, promote information sharing and scientific cooperation, increase community awareness, and encourage the active participation of stakeholders in environmental conservation.

Figure 2. Quang Ninh - Hai Phong Integrated Coastal Management MOU



Integrated coastal management in the Quang Ninh - Hai Phong region can provide a balance between the increase in living standards, environment preservation, and world heritage and biosphere reserve protection. The strategy will reduce costs and increase accumulative benefits for the benefit of coastal communities, the economic sector, and the regional environment. Administrative leaders have had the benefit of awareness raising activites and study tours to the US in order to share experience and learn more about MSP in other countries. Training has been provided for: marine protected area certification, oil spill response in the marine protected areas, and environmental monitoring and evaluation.

In order to implement the MOU, it is now necessary to institutionalize the regional network for integrated coastal management, strengthen the Operational Regulations and Action Plan for a inter-provincial steering committee, and develop the seas and coastal management network within the two provinces. The city can now utilize trained staff in the implementation of the integrated coastal management plan and further institutional capacity through addition training for policy, technology, and state management of seas and coastal areas.

With technical support from the National Oceanic and Atmospheric Administration (NOAA) and counter funds from the Ministry of Science and Technology, the Ministry of Natural Resources and Environment (MONRE) recently implemented a project for "Coastal spatial use zoning and management planning in QN-HP". This is one of the nine prioritized actions under the framework of integrated coastal management and a "buffer step" towards the application of MSP in Hai Phong. This project will assist the provinces in forming a decision-making procedure for within coastal spatial use zoning, a precondition for the application of MSP in Hai Phong. The project has already organized study tours to the USA and Thailand and conducted MSP training courses for fifty key city officers. Hai Phong is now in the position to take lead on the implementation of MSP.

3. Some directions on ecosystem-based urban economy development in Hai Phong

Hai Phong plans to develop an urban ecosystem-based economy with the following objectives:

(i) *Low-carbon and low-carbon-emission society:* energy saving, efficient energy use, renewable energy sources;

(ii) *Material use reduction, appropriate recycling:* application of 3R principles (reduce, reuse, recycle), change the perception of waste;

(iii) *Co-existence:* biodiversity conservation, fauna and flora resource protection and green space in urban planning and development.

The development of a climate change responsive, urban blue economy, will be implemented through an ecosystem-based approach which considers Hai Phong as an urban coastal ecosystem. Socio-economic, cultural activities will function within the ecosystem; with the input of land, water, food, energy, building materials and other resources (eco flows, environment and human resource etc.). The outputs will be the ability to create jobs, provide income and shelter, and maintain health, education, and recreational activities. Greenhouse gases, polluting wastes (solid, liquid, gas and toxic waste), and excessive heat will the waste generated.

The following development choices remain open for adaptation

a) *Making the economic structure more environmentally friendly through the:*

- Restriction of polluting industries
- Developing green-economy oriented sectors
- Ecosystem-based regional economic structuring
- Commodity production and environmental services development
- Clean energy development (wind, solar, bio, bio-fuel, sea energy, atomic energy etc.)

b) *Removing barriers to form a supportive legal environment and promoting development policy and mechanisms to create competitive advantages for:*

- Environmental commodities and services
- 3R products (reuse, reduce, recycle)
- Clean production, clean technology application

- Energy saving
- Wastes processing
- Using clean energy

c) *Develop a receiving technology transfer for environmental friendly production and technology:*

- Cleaner technology and energy saving
- Wastes processing technology
- Clean energy production technology

d) *Investment in leading green economy sectors:*

- Development of an organic agriculture
- Development of eco-economic models (ecosystem-based economic village, eco-urban, eco-industrial park etc.)
- Development of eco-tourism
- Development of environmental service sector
- Development of recycling industry
- Development of biomass energy, bio-energy, wind energy, seas and solar energy
- Rehabilitation of forest, mangrove reforestation to prevent waves, sand and other calamities

4. Some cautions when applying MSP in Hai Phong

Based on the demand and overall objective of MSP, Hai Phong city is currently preparing for its implementation. MSP will contribute to the Hai Phong seas economic development strategy to 2020, vision 2030 as approved by the city.

In order to successfully implement MSP in Hai Phong, attention should be paid to the following:

- Build on the experiences, ideology, and integrated coastal management framework to clarify the scope of MSP and identify study sites across the entire Hai Phong region.
- Carefully analyse eco-urban development viepoints to be integrated into the MSP process within land-seas interactions.
- Conduct functional zoning for sea and island use to ensure the protection of the natural environmental, ecosystems, and research sites under monitored and sustainable resource exploitation.
- Based on the ecosystem-based zoning results, analyze the suitability of each approved use and identify MSP management regulations: eg applying principles, legal binding, licensing, seas use charging system, good practices, compliance levels (eg. voluntary compliance), recommendations for other management organizations etc.
- Establish a Hai Phong MSP steering committee and integrated spatial management board hosted by the Provincial Department of Natural Resources and Environment. Its standing members may include the provincial Department for Investment and Planning, Department of Construction etc. The standing committee will be chaired by the vice chairperson of the City People's Committee; with assistance from a secretariat involving the Provincial Sub-Department of Seas and Islands Administration and the City Planning Institute.

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Coastal Use Zonation: An ecosystems approach to coastal management and sustainable development in Kampot and the protection of one of the largest sea-grass beds in SE Asia

Maeve Nightingale
Mangroves for the Future (MFF) Secretariat

1. Background

Kampot Province is located in the south-western part of Cambodia and is one of the country's three main coastal provinces. It has a total coastline of 66.5 kilometres and borders Viet Nam to the East. Kampot's coastal habitats include coral reefs, mudflats, approximately 2,000 hectares of mangrove forests, and 25,000 hectares of seagrass beds.

Kampot's marine and coastal zone plays an increasingly important role in the country's development; supporting the industrial, agricultural, fisheries, and transport sectors; and offering growing attraction for recreation and tourism.

The extent of the seagrass habitat in Kampot Province is likely the largest in Southeast Asia. Spanning 25,240 ha, it includes nine known seagrass species (UNEP, 2009 – based on 2004 survey results). This is currently being validated by IUCN. Seagrass habitats play a critical role in supporting fisheries, shoreline protection, prevention of coastal erosion, biodiversity conservation, and carbon sequestration. Seagrass beds are important habitat grounds for many species of fish, as well as endangered species such as dugongs and seahorses. The main threat to seagrass areas in Kampot is the encroachment of trawlers into near shore fishing areas and the trawling over seagrass beds (benthic disturbance). Seagrass beds are also susceptible to damage from increased sedimentation levels, dredging, thermal and chemical (land and sea based) pollution, and runoff. Coastal land reclamation is also threatening the seagrass areas.

Several areas along the Kampot coastline are undergoing land reclamation (using locally dredged aggregate) and construction. These activities are occurring in association with the new port development and refinery. Past reclamation in the relatively urbanized coastal provinces of Sihanoukville and Kep, have reportedly caused localized negative environmental impacts in terms of water quality and sediment transport dynamics. Fisheries exploitation and the use of destructive commercial fishing gear are cited as major concerns affecting coastal biodiversity / productivity. Solid waste, sewage, and industrial and agricultural waste disposal are an increasing problem for urbanized coastal areas.

Large areas of mangrove forest have been lost due to the development of shrimp ponds and salt pans. This is despite the fact that mangroves are defined as public areas under the Land Law (2001). Other areas have been severely degraded due to the collection of wood for charcoal and other uses. Although protected mangrove areas (either formal or through community-based initiatives) have been established, observations show that illegal harvesting of mangrove for construction materials still occurs. However, designations do generally safeguard against outright conversion to other land uses.

The overall trend is of increasing overexploitation of Cambodia's marine and coastal zone in advance of any real attempt to properly analyze the scale and status of the coastal environmental resources and ecosystem services they provide. Moreover, there is a trend for increased

marginalization of small-scale and subsistence users of coastal and marine resources from participating in any form of coastal management decision making.

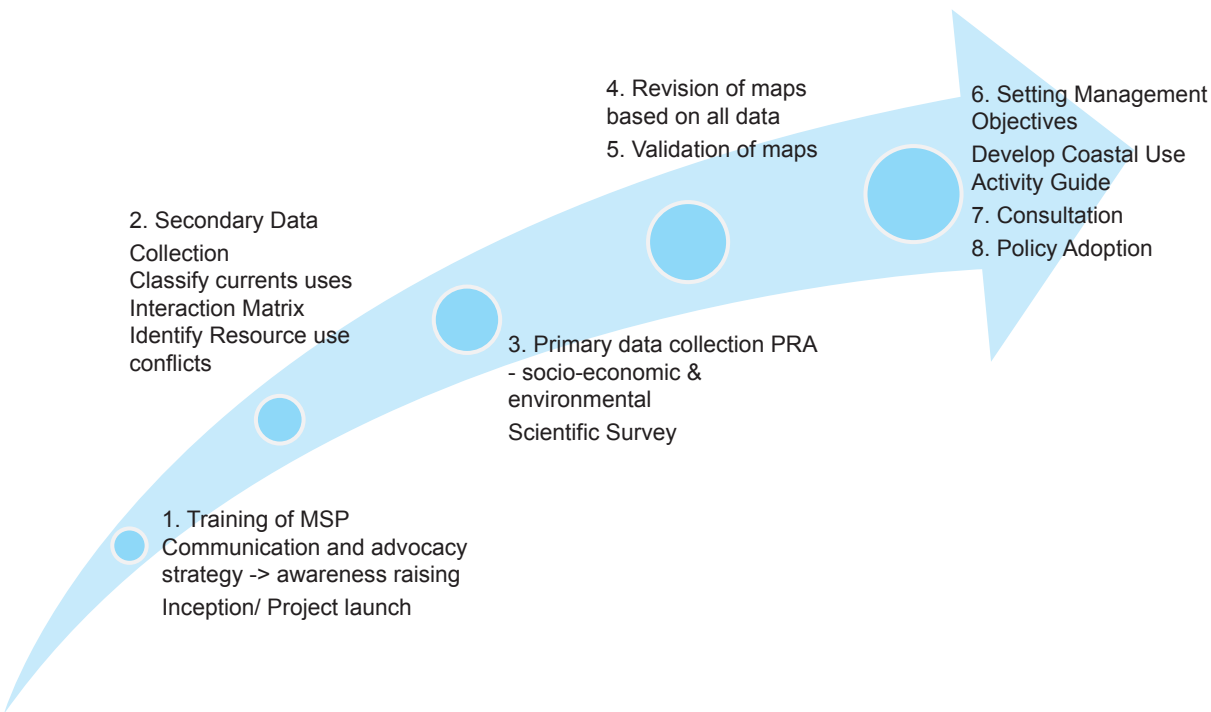
In general, coastal ecosystems of Cambodia remain undervalued in environmental economic terms and as such, their contribution to livelihood security and human wellbeing of coastal populations remains unrecognized. This holds significant importance in terms of local poverty, food security and climate change vulnerability. Improved recognition of the value and importance of coastal ecosystem services and informed and inclusive management planning is critical for sustainable development and equitable benefit sharing.

Whilst previous attempts to introduce principles of integrated coastal zone management (ICZM) under the DANIDA funded programme were partially successful, a comprehensive ICZM plan with an associated Marine Spatial Plan is still lacking in Cambodia. Coastal Use Zonation offers a spatial information-based approach for integrated coastal resource management in Kampot and a process for determining the location and area in the coastal zone for the implementation of development policies, plans, programs, and projects.

2. Coastal Use Zonation Kampot

In order to protect the critical habitats and coastal biodiversity and to guide sustainable coastal development for Kampot, a Coastal Use Zonation Plan is being developed at the request and under the leadership of the Kampot provincial authorities. The development of the Coastal Use Zonation Plan will follow eight steps starting with spatial analysis, the characterization of coastal resources and activities within the Kampot coastal area (land and sea), a study of the compatible and conflicting coastal resource uses / activities, and a move to the development of an activity guide and policy / regulations aimed at reducing / regulating current and potential resource use conflicts in line with sustainable development principles. The resulting plan will be adopted as provincial policy. (Fig.1.)

Figure 1. Process for developing Coastal Use Zonation Plan for Kampot Coastal Area



The Governor of Kampot has established a Provincial Task Force including all relevant line agencies, who will work together with IUCN to collect information for coastal spatial analysis and form a basis for developing the Coastal Zonation Plan. The Zonation Plan will cover 66.5 kilometers of the Kampot coastline (from the landward boundary of the national highway and 6 nautical miles seaward) and develop a coastal use activity guide for different zones, such as industrial use, tourism, conservation, and fishery activities.

The coastal zonation planning process will be based on a multi-stakeholder participatory approach. In this process, the endorsement and adoption of the zonation plan by the provincial authorities, its legitimization through local and national policies and legislation, as well as public awareness raising, are considered key to successful implementation. The goal of the implementation of the Coastal Zonation Plan is to ensure the sustainable development and management of Kampot's coastal areas for future generations and to promote the restoration and conservation of natural resources. Thereby contributing to the resilience and adaptive capacity of the coastal ecosystems and their associated coastal communities.

Definition: *Coastal Use Zonation is a rational and judicious approach of allocating available coastal (land and water) resources and spaces to various land- and water-uses, activities and functions in consideration with the state of the ecosystems, consistent with the shared vision, socio-cultural and economic values of the society and sustainable development goals. The purpose of Coastal Use Zonation is to;* plan and manage multiple uses of coastal space, particularly in areas where use conflicts are already well-known and specified, to guide long-term use, development and management of resources within a specified area to address existing and potential resource use conflicts, and to ensure compatibility of uses with ecosystem objectives (e.g. conservation, sustainability).

Building capacity to apply coastal and marine spatial planning in COBSEA member countries[1]

Reynaldo F Molina[2]
COBSEA, UNEP

Coastal zone management concepts have been applied in the East Asian Seas (EAS) Region for many years. However, further effort is needed for their effective implementation. The 2004 tsunami and recent scenarios on the potential impacts of climate change have highlighted the importance of effective coastal zone planning and development. Spatial planning has become one such tool used in successful coastal management plans.

Spatial planning can be defined as a "coherent and integrated intervention in the allocation of limited land and sea areas for various uses taking into account the needs for socio-economic development and environmental protection." (COBSEA Sida Regional Resource Document, Interim Edition, November 2011)

A long tradition of spatial planning in the coastal zone exists within the EAS region. Planning systems for the land and sea have served as good foundations for the protection of valuable natural resources within the coastal areas by supporting economic and community development, and cultural well-being. While shortcomings can be identified, these planning systems are being challenged, by emerging issues such as climate change and the expectations for incorporating what we might call modern management approaches.

There are a number of "emerging issues" and what can be considered as "modern management approaches". Issues such as climate change, sea-level rise, natural disasters, rapid population growth, coastal development, and a loss of resilience and adaptive capacity in coastal systems, are considered "emerging issues". Modern management approaches, such as ecosystem-based management, results-based management, hazard and risk reduction, resilience, comprehensive spatial planning for land and sea, "nested" management at different scales, and stakeholder participation, have a large and increasing influence on coastal spatial planning.

A new planning paradigm is also emerging. The traditional planning approaches and methodologies are proving inadequate in terms of both the rate of change and the issues needing attention.

Under the new paradigm, spatial planning is seen as a continuous process and a tool for managing change in its spatial dimensions. It is information intensive with a directed strategy for acquiring information. The new paradigm rests on the pursuit of a vision shared widely among all stakeholders, allowing priorities to be established in a step-wise manner. The pursuit of a vision gives positive direction and can be directly linked to other components of development. Instead of being primarily regulatory and restrictive, planning can be a promotional tool linked to other development components. It also encourages a closer integration of terrestrial and marine spatial planning in coastal areas. The new paradigm determines the future that is wanted before developing appropriate strategies to achieve it. It enhances existing assets, solves current challenges and minimizes future threats and problems. A long-term spatial framework and a short-term implementation program are provided to link to budget cycles and medium-term expenditure plans. Moreover, the new

[1] Paper presented at the National Workshop on the Application of Viet Nam's Marine and Coastal Spatial Planning - An Ecosystem Based Management Approach. 30-31 May 2013, Hai Phong city, Viet Nam

[2] Coordinating Body on the Seas of East Asia (COBSEA) Secretariat, United Nations Environment Programme. UN Building, 2nd Floor, Rajdamnern Nok Avenue, Bangkok 10200, Thailand. molinar@un.org.

paradigm focuses on the identification and analysis of stakeholder groups. The purpose here is to determine how best to involve each group, anticipating their interests and their general attitudes to development.

1. COBSEA Sida Spatial Planning in the Coastal Zone - Disaster Prevention and Sustainable Development Project

The project "Spatial Planning in the Coastal Zone - Disaster Prevention and Sustainable Development" was developed by the COBSEA Secretariat as a post-tsunami project during 2006 and submitted to the Swedish International Development Cooperation Agency (Sida). The original project proposal was developed in order to address the challenge of sustainable development in coastal areas in the EAS region through applying some of the recommendations outlined in the Cairo Guiding Principles. The proposal acknowledged that tools such as spatial planning and setback lines are applicable to not only Tsunami affected countries. but also the entire region. They minimize the impact of natural disasters and can achieve environmentally sustainable and socio-economically equitable coastal development.

Since the development of the project proposal, the challenges that countries are facing in relation to the impacts of climate change and sea level rise have become increasingly apparent. Coastal areas are extremely vulnerable to the impacts of climate change, and it is necessary to respond to these threats and minimize the vulnerability of coastal ecosystems and communities.

In early 2009, the project proposal was approved for funding by Sida, which will be implemented by UNEP/COBSEA from 2010-2013. After its approval, the project was modernized to integrate the concepts of climate change adaptation, sea-level rise, ecosystem approach and results based management. It was agreed that the project would be implemented in COBSEA developing countries.

2. Project Goal and Objectives

The overall goal of the project is to reduce and prevent the impacts of natural disasters, climate change and sea level rise and to promote sustainable development of the coastal areas in COBSEA member countries through the application of spatial planning for integrated coastal zone management (ICZM) and Ecosystem Based Management (EBM).

In achieving the overall goal, the specific objectives are:

- To develop a Regional Resource and Guidance Document and to adapt it to six COBSEA countries through building national capacities in integrating new management concepts into spatial planning in the coastal zone;
- To conduct national consultations and gap analyses with six COBSEA countries and identify priorities for capacity building in integrating new management concepts into spatial planning;
- To strengthen national capacities in coastal spatial planning and integrated coastal management through the national adaptation and application of the Regional Resource and Guidance Document.

In each of these COBSEA countries, spatial planning regimes exist to varying degrees. They are acknowledged as being limited in their capacity to respond to emerging issues and increasing pressures in their coastal zones. There are six COBSEA countries participating in this project: Cambodia, China, Indonesia, Philippines, Thailand and Viet Nam, with the COBSEA Secretariat assuming the role of the implementing organization.

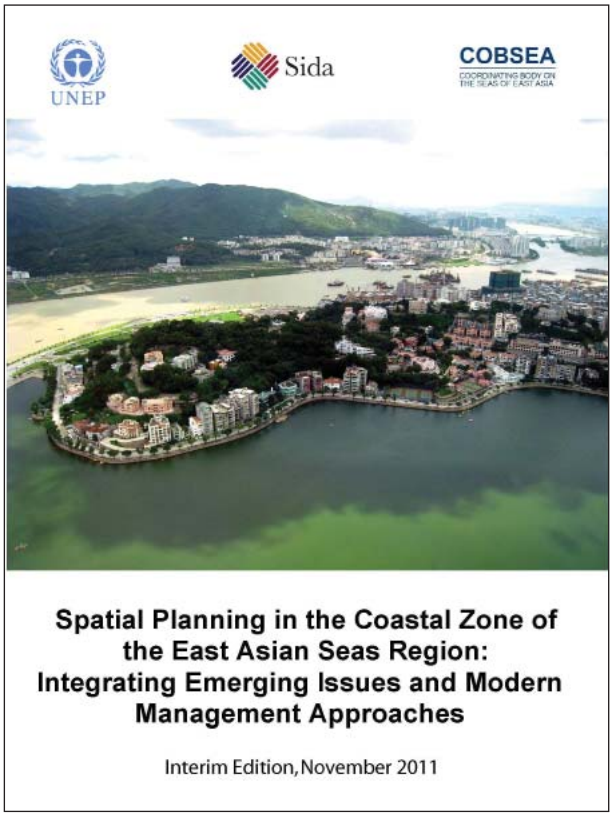
3. Project Phases, Activities and Outputs

The project is being implemented in three phases: Phase 1 - Development of a Regional Resource and Guidance document; Phase 2 - National consultations with participating countries on their needs and priorities in capacity building and adaptation of the Regional Guidance document to their national settings; and Phase 3 - Capacity building, national adaptation and demonstrations.

Phase 1 involves the development of a Regional Resource and Guidance document that focuses on the integration and mainstreaming of these new concepts into spatial planning and setback

lines management. This will assist countries in the prevention and reduction of the impacts of natural disasters, climate change and sea-level rise. In Phase 1, the Regional Resource Document 'Spatial Planning in the Coastal Zone of the East Asian Seas Region: Integrating Emerging Issues and Modern Management Approaches' (Interim Edition, November 2011) was produced. The document integrates emerging issues such as climate change and sea-level rise, and new management concepts such as ecosystem-based management, disaster risk reduction and results-based management into spatial planning and coastal zone management procedures.

Figure 1. Document of Integrating Emerging Issues and Modern Management Approaches



The overall purpose of the document is to assist participating countries in the reduction of impacts from natural disasters, climate change and sea-level rise, and to promote sustainable development of coastal areas through the application of "modern management approaches". It suggests ways in which new approaches and concepts can be incorporated in existing spatial planning systems. The document outlines a general spatial planning process that can be applied at different scales, administrative levels and degrees of complexity. It includes reference to a number of methodologies, tools and sources where additional information can be found. It is organized in such a way that the user can either navigate progressively through the various sequential steps, or choose sections relevant to particular needs:

The Introduction that sets out the Purpose of this Resource Document; Who Should Use it; the Final Products of the Spatial Planning Process, How to Use this Document; the Relationship between Plans through Time; and Concepts; Principles and Approaches.

Part Two addresses existing spatial planning frameworks and approaches in the EAS region. Part Three introduces and discusses some important emerging issues and modern management approaches such as ecosystem-based management, hazard and risk management, climate change and comprehensive spatial planning for land and sea. Part Four introduces the 'new' planning paradigm. It contrasts "old" approaches against this new approach. Part Five addresses the application of emerging concepts in the Coastal Spatial Planning Process.

It takes the reader through a step-wise approach for preparing coastal spatial planning, assessing the current situation, drafting the spatial plan, the negotiation process, and implementation. Each section discusses the implications of applying the ecosystem-based approach, integrating land- and sea-plans and the inclusion of risk reduction and addressing climate change aspects.

The document, which was drafted in 2010, presented to and reviewed by countries in a regional workshop in November 2010, and revised based on peer reviews and national feedback, was used as the basis for individual country consultations on their national needs and priorities for capacity building in spatial planning. This may be mapping and scenario exercises on climate change vulnerability, risk analysis and planning exercises, or a basic understanding of how to integrate the principles of ecosystem-based management into existing national spatial planning regimes. This national consultation, together with the identified adaptation and capacity building activities, will be the main

outcomes of Phases II and III of the project. Together with the Regional Resource Document (RRD), a *Training and Capacity Building for Coastal Spatial Planning in the East Asian Seas Region: Menu and Syllabus* was also developed in September 2011. The document provides a menu of possible training and capacity-building options or approaches that will serve as basis for for identifying their country-specific needs and priorities. The objective of this document is to build the necessary knowledge, skills, attitudes and abilities to integrate emerging issues and modern management approaches into their national, sub-national and local spatial planning systems and practices through the identified country-specific training and capacity building needs.

The main outcome of this phase is the development of the RRD which will help to build regional and national capacities in integrating emerging issues and new management concepts into existing national spatial planning systems of the six participating countries. The RRD together with the training and capacity building "menu" became the basis for individual national consultations in identifying their capacity building needs and priorities.

Phase II focuses on the planning of national adaptation of the generic Regional Document into national settings and needs; as well as identification of country-tailored capacity building and field application activities based on the needs and priorities, through national consultations with the six participating countries.

In coordination with the COBSEA Focal Points, six national consultations were held in Phnom Penh, Beijing, Jakarta, Bangkok, Ha Noi, and Manila in November-December 2011. The goal was to form a broad stakeholder consultation process which included relevant national authorities, bodies and individuals. The Sida Project Coordination Team, headed by Dr. Ellik Adler and Dr. Lawrence Hildebrand, met with national authorities and experts responsible for spatial planning in the coastal zone. These included senior representatives of from the Ministries of Environment, Natural Resources, Fisheries, Land Management, Ocean Management, Marine Affairs, Environmental Policy, Urban Planning and Research Institutes.

Figure 2. The participants of the consultation meeting in Hanoi

The primary objective of the country consultation meetings was to plan the “national adaptation” of the Regional Resource Document, and to discuss the countries’ individual adaptation and capacity-building options based on their needs and priorities; using the RRD and the Training/ Capacity-building menu as a basis.

The consultation meetings: 1) Reviewed and discussed the Regional Resource Document and the Training/Capacity Building Menu and Syllabus; 2) Consulted with the various relevant organizations and institutions from the government, regarding their country needs and priorities on coastal spatial planning; 3) Identified country-specific adaptation and capacity-building

activities based on national needs and priorities; 4) Agreed on the implementation schemes for the identified adaptation and capacity-building activities, including the schemes for Phase 3 implementation; and 5) Discussed the next steps for Phase 3, the implementation of national adaptation, field application and capacity-building activities.

Each one-day, in-country consultation identified common needs and particular needs for each country. Common to all countries is the desire to begin national adaptation with a regional train-the-trainer course. Six national representatives/ future national trainers will be identified by each country to work with a team of international consultants through a five-day course that will prepare them to assume responsibility for subsequent training in their own countries. At the end of the course, each participant should have acquired the knowledge and techniques required to deliver national training sessions in their own countries.

All countries also agreed on the development of national training manuals following and using the regional training course and materials. Five out of six countries (except the Philippines) also identified a common need to translate the RRD into national setting as part of national adaptation of the RRD.

The Philippines opted for a different approach where they will update and amend existing land-use spatial planning guidebooks. These national guidebooks do not presently incorporate the "emerging issues" and "modern management approaches" for which the RRD advocates and provides detailed guidance.

After each consultation meeting, summary reports were prepared for each country. These summarized the consultation process and included the needs and priorities for capacity building, the adaptation and capacity building activities identified and agreed, and the schemes to implement the activities through work-plans and budgets which will be the basis for Phase III implementation.

The main outcome of this phase was the identification and agreement of the country's needs and priorities for capacity building and adaptation; including the activities and schemes that will be implemented in Phase III. The national consultations provided a venue for spatial planning experts and authorities in the country to meet, discuss, and coordinate their national needs and priorities on capacity building in coastal spatial planning. The dissemination of RRD (hard copies of the interim edition were distributed during national consultations) will assist various levels of administrators and technical practitioners to integrate emerging issues and modern management approaches into existing frameworks of spatial planning. This will be useful after completion of Phase 3 when national trainers will be formed and the learning material will be translated and adapted to national settings.

Phase III focuses on the implementation of capacity building and adaptation activities of the RRD based on the results of the national consultations and the identified needs and priorities of the participating countries. As identified during the national consultations, the activities for implementation at the national level are: 1) Organization of a regional train-the-trainer course; 2) Development of national training manuals; 3) Organization of national training courses; 4) Translation and adaptation of the RRD into national setting; and 5) Amendment of existing national land-use spatial planning guidebooks.

This phase began with the Regional Train-the-Trainer Course on Spatial Planning in the Coastal and Marine Zone of the EAS Region which was held in Phuket, Thailand in May 2012. The aim was to educate teams from six participating countries, about how to integrate emerging issues and modern management approaches into their national spatial planning processes and regimes. These national trainers were be equipped with necessary knowledge and skills to conduct similar training programs in their own countries and languages. During the course, participants developed tailored course syllabi and curricula, with the objective of strengthening the capacity of these countries to plan and manage their coastal zones more sustainably at national, sub-national and local levels.

Figure 3. The teachers are exercising and discussing at Regional Workshops on Marine Spatial Planning

The course ran for five days; four days of instruction, interaction, group exercises, and discussion, and a day field trip that placed the instructional material and main lessons into a real-life context. The three international consultants provided the instruction, each drawing from an extensive base of knowledge and experience in specific topic areas. The course used a combination of lectures and group exercises to keep the sessions lively and informative. The three instructors were: Lead Instructor Dr. Lawrence (Larry) Hildebrand from Canada, Mr. Charles (Bud) Ehler of UNESCO IOC, and Mr. Anisur (Anis) Rahman of the Asian Disaster Preparedness Center (ADPC).

Four key regional resource documents were provided to the participants and used as reference training materials:

- COBSEA Spatial Planning in the Coastal Zone of the East Asian Seas Region: Integrating Emerging Issues and Modern Management Approaches
- UNEP Taking Steps Toward Marine and Coastal Ecosystem-Based Management – An Introductory Guide
- UNESCO IOC Marine Spatial Planning: A Step-by-Step Approach toward Ecosystem-based Management
- Asian Disaster Preparedness Center (ADPC) Regional Training Manual on Disaster Risk Reduction for Coastal Zone Managers

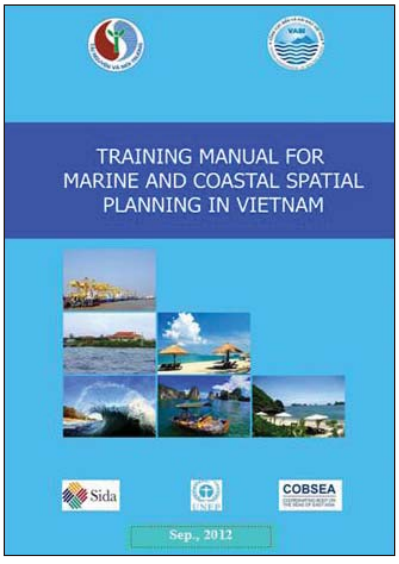
Figure 4. Regional references provided to the participants

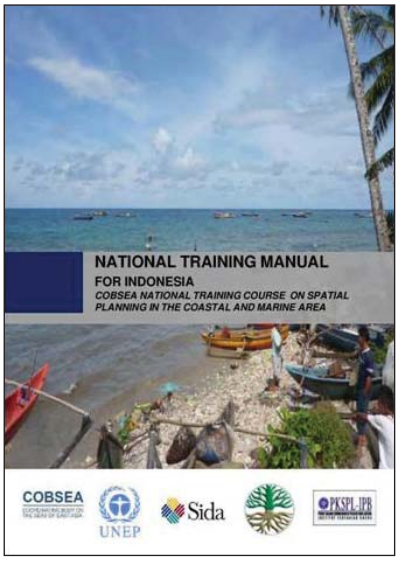
A summary course report template was developed for each national team to prepare and submit. It included the following sections: the national team composition; the national challenges and needs in coastal spatial planning; the objectives and expected outcomes of the national training course; the training approach and materials; and the national training syllabus, programme and agenda. For cross referencing, the course reports were provided to all countries for their information and consideration in finalizing their respective training syllabus and agenda.

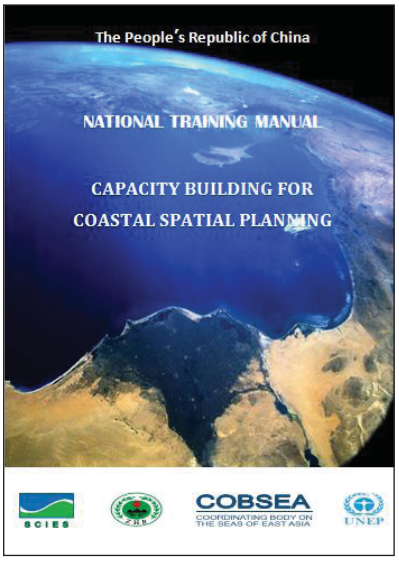
The main results of the training course were: 1) establishment of six national teams of instructors that have the knowledge and capacity to design and conduct national training programs in their own countries and languages; with sufficient understanding of the emerging issues and modern management approaches related to coastal and marine spatial planning and sustainable development; and 2) development of six national training syllabi and curricula which will be translated into local languages and used for national training courses.

Figure 5. The participants of the regional training course on marine spatial planning

Figure 6. Training syllabi are used for National Training Courses

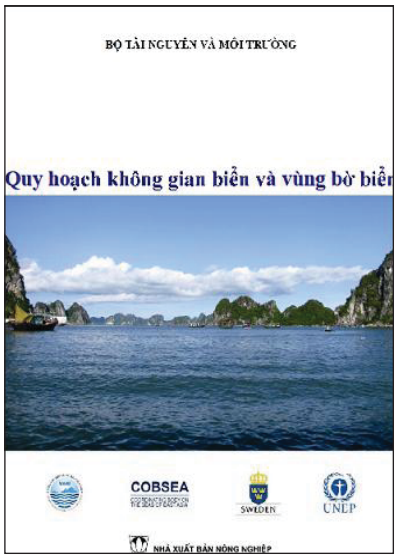


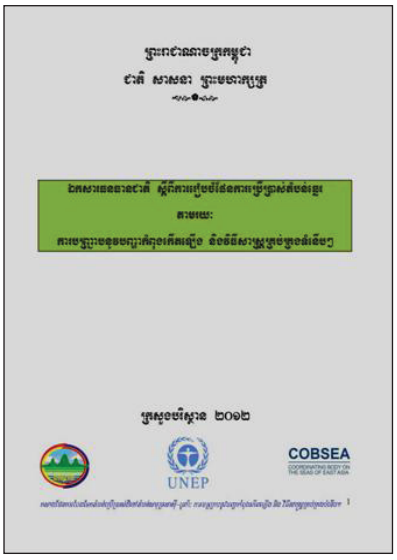




This phase also started the translation and adaptation of the RRD into National Resource Document (NRD) to help local planners, researchers, students, and national authorities with relevant information on coastal spatial planning in the country. It was made clear to countries that the process should not be a mere translation of the document into local language but should also consider and add the national setting and national aspects of spatial planning in the relevant coastal zone. The NRD is a comprehensive document in local text and material with relevant material on the legal, administrative and institutional aspects as well as reference to case studies, projects that have already applied coastal spatial planning and examples of integrating disaster risk reduction, climate change, ecosystem-based management, etc. into the national settings.

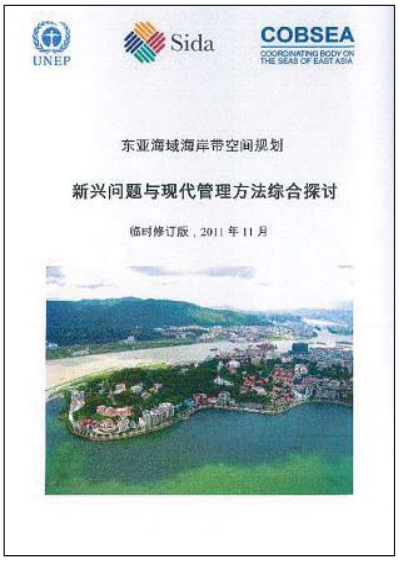
Figure 7. Training syllabi are used for National Training Courses

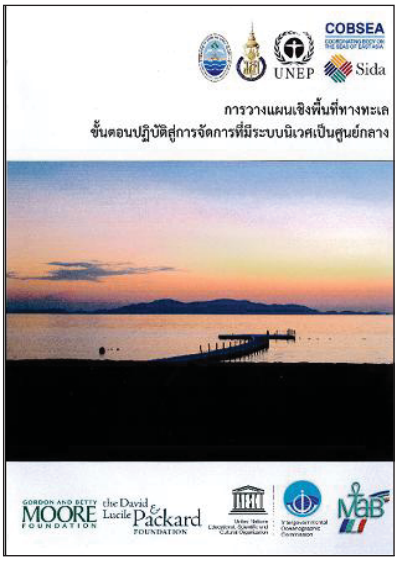




The countries have also translated the RRD and other reference and resource documents into local languages.

Figure 8. Training syllabi are used for National Training Courses





After the regional train-the-trainer course and the development and adaptation of national training manuals of the RRD into national setting, national training courses were organized in six participating countries. The participants who attended the Regional TTT Course in Phuket then organized the national training courses using the training materials provided in the Phuket training. Several resource persons from different ministries and organizations were also invited to give presentations.

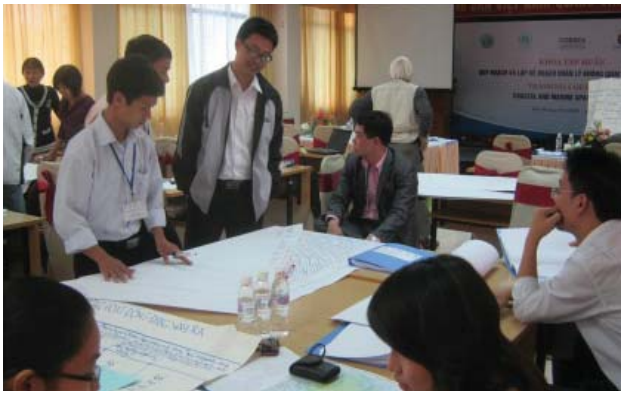
The first to organize the national training course was Cambodia through the Ministry of Environment (MOE), Training on Integrating Coastal Spatial Planning to Address Emerging Issues, from 1-3 October 2012 at the Kampot Provincial Environment Department Office, Kampot Province. Around 50 participants from ministries, academia, NGOs, local communities and 4 coastal provinces (Koh Kong, Sihanoukville, Kampot and Kep) participated in the training course. The training introduced coastal and marine spatial planning, emerging issues, new management approaches and best practices from other countries with similar geography and economic development.

Figure 9. Training on Integrating Coastal Spatial Planning in Cambodia

China organized their National Training Course on Spatial Planning in the Coastal Zone from 14-16 November 2012 in Beihai City, Guangxi Zhuang Autonomy Region. The course was organized by the South China Institute of Environmental Sciences (SCIES) and the Ministry of Environmental Protection (MEP). 41 participants from 11 coastal provinces (Autonomous Region or central-government-controlled megacity) and 4 government branches attended the course. The training focused on how to integrate emerging issues (adaptation to climate change and sea-level rise), and modern management approaches, including EBM, into coastal spatial planning and integrated coastal management. It also provided participants with concepts and techniques on EBM, DRR and MSP, and promoted its application into national and sub-national spatial planning processes in the coastal and marine environments.

From November 27th - December 1st, 2012, the Viet Nam Administration of Seas and Islands (VASI) organized the Training on Coastal and Marine Spatial Planning in Hai Phong city and Cat Ba Island. 40 trainees participated in the training from ministries / agencies such as the Ministry of Planning and Investment, Ministry of Agriculture and Rural Development, units under the Ministry of Natural Resources and Environment and representatives from 19 of the 28 coastal provinces. The training introduced the basic principles of Coastal and Marine Spatial Planning (CMSP), the basic steps in CMSP process, including the development of a management plan from marine and coastal space for a specific area. The course used the training document developed for CMSP as a reference from organizations, individuals, managers and planners.

Figure 10. Training on Integrating Coastal Spatial Planning in Viet Nam



The Training on Coastal and Marine Spatial Planning in Indonesia was organized by the Centre for Coastal and Marine Resources Studies - Bogor Agricultural University (CCMRS-IPB) and the Ministry of Environment from 10-14 December 2012 in Bogor Province with 16 participants from 9 different ministries (central and regional government agencies in Jakarta). Two local governments, Bontang City (East Kalimantan Province), Bandung and Sukabumi (West Java Province), also participated in the training course. The training course focused on the integration of emerging issues and modern management approaches into national and sub-national spatial planning processes in coastal and marine environments. At the end of the training, simple spatial planning reports were produced and presented.

Thailand, through the Department of Marine and Coastal Resources (DMCR) and the Prince Songkla University, organized their Training Course on Spatial Planning in the Coastal Zone from January 28th - February 1st in Chumpon Province. 49 participants from six local administrative provinces in the western-upper Gulf of Thailand - Phetchaburi, Prachuap Kirikhan, Chumporn, Surathani, Nakorn Srithammarat and Songkla; representatives from central government agencies, universities and research institutions attended the training. The training focused on the integration of emerging issues and new management approaches into provincial spatial planning processes in the coastal and marine environments. Draft provincial or sub-provincial (cell) spatial plans were developed by the six provincial teams; they will be considered for pilot demonstration under the full MSP process.

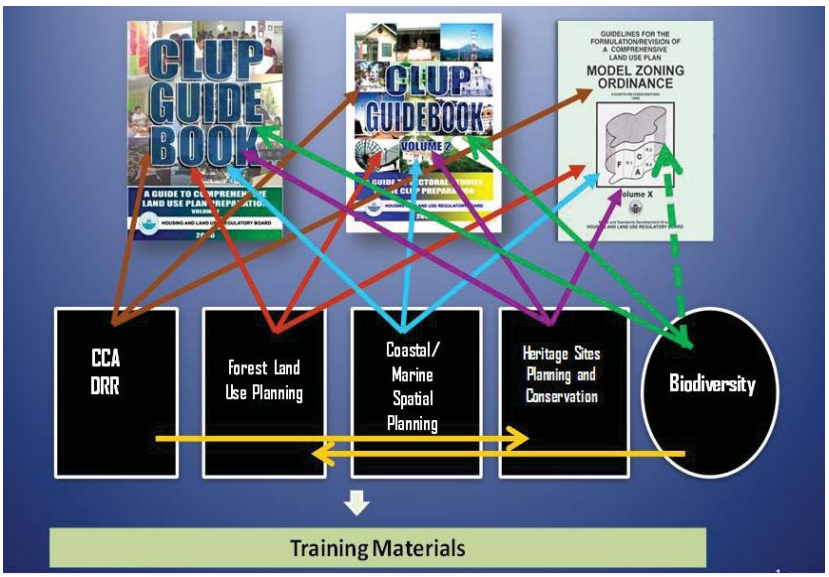
Figure 11. Training on Integrating Coastal Spatial Planning in Thailand

The Philippines Train-the-Trainer Course on Coastal and Marine Spatial Planning was organized from 20-22 March 2013 in Bataan Province by the Environmental Management Bureau (EMB)-Department of Environment and Natural Resources (DENR) and the Housing and Land Use Regulatory Board (HLURB). There were 25 participants from the HLURB's pool of trainers and representatives from DENR bureaus, Bureau of Fisheries and Aquatic Resources, Department of Interior and Local Government, and other relevant national/sub national agencies and authorities. The training introduced the basic components involved in mainstreaming emerging issues into current spatial planning processes. This included basic principles in the draft Tool Kit and Reference Guidebook on Coastal Sector when mainstreaming emerging issues into current spatial planning processes.

The Philippines also drafted the Enhanced Comprehensive Land Use Plan (eCLUP) that integrates land and water use including other sectors and concerns (coastal, forest, national heritage, urban greening, etc.), and relevant provisions of new national laws (Bio-diversity Act, National Disaster and Preparedness Act, etc.) into the planning process. The eCLUP also includes a Toolkit and Reference Guidebook for the Coastal Sector.

Figure 12. Training on Integrating Coastal Spatial Planning in the Philippines

Figure 13. Toolkit and Reference Guidebook for the Coastal Sector



4. Findings and Lessons

1. At the national level, it was necessary for the countries to identify and nominate National Institutions and National Coordinators who would be responsible for: national coordination activities; completion of project activities; timely delivery of activities, outputs and contracts (SSFAs or Individual Consultancy). This was carried out successfully.

2. Participating countries recognized and agreed on the importance and value of the RRD and the need to translate and adapt it into their national languages and setting for better understanding and efficient use. Most of the countries have integrated the RRD in their NRDs. The RRD and NRDs will serve as a major reference on how to integrate emerging issues and new management approaches into the existing national plans, policies and programs on coastal spatial planning and management at the national and sub-national levels.

3. The consultative approach through national consultation meetings among national authorities is essential in the discussion of project activities and identification of issues, including directions with national authorities and providing a clear path-forward for the implementation of project activities at the national level.

4. The consultative process ensured the appropriate design of the national training courses and identified the right people to undertake the training courses. The approach ascertained that relevant information on the national setting and national aspects on coastal spatial planning in the country were added in the national resource documents.

5. The consultations provided an opportunity for the representatives of different ministries, various levels of government and the private and non-governmental sector to meet and discuss related matters. It encouraged cross-learning and team building; enhanced cooperation, coordination and dialogue among the different representatives.

6. The Regional Train the Trainer Course, the first activity in Phase 3, was essential in building the capacity of national teams and increasing their awareness and understanding of the key issues and modern management approaches related to coastal and marine spatial planning and sustainable development. These national trainers were equipped with the necessary knowledge and skills to design and conduct similar training programs in their own countries and languages, using country specific training course manuals.

7. The regional training course allowed each national team to develop a detailed training curricula and schedule and undertake the planning of their national training courses. This approach has allowed for both country-specific training and an expanding cadre of trainers and trainees that will understand and know how to integrate the emerging issues and modern management approaches into their national spatial planning regimes.

8. The national training manuals will serve as reference materials for the development of future training programs at national and sub-national levels.

9. The regional and national training courses brought together individuals and experts from different institutions to learn and understand the basic principles and approaches of coastal and marine spatial planning. The training courses have improved coordination and communication among national authorities and provided a venue to discuss planning issues and concerns.

10. The training provided an opportunity for participants to meet counterparts at national and sub-national management levels. Participants expressed their wish to have similar training programs at sub-national levels.

11. The organizers and participants of the national training courses expressed their appreciation to COBSEA and Sida for the support and organization of the training courses. They also expressed their intention to hold follow up activities to build the capacity of national

and local authorities through the on-ground application of CMSP.

12. Strong personal and working relationships between national institutions and coordinators contributed to the success of the training courses as it gathered full support and cooperation in attendance and sending participants to the trainings.

13. Careful preparation and coordination among various national authorities and individuals and the full support and direct involvement of COBSEA National Focal Points and Institutions was a significant factor in ensuring the success of the training courses.

5. Next Steps

The countries will now prepare reports on the results, lessons learned and best practices for their national training, workshops and capacity building and adaptation activities. The COBSEA Secretariat will integrate this into the Final RRD. The COBSEA Secretariat will then present this at the final regional concluding workshop to report the project results and country accomplishments. The COBSEA Secretariat is also in the process of developing a proposal for Phase Two of the Sida Project.

6. Summary and Conclusion

The goal of the project is to develop national capacity through the establishment of national instruction teams; the development of NRDs and national training manuals;and the organization of national training courses.

Despite the complex multi-sectorial nature of CMSP, participating countries were supportive of the project. Strong coordination and cooperation between national authorities was seen in their participation in project activities. This improved communication, coordination and dialogue among ministries and stakeholders, a key challenge previously identified by participating countries.

Participating countries have recognized the importance of this project to Coastal Spatial Planning and Integrated Coastal Management and have expressed appreciation to Sida and COBSEA for funding and implementing the project.

The smooth implementation of project activities is a result of commitment by the participating countries, strong management by COBSEA and continual support from UNEP and UNEP ROAP.

In response to this success and positive feedback, COBSEA is considering further development on a second phase which will focus on capacity building and pilot demonstration activities at national, sub-national and local levels.

7. References

1. COBSEA Sida Spatial Planning in the Coastal Zone of the East Asian Seas Region: Integrating Emerging Issues and Modern Management Approaches", Interim Edition, November 2011

2. Training and Capacity Building for Coastal Spatial Planning in the East Asian Seas Region: "Menu and Syllabus", September 2011

3. COBSEA Sida Project on Spatial Planning Project Document Revision 2

4. COBSEA Sida Project on Spatial Planning 2011 and 2012 Annual Reports

5. Summary Report of National Consultations (Phase 2)

6. Country Reports on National Training Courses

7. Country Reports on Project Implementation.

Coastal spatial use zoning and management planning in Quang Ninh - Hai Phong area: Primary results

Nguyen Chu Hoi
Hanoi University of Science (HUS)

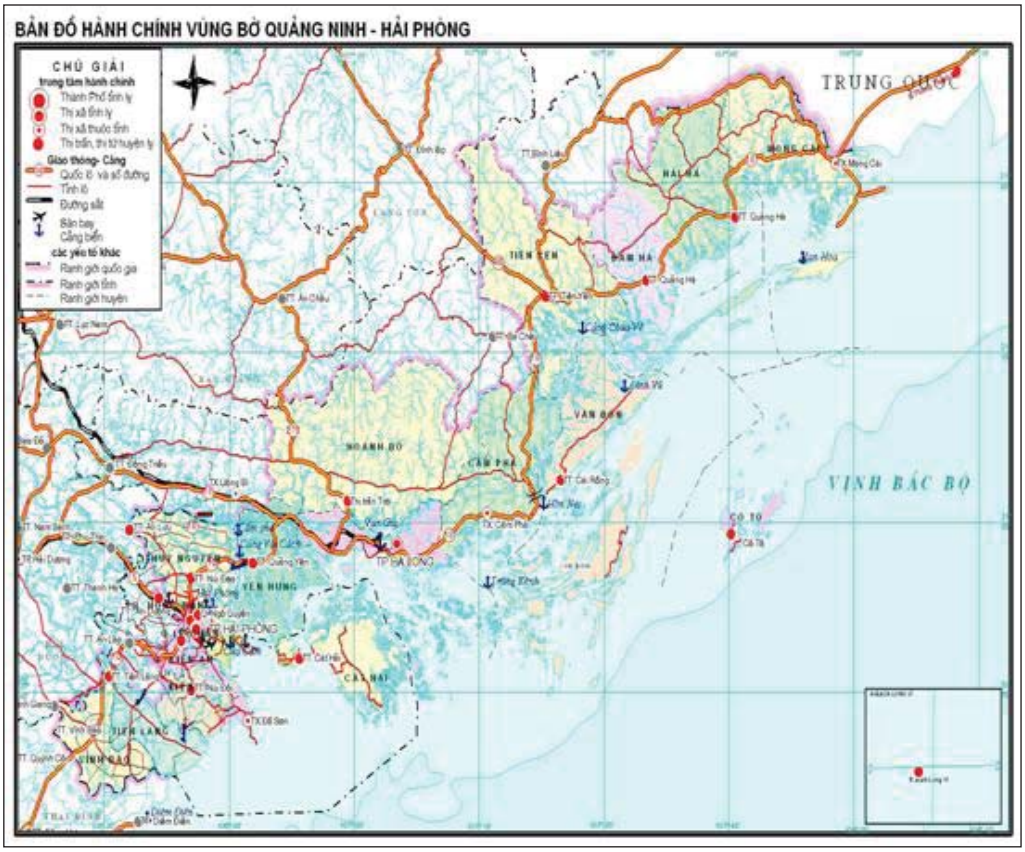
1. Introduction

The Quang Ninh - Hai Phong (QN-HP) coastal region is home to high levels of biodiversity and rich natural resources. This 300km stretch from Long Chau Archipelago (Hai Phong) to Tran Island (Quang Ninh), includes many districts, towns, and coastal communes along the western coast of the Gulf of Tonkin; representing an important economic belt within the Viet Nam-China trading corridors. Short term economic gain in the region has led to the unsustainable exploitation of natural resources and environmentally harmful activities. Thus, in October 2002, the 'Capacity building for integrated Tonkin Gulf coastal management for Viet Nam' project was implemented by the National Oceanic and Atmospheric Administration (NOAA), on behalf of the United States Government and the International Union for the Conservation of Nature (IUCN), with the Government of Viet Nam. Phase One was piloted in Ha Long Bay from 2002-2005. This was expanded to include the entire QN-HP coastal area in Phase Two from 2006-2009. Phase Two developed a framework for integrated coastal management and resulted in Viet Nam's first inter-provincial agreement on integrated coastal management, which was signed by the leaders of Quang Ninh province and Hai Phong city on April 3rd, 2007. Coastal spatial use zoning and management planning is the seventh of nine prioritized activities under the integrated coastal management framework. Led by the VASI (Viet Nam Administration of Seas and Islands) under the Ministry of Natural Resources and Environment, priority seven was implemented from 2011-2013 with the continued assistance from NOAA and Ministry of Science and Technology. This paper will introduce to initial results of the coastal spatial use zoning.

2. Materials and methodology

Coastal spatial zoning aims to utilize policy and technical solutions to reduce stakeholder conflict through improving communication and collaborative relationships within the coastal area while ensuring the long term conservation of the eco-systems. Pre-zoning research in the coastal spatial use zone (Figure 1) analyzed the following conditions: natural resources; exploitation and commercial resource usage; social-economic situation; current coastal management policies; institution capability. Based on this information, gaps could be analysed and additional research plans were developed.

Figure 1. Quang Ninh-Hai Phong coastal area



A 1:250,000 scale map was developed for the area; including two 1:100,000 scale maps for the Cat Ba - Hai Phong port and Mong Cai - Hai Ha areas. The zoning map was based on criteria for coastal spatial use as instructed by the Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) as well as marine spatial planning (MSP) guidelines by IOC-UNESCO (2009) and UNEP-Side-COBSEA (2011). The following approaches were used:

Eco-system based approach: focus on the structure, function and connectivity within an area to ensure the service values of an ecosystem are sustained within long-term development.

Integrated approach: address inter-regional, inter-disciplinary, and inter-governmental issues to allow stakeholders to reach a consensus for future resource use zoning.

Strategic and adaptive approach: ensure an effective and sustainable investment based upon practical research into long-term ecosystem variability related to climate change and sea level rise.

3. Primary results

3.1. Research area features

The QN-HP research area includes both hill terrain and coastal plains which are affected by storms, floods, fog, and large tidal amplitude of 3.5-5 meters. Summer brings rain and southeast monsoons while the winter is cold and dry with monsoon from the northeast. Diverse geology and geomorphology can be found across the region, with approximately 2.500 islands. The archipelago of karst limestone islands in Bai Tu Long, Ha Long, Cat Ba, and Long Chau is considered an area of high conservation value

on a local and global scale for the diversity of habitats and natural systems such as channels, bays, and lagoons.

The QN-HP region is not only an area of high conservation value but also an important economic base for northern Viet Nam. With increased development, pollution has increased and important coastal ecosystems such as coral reefs, mangroves, seagrass beds, etc. have degraded in both quantity and quality. The growing population is currently at around three million, with the majority of residents living in the urban areas. Solid wastes, including coal dust, metals, and fertilizers, have been progressively released to the sea, increasing turbidity. Moreover, there is increasing organic pollution from aquaculture and cage fish farming in some areas. Oil spills and increasingly unsustainable tourism development are further threatening the coastal area. This is reflected in the declining health of fish, shrimp, and mangrove populations. This is leading to a decrease in biodiversity and economic losses for coastal communities.

With approximately 60% of the coastal area affected by land-based pollution, this region is in prime location for Viet Nam to develop a conservation-value based green economy. A multidisciplinary approach to sustainable development is essential to ensure stringent environmental protection while also encouraging further economic development. Although a cross-provincial social-economic plan has been approved by the government, current coastal management strategies remain fragmented between the provinces and stakeholders. Coastal spatial use zoning has the potential to propose solutions to halt environmental degradation and improve economic profitability for the future.

3.2. Spatial zoning process

Coastal spatial use zoning for QN-HP area is conducted according to the following steps:

- Information analysis: information gathering; gap analysis; and thematic report writing about the natural, political, and socio-economic situation.
- Field investigation: conduct investigation and source data sets and relevant materials to develop a coastal profile to identify prioritized issues for management.
- Best practice visits: trips to view examples of coastal and marine spatial planning in Massachusetts, United States.
- Training material compilation: translate and comile coastal spatial use zoning training materials for fifty officers in the QN-HP region.
- Develop maps: establish 23 maps of the QN-HP coastal area, including: 18 thematic component maps; two key pilot-site maps; three spatial zoning maps.

Box 1. List of QN-HP coastal area maps

a) 1:250,000 map for the entire QN-HP coastal area

- Map of natural elements, reflecting all forms coastal hazards
- Map of coastal ecosystems, biological resources and protected areas
- Map of non-living resources distribution
- Map of current situation of coastal exploitation and use
- Map of coastal socio-economics, including spatial development scenarios approved until 2020
- Map of environmental pollution, including pollution hotspots
- Map of coastal spatial use zoning

b) 1:100,000 map for 2 key areas: Cat Ba - Hai Phong port and MongCai - Hai Ha *(each has one 7 maps set with the same names, different places)*

- Map of natural elements, reflecting all coastal harzards
- Map of ecosystem, biological resources and protected areas
- Map of non-living resources distribution in key areas
- Map of current situation of coastal exploitation and use in key areas
- Map of socio-economics in key areas
- Map of environmental pollution, including pollution hotspots in key areas
- Map of coastal spatial use zoning for key areas

3.3. Coastal spatial use zoning in the QN-HP area

Coastal zoning divides a region into smaller spatial units (sub-regions or zones) based upon specific criteria, or functions, to develop a management strategy for resource use, development, and conservation. The following criteria/functions were used in the QN-HP coastal spatial zoning: natural function of the area; service values of the ecosystems; exploitation and usage of natural resources. Functional zoning is a valuable supporting tool in coastal and marine spatial planning. When implemented correctly, this approach will reflect the benefits and social features of the managed coastal area to reduce stakeholder conflict and manage coastal resource use. Despite fifteen global and regional zoning guidelines, Viet Nam has not had a template for coastal spatial use planning. The QN-HP spatial use zoning has had to consider specific conditions for the adaptability and conflict reduction of spatial units in the region.

The Plan for Coastal Spatial Use Zoning in the QN-HP Area will include illustrative maps outlining prioritized goals, development plans, and conservation strategies for each spatial unit.

Case Study: Deepwater Port Phase one of the Deepwater Port project (Figure 2) was approved by the government and commenced early 2013. Project implementation was publically controversial given the questionability of the long-term benefits and unknown implications of the port. The port will be adjacent to the existing Lach Huyen Port which has been classified in the same zone as the Cat Ba archipelago, a region of globally significant natural value, The regiona hosts Cat Ba National Park, Marine Protected Area, Biosphere Reserve, possible future location of the Cat Ba-Long Chau UNESCO world heritage site.

The region faces a conflict between protecting this globally significant region and developing a deepsea port for the long-term strategic development of Hai Phong. The current entry gate into Hai Phong port has become shallow and siltation; making it difficult for large ships to enter this economic hub and highlighting the need for a deepsea port. Lach Huyen was the final option to be approved for the development of a larger port. Possible solutions to reduce conflict in the area are: delimit the water area of the Hai Phong Port (including the Nam Trieu estuary); establish a particularly sensitive sea area (PSSA) to be regulated under the MARPOL Convention by the International Marine Organization (IMO).

Figure 2. The project of Deep-water port for (international gateway" Lach Huyen (Hai Phong)

Case Study: Van Don Coastal Economic Zone

In September 2010, the Prime Minister approved the Viet Nam Coastal Economic Zone Development for 2020 project. Under this Decision (No.1353/QD-TTg) fifteen coastal economic zones have been approved, one of which was the Van Don project in Quang Ninh province. This has led to the coexistence of two entities managing this coastal area: the Van Don Economic Zone Management Committee and the People's Committee of Van Don Island District. This has led to incompatibility in management plans and the strategic direction for the development and conservation of the region, which contains pockets of unique ecological systems. Thus, not only has the economic zone not reached full potential, but the natural values of the region are declining.

In the acknowledgement of the Van Don economic zone, the administrative authority of the management committee must be established as an institutionally administrative body over the People's Committee if Van Don is to support the effective implementation of the following: (i) the establishment of the area as a center for green economy that works towards both conservation and development for long term sustainability; (ii) the development of a detailed classification of functional areas for conservation, turtle spawning ground, eco-tourism, recreational fisheries, environmentally friendly specialty farming, cruise terminal, and diving tourism. Furthermore, a small low-impact, low-waste, urban development should be allowed on Cai Bau Island.

4. Conclusion

- The initial impact of coastal spatial use zoning in the QN-HP area provide important practical lessons for the future of marine spatial planning in Viet Nam; paving the way for nationwide implementation of these strategies.
- A guideline for marine spatial planning (and coastal zoning) is essential for the initial implementation of planning strategies in Viet Nam. These guidelines should be regularly adjusted and altered to reflect situational changes and lessons learnt.

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Oil spill geographic response planning: An approach to marine spatial planning

Bui Thi Thu Hien[1]; Nguyen Chu Hoi[2]
1. IUCN/MFF (Mangroves for the Future (MFF) Viet Nam)
2. Hanoi University of Science (HUS)

1. Introduction

Oil spills pose a serious threat to Viet Nam's marine environment. Spill frequency is increasing in port areas across the country; causing a series of short and long term effects in ecology, economics, and livelihoods. With spill records dating from 1989, the Government has developed response plans to be implemented at local, regional, and national levels. There are three national oil spill response centers are located in Hai Phong (north), Da Nang (central), and Vung Tau (south). However, plans across these centers are inconsistent and not nationally standardized. Although the plans have been authorized, if implemented they will be ineffective against large oil spills.

A Geographic Response Plan (GRP) is a tool within coastal and marine spatial planning (CMSP) that assists in the management of issues that span multiple governance and stakeholder regions. GRPs, which have successfully managed oil spills in the Gulf of Mexico, are a reactive approach designed to flexibly counter possible incidents. CMSP and GRPs do not plan the marine environment; they manage human activities in response to ecosystem needs and changes. Most importantly, CMSP and GRPs embrace partnerships and input from all relevant parties within the region.

In 2009, a National Oceanic and Atmospheric Administration (NOAA) supported pilot GRP was implemented in the coastal areas of Quang Ninh and Hai Phong provinces. This article will provide a brief introduction to the GRP pilot and emphasizes the importance of coastal and marine spatial planning in addressing environmental issues.

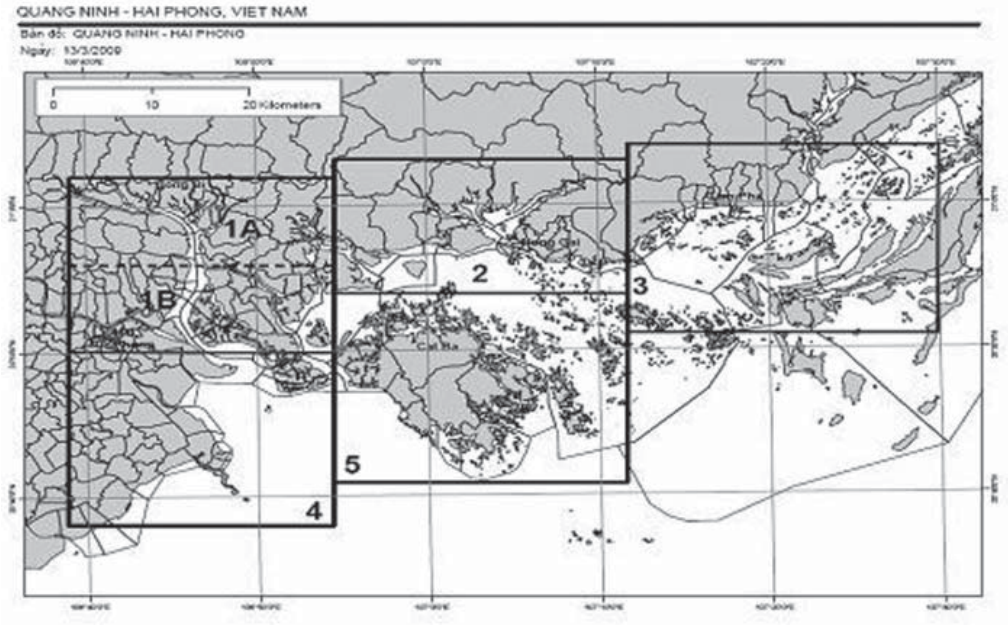
2. GRP application in coastal Quang Ninh - Hai Phong

Viet Nam's GRP pilot was conducted in the coastal areas of Quang Ninh - Hai Phong. The plan specifically focused on areas of high conservation value, diversified natural resources, socio-economic activities, and archaeological and cultural characteristics. This region contains the largest number of islands in Viet Nam and is noted for the unique limestone scenery. Ha Long Bay, one of the world's natural wonders (2011), has been classified by UNESCO as a World Heritage Site of landscape value (1994) and geological-geomorphological value (2000). Cat Ba Archipelago is designated as a National Park (1989), Marine Conservation Area (2010), and Biosphere Reserve (2004). The specified areas can been seen in Figure 1 and are as follows: Ha Long Bay; southern Bai Tu Long National Park (Quang Ninh province); Cat Ba Archipelago; Do Son; Hai Phong Port on the Bach Dang and Cam Rivers (Hai Phong city).

[1] Marine and Coastal Program - IUCN Viet Nam; National Coordinator of Mangroves for the Future (MFF) Program; Email: hien.buithithu@iucn.org

[2] Assc.Prof.Dr. Nguyen Chu Hoi; Hanoi University of Science (HUS) - 334 Nguyen Trai street, Ha Noi, Viet Nam; Email: nchoi52@gmail.com

Figure 1. GRP Areas



The Quang Ninh - Hai Phong area is a key economic center of northern Viet Nam. It is not only a major sea port and fisheries center but also one of the leading tourist attractions in the country. In 2012, Ha Long Bay received eight million dollars in tourism fees from over 2.5 million visitors. However, frequent oil spills threaten the fragile ecological network of caves, sea grass beds, coral reefs, mangroves, mudflats, sandy beaches and estuaries.

A GRP would substantially improve management of these areas by addressing three central issues: develop a map of prioritized protection areas using the input from relevant parties; collaboratively decide on the most effective response when dealing with a spill in these areas; clearly outline the necessary actions, equipment, and communication methods that will be employed. This information will be compiled in a map and brief GPR document. An important step in this approach is ensuring regular reviews of the GPR to record circumstantial changes over time.

3. Steps of the GRP (Geographic response plan)

The goal of a GRP is to analyse regions and resources to enable efficient and targeted response to oil spill incidents. The Quang Ninh - Hai Phong pilot GRP was developed in collaboration with relevant stakeholders. Relevant resource data was collected from NOAA and the Institute of Marine Resources and Environment. Participants at a training workshop, held in March 2009, also provided valuable input. The following steps were implemented to develop the GRP:

Step 1: Identify scope of possible oil spill

- Determine possible sources of oil spills
- Agree upon operation parameters for sea vessels
- Discuss possible oil spill scenarios

Step 2: Prioritize protection areas

- Identify and prioritise vulnerable areas and resources in terms of high, medium and low
- Mark these locales on a nautical chart to be shared
- Compile response equipment
- Develop a capability enhancement training schedule

Step 3: Develop protection and response plans (strategies)

- Develop three plans: sea; coastal; river and gulf
- Determine protection methods and drawbacks for coastal area protection

Step 4: Compile GRP and Ecosystem Sensitivity Information (ESI)

- Finalise a GRP that focuses on response actions and options
- Develop ESI that contains detailed information sources, ecosystem outlines, seasonal changes, and natural resource exploitation

4. Main contents of GRP

4.1. The A, B, and C of prioritised locations for protection

Under a GRP, locations are prioritised based upon their environmental, social, and economic vulnerability to an oil spill. An "A classified" site will be a first response priority whereas oil spill response at a "C classified" site will occur after A and B sites have been stabilized. Essential response information, such as a list of threatened resources, protection plans, and communications strategies, will be provided for each site.

Box 1. Prioritised Regions for Protection

A Classified Sites (top priority)

- Mangroves, coral reeds; seabed grass, seagrass bed
- Important riverside/coastal swamps, mudflats for fisheries and aquaculture
- Creeks, estuaries, canals effected by tides
- Aquaculture zone (shrimp, bivalve fauna)
- National parks, nature reserves, world heritage areas
- Spawning ground of important fisheries
- Coral reefs/Seagrass where the water level is < 3m
- Habitat (marine area) or spawning ground of turtles (sands)
- Water source for hatcheries
- Oil and petrol ports

B Classified Sites (second priority)

- Beaches/resorts
- Riverside/coastal villages
- Riverside/coastal intensive lands for rice and vegetables
- Salt fields
- Urban residential
- Rocks, sands used by many people or tourism purposes
- Coral reefs/Seagrass where the water level is > 3m
- Large civil ports

C Classified Sites (third priority)

- Forests (other terrestrial forests, not mangroves)
- Industrial land
- Land for cash plants, perennials
- Small civil ports
- Sands with low usage

4.2. Potential Oil Spill Locations

All locations that deal with the transport and transfer of oil represent potential spill sites. This is exacerbated in areas with high traffic density such as busy sea ports. A data sheet outlining the logistics and risk analysis will be prepared for each potential spill location. Contact details will also be included to ensure efficient communication with facilities and companies affected by the spill.

4.3. Locations with response equipment

Headquarters of response bodies and response equipment storing facilities should be identified to ensure each prioritized site has a specific and efficient spill response plan. This will assist in estimating response time and providing instructive communication to each facility so that responders can act immediately. Specific actions are outlined in Box 2.

Box 2. Response plans and techniques applied

I. Open sea/high sea

a) Surround and recall floats using skimmer
b) Oil dispersants

II. Coastal areas

a) Manual prevention and recall methods
b) Release floats to deviate spilled oil
c) Release floats to prevent oil from spilling into protected areas
d) Oil blocking floats
e) Oil absorbent floats
f) Oil trap (for black oil, white oil)
g) Decant pumps, oil suction (Skimmer)

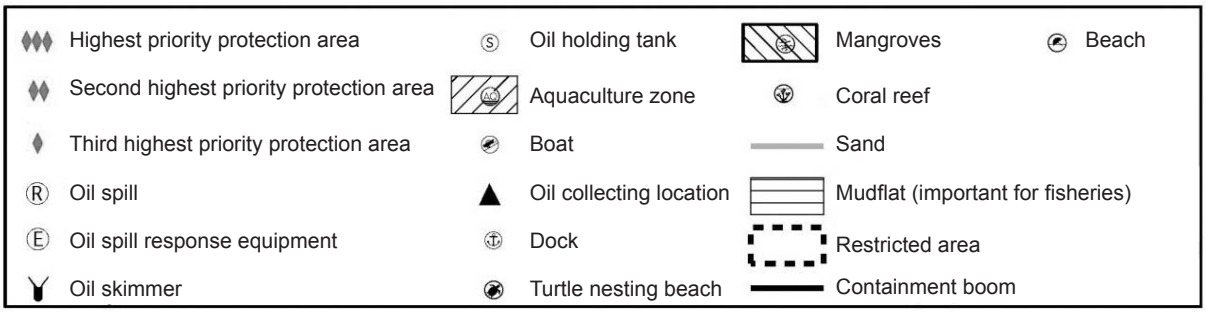
III. Bays, rivers and creeks

a) Manual prevention and recall methods
b) Release floats to deviate oil spilled
c) Release floats to prevent oil from spilling into protected areas
d) Release oil blocking floats
e) Oil absorbent floats
f) Oil trap (for back oil, white oil)
g) Decant pumps, oil suction
h) Earth dams for water to flow over or under

4.4. Other components of GRP

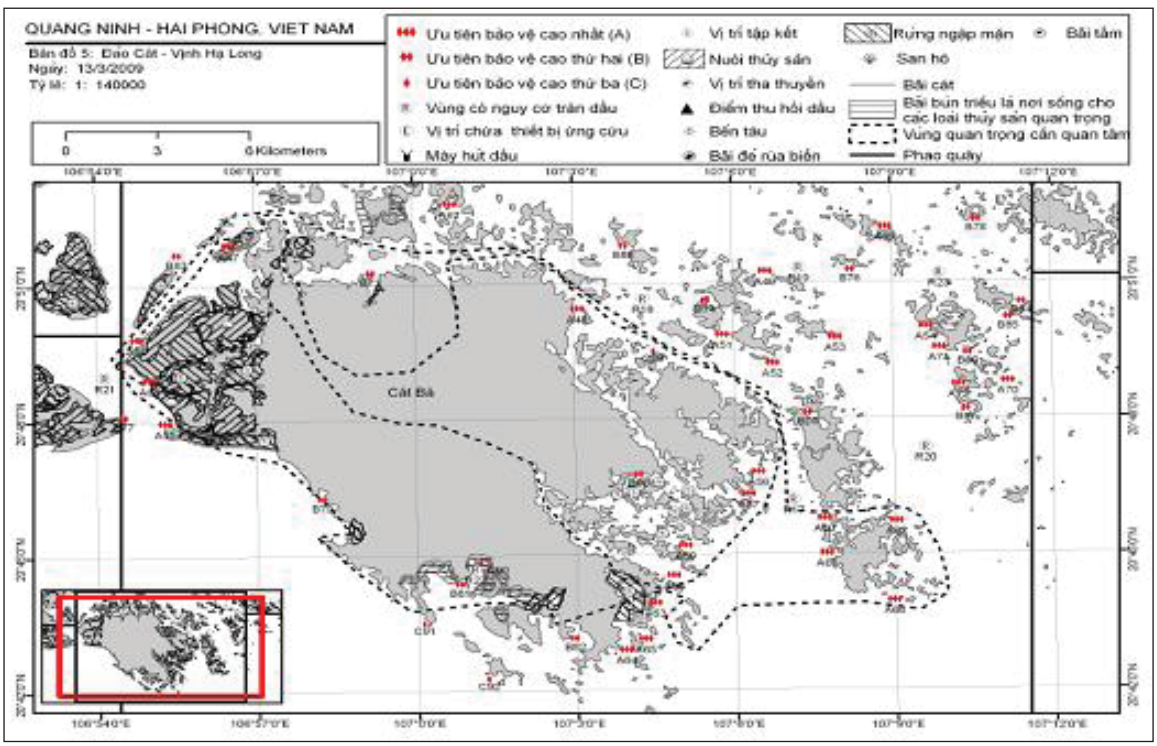
GRP maps provide critical information for oil spill responders, such as: locations for oil collection; sensitive resource areas (mangroves, aquaculture, water); and access information for docks, airports, spill response equipment collection. Addition information is outlined in Figure 1.

Additional information to be marked on GRP maps



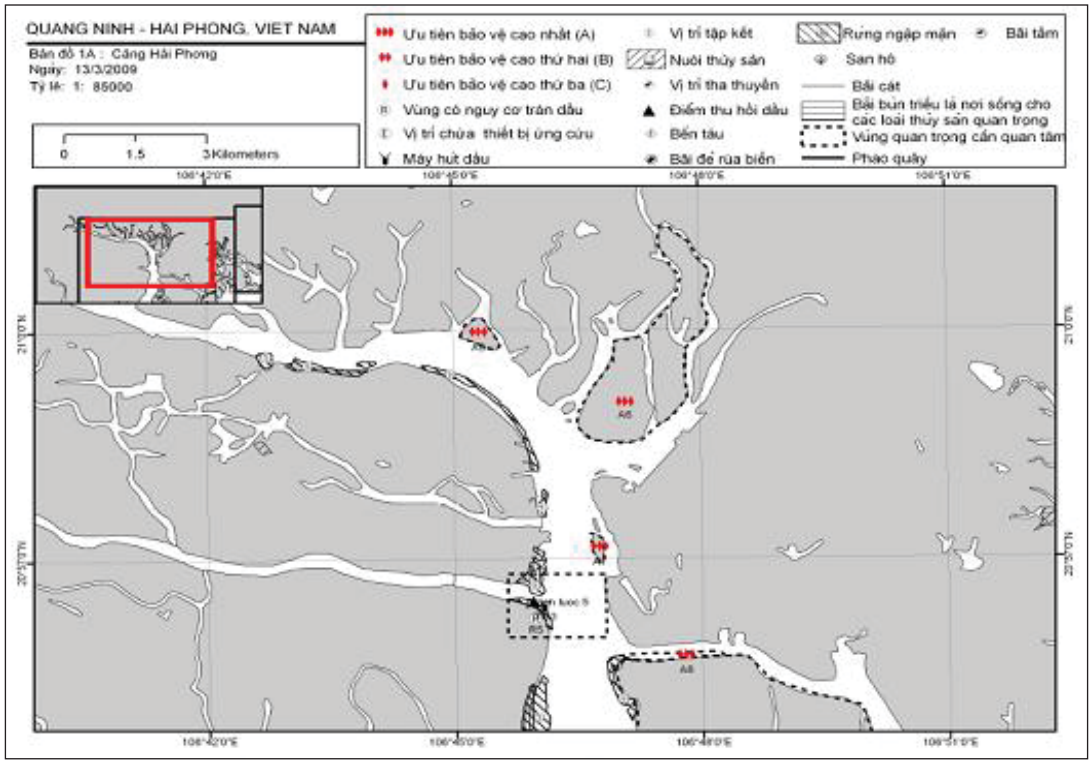
In accordance with the GRP process, stakeholders collaboratively developed six maps detailing additional information for the response process. It is crucial that this information is regularly updated to reflect changes and meet practical needs for effective oil spill management. The information analysed through different steps help to identify the sensitive areas of oil spill. These have been detailed in the GRP map (Figure 2).

Figure 2. Legend used for GRP map for Cat Ba and Ha Long Bay



Figures 4 to 6 contain further information for the management and response to oil spills in Hai Phong city and Quang Ninh province.

Figure 3. Three GRP maps for the Hai Phong port area



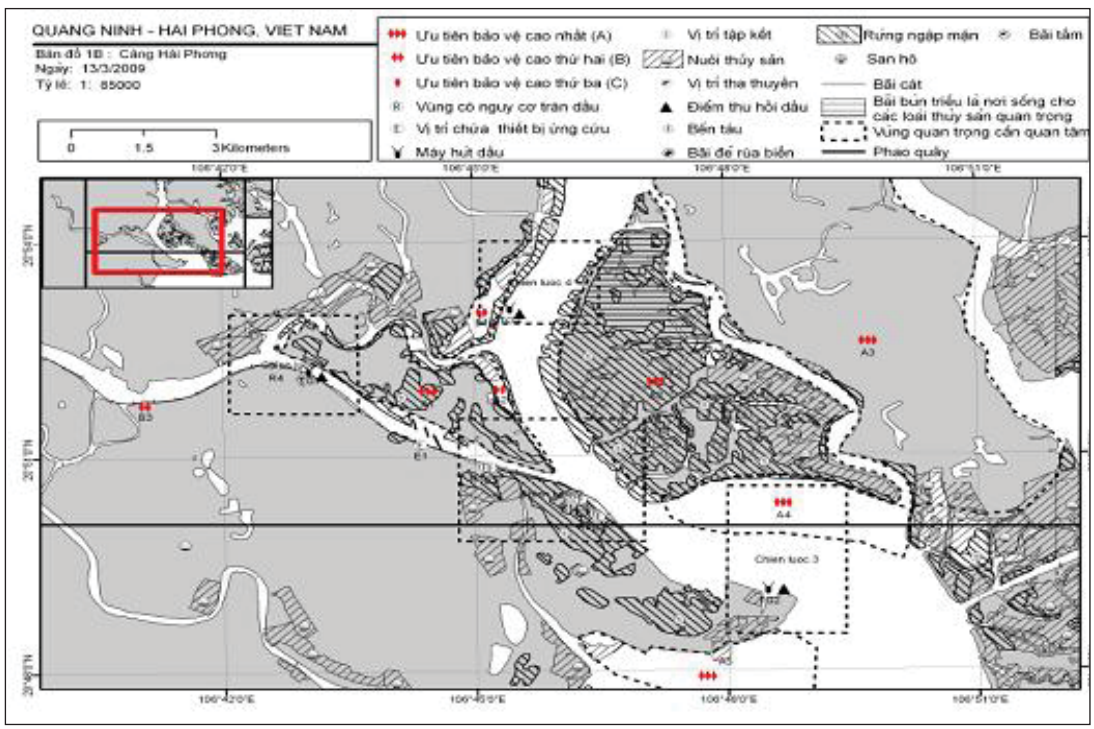


Figure 4. GRP map for the Cua Luc Bay area

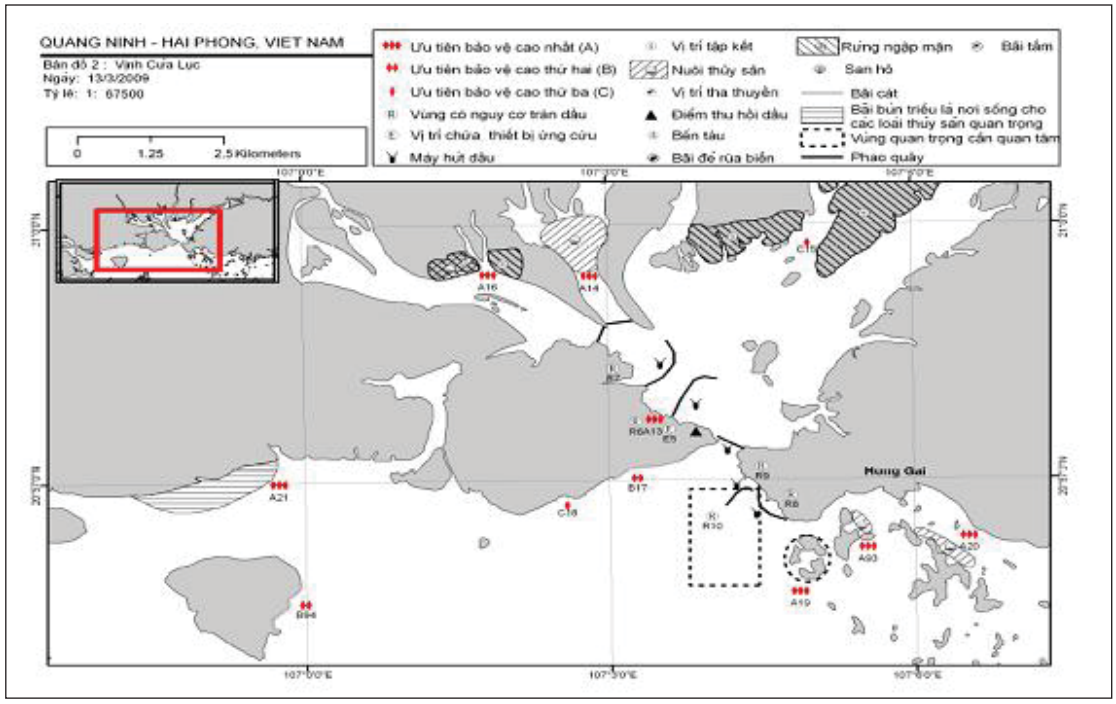


Figure 5. GRP map for the Bai Tu Long Bay area

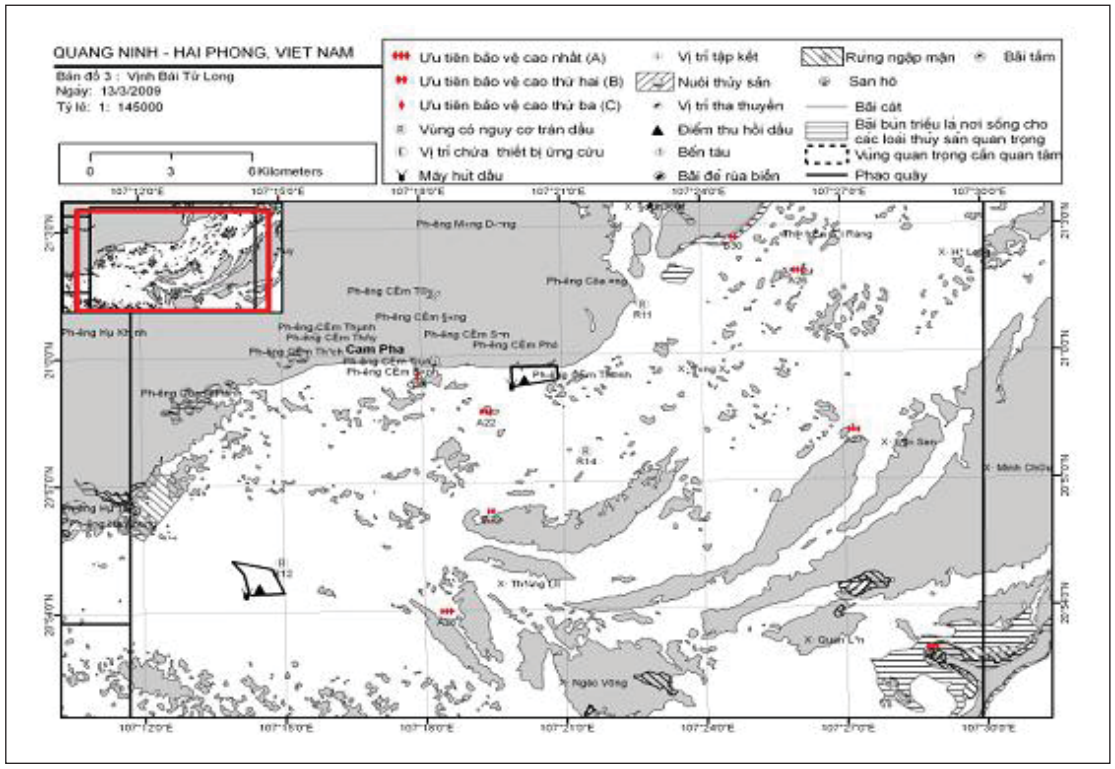
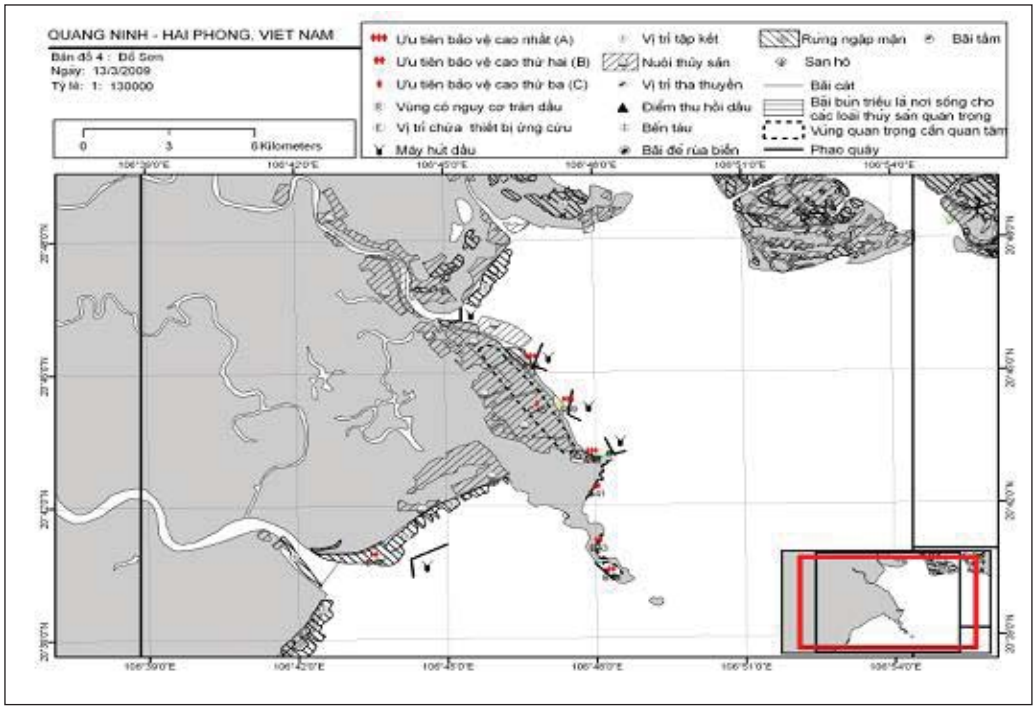


Figure 6. GRP map for the Do Son Beach



5. Conclusion

- GRP is a new low-cost, straight forward strategy for managing oil spills. The approach fosters collaboration between all related parties, making it easy to mobilize response strategies in Viet Nam's coastal region in the coastal localities of Viet Nam.
- It's necessary to review and update GRP in QN-HP's coastlines in order to ensure that the decisions and response actions are based on the latest available information. The protection plans require the two localities must be tested and verified on the ground. These protection plans should be field tested and then edited and updated regularly.
- Viet Nam should apply GRP through the issuing of legal guidelines and technical details.
- GRP is a strategy applied under the broader application of CMSP in designated geographical areas.

6. Main references

Documents as well as the main results (maps) in this article are extracted from the results and training materials "Oil spill geographic response planning". This activity is supported through the project "Enhancing the capacity of coastal management in Quang Ninh - Hai Phong " with the participation of NOAA (the National Oceanic and atmospheric Administration), Viet Nam IUCN (International Union for Conservation of Nature International - Viet Nam Office); VASI (Viet Nam Administration of Seas and Islands, Ministry of Natural Resources and Environment), with technical supports from the company GENWEST System INC (http://www.genwest.com/).

Strengthening capacity for coastal and marine spatial planning in Viet Nam: contributions from Sida - COBSEA UNEP

Nguyen Thi Ngoc Hoan
Bureau of Sea and Island Use Management (BSIUM)
Viet Nam Administration of Sea and Island
Ministry of Natural Resources and Environment

1. Introduction

”Spatial Planning in the Coastal Zone - Disaster Prevention and Sustainable Development” was a project developed by the Coordinating Body of the Seas of East Asia (COBSEA) after the 2004 South Asian tsunami. The project, approved by the Swedish International Development Cooperation Agency (Sida) in early 2009, focuses on coastal spatial planning (coastal zone for short) with the goal of preventing and reducing the impacts of natural disasters, climate change, and sea level rise. Its promotes sustainable development in the coastal zone through the application of marine spatial planning.

The project also contributes to the mid-term strategy of UNEP and 6 other smaller programs, such as: Disasters and Conflicts Program (improve countries’ readiness and minimize threats to human due to natural phenomena), Program for Ecosystem Management and Climate Change and Sea and Coastal Strategy of UNEP.

The project was implemented over 3 years (2010-2013) in 3 stages (phases):

Phase 1: Development of the regional resource document “Guidelines for coastal and marine spatial planning in East Asia seas”.

Phase 2: Individual national consultations to determine the needs and priorities to apply the Regional Resource Document to the project’s member countries (06 countries) in accordance with the specific requirements of each country.

Phase 3: Implementation of adaptation activities and capacity building through in-country demonstrations.

2. Situation and performance

Viet Nam is a COBSEA member and one of the six countries participating in the the three stage project. In phase 1, the regional and international experts, in consultation with national experts, developed a draft “Guidelines for coastal and marine spatial planning for East Asia seas region". This draft addressed the integration of new issues, such as climate change adaptation, disaster risk reduction, and ecosystem-based management into policy regarding marine and coastal spatial planning.

In phase 2, the Regional Resource Document draft was directly reviewed by the six member countries in November and December of 2011. Through the national consultation conferences, the project identified the needs and priorities of individual countries in capacity building for coastal and marine spatial planning. The consultation conference in Viet Nam was held on November 18, 2011 in Hanoi.

Following the 2012 regional COBSEA project conference in the Philippines, UNEP-COBSEA and the Viet Nam Administration for Seas and Islands (VASI), COBSEA’s focal organization in Viet Nam signed an agreement to implement phase 3 in Viet Nam (on Feb 24, 2012). The Bureau of Sea and Island use management (BSIUM), a subordinate of VASI developed a 14 month implementation work plan (from 3/2012 to March 4/2013).

The project activities focus on the following activites:

- *Introduction of the project and the inception workshop* (small scale) was held on May 5th 2012 to assist the stakeholders and partners

in understanding the objectives, activities and expected results of phase 3. There were approximately 20 participants representing the Institute of Strategy and Development (Ministry of Planning and Investment), Ministry of Agriculture and Rural Development, Viet Nam National University, Ha Noi, Hai Phong city and a number of units under VASI.

- *Six Vietnamese officers attended a training of trainers course on marine and coastal spatial planning* from 14-18 May 2012 in Phuket, Thailand. The participants represented VASI, Development Strategy Institute and Sub-Department of Seas and Islands of Hai Phong city. Upon course completion, the participants implemented activities such as: drafting the "National Resources Document on coastal and Marine Spatial Planning"; Vietnamese translation of the "Guidelines: spatial planning coastal marine area in East Asia: Integrating emerging issues and a new management approach"; drafting "The training materials for Viet Nam on coastal and marine spatial planning"; and joining the National training course on MSP.

- The BSIUM organized the translation of *"COBSEA Coastal Zone Spatial Planning Guide: Integrated highlights and mordenized management approach"* into Vietnamese. The book serves as an important reference for the drafting of national reference books and training materials on coastal and marine spatial planning in Viet Nam.

- *Compilation of National Resources on coastal and marine spatial planning in Viet Nam* conducted on the basis of regional integrated guidelines and other relevant documents, such as the Guidelines for marine spatial planning of the IOC-UNESCO, the experience in coastal and marine spatial planning of U.S, EU, etc.

- *Training materials for coastal and marine spatial planning in Viet Nam* were compiled with the participation of the team who had been trained in Thailand and professionals with experience in planning in Viet Nam.

To ensure editorial quality, a National consultation was organized on 23 October 2012 in Ha Noi to review the National Resources Document and the training materials. There were over 50 participants from ministries and branches concerne such as the National Border Committee (Ministry of Foreign Affairs), Ministry of Defense, Ministry of Planning and Investment, Ministry of Agriculture and Rural Development, Ministry of Trade and Industry, Viet Nam National University (Hanoi), and the Departments of the Ministry of Natural Resources and Environment. Comments were received from representatives of a number of sub-department of marine and island coastal provinces such as Quang Ninh, Hai Phong, Thai Binh, Nam Dinh, Ha Tinh, Quang Binh.

Organizing a training course on coastal and marine spatial planning for Viet Nam.

Coastal and Marine Spatial Planning training was held in Hai Phong in 5 days (from May 27, 11 to December 2, 2012). Participants were representative from ministries or coastal provinces (related to the management, exploitation and use of marine resources and coastal zones). COBSEA experts and staff gave lectures and assisted in document editing.

The training provided participants with an understanding of the basic concepts and principles of coastal and marine spatial planning, and the need to incorporate new issues and modern management approaches, especially in the context of climate change. Participants had the opportunity to hear about global experiences with coastal and marine spatial planning, practice building a management plan for coastal and marine space and visit the coastal area of Cat Hai district, Hai Phong province.

3. Overall assessment and recommendations

3.1. Overall Assessment

Upon project completion, three documents were finalized and published: (1) National Resources document (NRD) on "coastal and marine spatial planning" (2) Training materials on coastal and marine spatial planning for Viet Nam, and (3) the Vietnamese translation of "COBSEA Coastal Zone Spatial Planning Guide: Integrated highlights and a modernized management approach".

These publications are useful for planners, policy makers and managers of marine and coastal development. They discuss a new tool in the integrated management of Viet Nam's sea and islands and should be in the public domain for all those interested in marine management.

Space Management Plan is an integrated strategy that should be used in conjunction with other management tools. Coastal and marine spatial planning promotes co-management and cooperation for the sustainable development and effective management of Viet Nam's marine and coastal regions. The COBSEA project implementation and results will have a strong impact on ocean policy, coastal systems, national planning, and the National Focal Point.

The lecturers and students participating in the national and regional training courses are experts in the implementation of the Sida-COBSEA project, and have the ability to effectively apply coastal and marine spatial planning in as I have mentioned previously, there needs to be consistency in whether the document uses Viet Nam or Viet Nam in the near future. In particular, the activities of the project have helped Viet Nam:

- Raise awareness and knowledge about marine spatial planning;
- Strengthen existing capacity for integrated coastal management;
- Improve coordination mechanisms among stakeholders and local communities to manage and develop the coastal area;
- Integrate best practices of coastal and marine spatial planning by adopting successful integrated coastal zone management strategies from other countries;
- Apply an ecosystem-based approach and step-by-step approach in the marine and coastal planning and management;
- Support Viet Nam in applying marine spatial planning at a national level, primarily in implementation of the coastal and marine spatial planning pilot project in Hai Phong City 2013 - 2015.

3.2. Several recommendations

COBSEA has successfully implemented a wide range of coastal and marine spatial planning applications in Viet Nam. To continue this success, the nation needs to:

- Develop technical guidelines on coastal and marine spatial planning for the respective planning levels (national, regional and coastal province).
- Compile training documents on coastal and marine spatial planning for undergraduate, and post-graduate students in a number of universities in Viet Nam.
- Identify the legal position of coastal and marine spatial planning in the national legal system.
- Provide technical support to the international organizations in the process of applying coastal and marine spatial planning.

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The application of SLIQ approach in establishment and management of biosphere reserve in Viet Nam

Nguyen Hoang Tri, General Secretary of the National Committee of MAB Viet Nam
Le Thanh Tuyen, Managing Board of Cat Ba Biosphere Reserve, Hai Phong city

1. Introduction

The "Systems thinking, Landscape planning, Inter-sectoral coordination, Quality economy" (SLIQ) approach was first proposed and applied by the Specialist Group of Man and Biosphere (MAB) under the National Committee for the establishment, planning and sustainable management of the biosphere reserve in Viet Nam. Although environmental protection initiatives are improving, there is increasing conflict between conservation, social and economic development. In some situations, environmental protection is burdening those whose livelihoods rely on the local natural resources.

Biosphere reserves aim to harmonize the natural environment and human development. Each biosphere has its own functional zonation for conservation, development, research and education support, SLIQ was formed from a systems thinking foundation which approached each biosphere as a complete system of natural and human interaction. A broad and interactive management scheme is implemented to avoid addressing singular problems and to promote the management of the whole system (John et al. 1994; UNESCO 1996, 2005). SLIQ is built on the basic principle to conserve for development and to develop for conservation. This contributes to the Sustainable development strategy at both local and national levels (SRV, 2004).

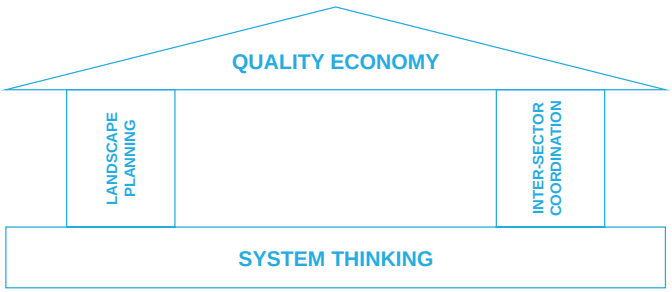
From 2000-10, Viet Nam contributed eight biosphere reserves to the global network. These reserves are distributed from North to South, the majority harbouring typical ecology and contributing to the local and national socio-economic development. SLIQ has set out a scientific basis and methodology for the establishment of biosphere reserves throughout Viet Nam.

In order to continue with the challenging mission of achieving sustainable development, lessons learnt from both success and failure should be discussed and shared (from the website of MAB Viet Nam).

2. SLIQ

Systems thinking, also known as the "active process", is a way to perceive and think holistically about the complex components and interactions within an environment. Each biosphere reserve is a complex system of relationships between active processes of nature and human. This is the foundation to comprehend and carry out landscape planning, inter-sector coordination and quality economy within the biosphere reserve.

Figure 1. SLIQ is like a house in which system thinking is the foundation. The pillars are landscape planning and inter-sector coordination to maintain the quality economy, which is the basis for sustainable development.



Experiences in applying SLIQ in Cat Ba biosphere reserve

The principles of landscape planning are applied in the structure of the core, buffer and transitional zones of Cat Ba Biosphere Reserve. The core zone (2 regions with an area of 8,500 ha, including the sea and the primary forest on limestone islands) is an area dedicated to conservation. It is strictly connected to, bounded by and protected by an adjacent to and buffer zone (area of 7,741 ha) that limits the impact of development activities from the transitional zone (10,000 ha), where the population and socio-economic activities gather.

The establishment of Cat Ba Biosphere Reserve Fund and Cat Ba Archipelago Biosphere Reserve certification trade mark was initiated and implemented from 2007 to date, aiming to enhance the marketing for 17 units with high quality special local products and services, belonging to 1 of the 5 product groups honey, fish sauce, tourist boat services, hotels, restaurants.

Scientific research and international cooperation are emphasized, particularly in the application of Systems Thinking for sustainable development. Cat Ba Biosphere Reserve was established as the first Learning Laboratory for Sustainable Development in the world (Website Cat Ba biosphere reserve).

(Website Khu Dự trữ Sinh quyển Cát Bà)

Landscape Planning is based on ecological landscape principles, together with the zonation and management of land, water and resource use within a specific area. The function of landscape planning is to adapt and collaborate with the natural componants of the biosphere reserves. The planning process must be based on the specific ecology, economics, natural and social geography of an area. Moreover, local participation is essential in developing a comprehensive and relevant plan for the area. The landscape planning for UNESCO Biosphere Reserves consists of the core, the cushion, and the transition zone.

Inter-sector coordination connects all stakeholders in the collaborative management of policy systems. It is a way to harmonize the directive top-down policies with grass-roots participation. The approach gives a holistic view of current problems, dissatisfaction, and local cultural tradition. The role of civil organizations and non-governmental organizations is very important in this process and inter-sector coordination is a bridge between stakeholders, and between the government and the people.
Quality economy is the creation of a conservation-based economy which adapts to the current trend of green economic growth. This involves activities regarding brand registration, marketing, and promotion of quality products based on global conservation values. This is a foundation to improve product value with the value added within the chain. It sets out the premise for the new chain of goods which contains greater level of intelligence

3. Experience in applying SLIQ into the establishment and management of biosphere reserves in Viet Nam

SLIQ has been used in the design, establishment and management of most biosphere reserves in Viet Nam. Previously, management activities were carried out by the ministries, boards, and departments in a top-down approach. This led to categorization according to administrative boundaries and the overall integrity of the natural and social systems. They were divided, and distributed to each sector, causing segregation within the area, irrational resource distribution and preventing collaboration on cross-border issues. The application of SLIQ is the key to

solve these issues. SLIQ promotes the provincial coordination of all activities within the biosphere reserve and appoints the vice president of the province or city to be the chief manager to ensure comprehensive adoption of SLIQ principals.

Experience in the development of co-management in Red river delta biosphere reserve

A co-management mechanism has been implemented in the Red River Biosphere Reserve with financial and technical support from MCD - a non-governmental organization for marine conservation and community development. Co-management can be achieved through the sharing of intelligence, experience and responsibilities between the three provinces of Thai Binh, Nam Dinh and Ninh Binh. Organizational reinforcement activities and the planning and implementation of eco-tourism, are creating alternative livelihoods for local people. Co-management is also reflected in the resource management at the community level with the participation of the national parks, forest rangers, fishermen, aquaculture workers, etc. The mechanism of co-management is not only shown through the sharing of benefits but also in sharing intelligence, resource conservation responsibilities and exchange of experience between the hamlets, and villages, especially in the development of community based ecotourism. Two models of community based ecotourism in Giao Xuan commune (Nam Dinh) and a commune in Tien Hai District (Thai Binh) are examples of sharing experiences and developing partners for conservation and and social and economic development. Lessons learned about co-management are also reflected in the harmonious cooperation between local authorities, national MAB committee and non-governmental organizations.

(Website MCD)

Landscape planning is applied for the zonation of the biosphere reserves and each reserve may have two or more core zones that are connected by the cushion zone and the transition zone. This ensures the continuity and integrity of the ecosystem. For example, the connection between the two core zones in Cat Ba Biosphere Reserve facilitate the maintenance of the habitat, feeding and breeding grounds for the endangered Cat Ba langur. The connection between the Cu Lao Cham Marine Protected Area, a core zone, and the Hoi An ancient town, a Cultural Heritage site, links the preservation and sustainable development of nature and culture. In Kien Giang Biosphere Reserve, the connection between the three core areas, the buffer zone, and the transition zone unites the entire ecosystem and embraces all tropical characteristics present in the area. The Biosphere Reserve connection in the inter-coastal wetlands of the Red River Delta, creates a biological corridor that maintains ecological connectivity and ensures effective conservation of migratory birds; forming the first Ramsar site in Viet Nam.

Quality strategies, also known as a conservation based economy, have been promoted in the Cat Ba Biosphere Reserve with such enterprises as: honey products, restaurants, and hotels. The Cat Ba langur trademark is attached to local products for local and international trade. The image has become a symbol of environmental sustainability and social responsibility. This strategy is now implemented in Biosphere reserves around the country.

These successes are the result of local initiatives and the collaboration between local people and authorities in the application of SLIQ principles. However, SLIQ still encounters difficulties in inter-provincial and multi-component biosphere reserves which still enact, top-down, management approaches and limited budgets. Moreover, a lack of action and initiative in many staff members is slowing the SLIQ implementation.

4. Conclusion

- In the context of economic globalization, there is a global responsibility to promote sustainable development. Although Viet Nam is slow to implement these strategies, the country is in the position to learn from abroad and adapt SLIQ principles to the management of protected areas.
- This is an important stage in the "Man and Biosphere" program and Viet Nam needs to work through the challenges, learn from experience, improve communication, exchange lessons learned, and continue on the path towards economic, environmental, and social sustainability.

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Functional zoning of Viet Nam's seagrass beds and coral reef protected areas

Hoang Van Thang
Center for Natural Resources and Environmental Studies (CRES),
Viet Nam National University, Hanoi

1. Introduction

Viet Nam is a coastal nation, responsible for the protection and development of a large marine area. Over 3,260km of coastline, abundant coral reefs, diverse seagrass beds, and complex island ecosystems, make Viet Nam's marine environment both unique and vulnerable. With high levels of biodiversity and natural resources, the coastal and marine areas play a significant role in the economic, social, and conservation framework of the country. Government, international organizations, and local and international NGOs have recently made significant progress in marine ecosystem conservation, particularly in seagrass beds and coral reefs. However, challenges in the management, sustainable development, and conservation of these fragile areas still persist. Many marine and coastal areas with high levels of biodiversity are not adequately protected and are at risk from unsustainable practices. Declining biodiversity and increasing degradation are becoming standard trends throughout Viet Nam's marine and coastal areas. As natural coastal defences decline, Viet Nam is becoming increasing susceptible to threats from climate change, natural disasters, population pressures, and resource overexploitation. It is imperative that coastal management strategies adapt to these threats and mitigate conflicting interests, such as economic development and biodiversity conservation. Functional zoning can offer assistance in dealing with coastal pressures and planning for the sustainable development in these areas. This paper introduces the scientific and practical foundations for functional zoning in coral reefs and seagrass beds.

2. Functional zoning of seagrass beds and coral reef ecosystems around the world

Functional zoning has been used in marine protected areas and multi-purpose areas around the world:

2.1. Australia

The functional zoning of Moreton Bay Marine Park resulted in three core sub-zones (Queensland Environmental Protection Agency, 2007):

1. A Marine National Park that either prohibits or strictly regulates resource exploitative activities.
2. A Conservation Park with a high level of biodiversity protection.
3. Habitat Protection Zone that prohibits trawlers and aquaculture.
4. General Use Zone that allows coastal activities except aquaculture feeding.

In addition to functional zoning, the plan includes strict seasonal regulations on tourism, navigational activities and ship anchoring.

2.2. Italy

Sub-zone design in Italy is determined by the level of conservation required and can be divided into the following criteria (Villa, et. al., 2007):

1. Integral reserve that only allows authorised personnel to implement monitoring, research, and maintenance activities.
2. General reserve that allows regulated, low impact tourist activities.

3. Partial reserve which acts as a buffer zone between strict and peripheral areas. The zone allows administrative services and entertainment.

2.3. South/South-East Asia

Function zoning of coastal and marine protected areas has been implemented in India, Sri Lanka, Thailand, Philippines, etc. The Hikkaduwa National Park in Sri Lanka, which protects a coral reef, has been divided into five zones (IUCN, 2008):

1. Glass bottom boat zone allows tourism boats to operate over a small area where the reef is not exposed to shallow water.
2. Snorkelling zone restricts where and how tourists can snorkel to ensure they are always well above the reef.
3. Beach zone areas with shallow water and sandy beaches.
4. Research zone reserved for research activites without the interference of other activites.
5. Strict protected zone for the conservation of sensitive habitats. All activities in the zone are strictly monitored and controlled.

3. Functional zoning of seagrass beds and coral reef protected areas in Viet Nam

3.1. Objectives and legal foundation of the zonation

Functional zoning is an essential tool in the management of multi-use areas around sea grass beds and coral reefs. Prior to legal implementation, functional zoning develops a detailed situational analysis and plan. Based on credible scientific data, the zonation plan requires thorough evaluation and analysis to develop a strong understanding of the ecological, social and economic factors associated with the area. This will reduce conflict between stakeholders and enhance the effectiveness of implemented activities. The zonation plan will assist in determining sub-zones, with different levels of protection and regulation, and buffer zones based on spatial, seasonal, and ecological cycles. These regulations should be clearly communicated to all stakeholders. If implemented with adequate research and stakeholder collaboration, functional zoning will ensure a balance between conservation, livelihood protection, recreational use, and economic development.

Legal documentation for functional zoning regulates biodiversity conservation and sustainable development. A number of domestic laws and international agreements, committing to the protection of Viet Nam's environment, have been implemented by the government. These include: RAMSAR Convention; Convention on Biodiversity; Environmental Protection Law (1993, ammedned in 2005); Land Law (1993, amended in 1998, 2001, 2005); Law on Forest Protection and Development (2004); Law on Water Resources (1998, amended 2012); Fisheries Law (2003); Law on Biological Diversity (2008); and a series of additional Government Decrees.

Functional zonation in Viet Nam is already in effect under the Law on Forest Protection and Development, Law of Biological Diversity and Decress 57/2010/ND-TTg which regulate the sub-zoning of marine protected areas. Under these laws, the boundaries set in the zoning process must be clearly defined to determine the level of conservation required within a specific area.

3.2. Scientific foundations for functional zoning

- *Ecological:* There is significant diversity within the living requirements of aquatic species. Due to differences in life-span, reproduction cycle, and diet, the ability of species to adapt to impacts within their habitat varies greatly.
- *Community-Based Conservation:* Local communities benefit from and impact sea grass beds and coral reefs in various ways and in differing degrees. However, they are also a wealth of knowledge and an important part of the environment. Communities are crucial in the development of feasible zoning plans that balance the needs of stakeholders with conservation strategies.
- *Geographic Information Systems (GIS):* GIS if an effective tool for demarcation, data collection and storage, management, and conservation decision making.

- *Information Collecting and Analysis:* Ecosystem research and current conservation strategy analysis forms an important foundation for the development of a zoning plan. Prior understanding of ecological impacts, such as climate change, and conservation challenges, such as stakeholder management, are crucial. Information and assistance gathered from countries that have delt with these issues in the past can offer valuable input when implementing this analysis and dealing with issues that arise.

3.3. Zoning principles for seagrass bed and coral reef ecosystem reserves

a) Natural condition-based zonation principles

Natural condition-based zonation must adhere to the CAR principles (Comprehensive, Adequate, Representative) as follows:

- Comprehensive: Contains all types of habitats (and other biodiversity components) in the non-exploitation sub-zone, recognized at a reasonable level;
- Adequate: the protected area is sufficiently large to independently develop and maintain a healthy ecosystem
- Representative: each biodiversity characteristic (species or ecosystem) is typical and exemplary.

Based on the CAR principles, the functional zonation of the seagrass bed and coral reef reserves should be implemented in accordance with the following criteria:

Criteria	***Principles***	***Explanation***
Typical habitat	1) Minimal representation of each "habitat type" in non-exploitation sub-zone	Protecting the (standard) sample of each habitat type ensures the maintenance of the habitats and the components of biodiversity in a nature reserve.
Size and type	2) Must have appropriate size and types of habitat in the non-exploitation sub-zones	Each habitat type needs to be protected in various non-exploitation sub-zones in the reserve network, in order to prevent any habitat type from total annihilation. The reserves need to be sufficiently large to protect the species in those habitats.
Connectivity	3) Create connectivity in the network/system of non-exploitation sub-zones	The distance between reserves in a network needs to be appropriate to ensure the safe movement of species.
Vulnerable habitat	4) Protect a certain number of vulnerable habitats in the non-exploitation sub-zones	The vulnerable seagrass beds and coral reef habitats and related living organisms need to be effectively protected in the non-exploitation sub-zones.
Vulnerable life cycle periods	5) Appropriately protect the species during the vulnerable stage in their life cycle	The species need to be effectively protected at the vulnerable stages of their life cycle at the non-exploitation sub-zones
Threatened and endangered species	6) There must be populations of threatened or endangered species in the non-exploitation sub-zones	Threatened and endangered species are to be protected more effectively in the non-exploitation sub-zones

Criteria	Principles	Explanation
Ecosystem connectivity	7) Need to consider the ecosystem connectivity between the habitats and the surrounding marine and land areas in the non-exploitation sub-zones	The areas that support other habitats (ecosystem connectivity) or the independent areas need to be protected.
Resilience	8) Provide future to resilience natural and human based threats	Areas that can be recognized to have high "naturalness" and have suffered little impact need to be categorized as non-exploitation sub-zones to ensure resilience to future changes and threats.
Adaptive management	9) Design a contingency network for the scientific evaluation of the zoning effectiveness	The zoning needs to be reviewed after a certain period of time (approx. 10 years), to update technological and scientific advances related to monitoring and research.

b) Socio-economic guiding principles

Guiding principles ensure the zonation is effective in achieving conservation goals without negatively impacting other users. Moreover, they ensure a compact and focused approach in management and law enforcement.

Criteria	Principles	Explanation
Balance between conservation and development	10) The final zoning decision needs to take into account the costs and benefits of the economic, social, cultural, and environmental aspects.	The final zoning decision requires anderstanding of the costs and benefits to the community, and a balance between conservation and resource use.
Minimize impacts	11) Minimise the impact of zoning on human livelihoods and the marine protected area, including the approach, activities and spirit.	Through open participation in planning and implementation, the zonation plan should have little impact on the community and stakeholders.
Management support	12) Support the organizational and institutional mechanisms that can influence the marine protected area.	The related institutions and policies need to be analysed and evaluated.
Effectiveness and practicality	13) Increase understanding of the marine protected area and the sub-zone management.	The final zoning plan should take a holistic approach by working with all sectors in operation and implementation. This includes improving stakeholder understanding of key zoning issues.

4. The proposals for zonation of seagrass beds and coral reef reserves in Viet Nam

Five functional sub-zones have been identified for varying levels of conservation: (1) Strictly prohibited area, (2) Sanctuary, (3) Habitat reserve, (4) Common use zone under control and (5) Special use zone (WWF, 2005; Hoang Van Thang, 2008).

Certain reserves such as Con Dao National Park, Phu Quoc National Park and Nha Trang bay reserve have been zoned for sea grass bed and coral reef conservation. In 2003, Hon Mun marine protected area (now is Nha Trang bay reserve) was divided into three zones:

(1) *Core zone (10-20% of reserve):* no fishing (educational activites, research, or nature-based tourism.

(2) *Buffer zone:* traditional fishing activities, excluding trawling, tourism activities, and sailing.

(3) *Aquaculture zone:* planned aquaculture activities.

Despite this, functional zoning of the largest and most biodiverse coral reef in Nha Trang Bay is yet to be implemented.

In Phu Quoc, Nguyen Van Tien (2004) suggested dividing the seagrass bed ecosystems into two primary sub-zones:

1. Strictly protected zone: no fishing or aquaculture; activities that cause a possible decline in the sea grass area are strictly monitored,
2. Partially protected zone: no exploitation during breeding or migration seasons; no exploitation at feeding and spawning grounds.

Although functional zoning can offer a viable approach to marine and coastal management, there are still issues in implanting this approach:

- Rules and criteria for functional sub-zoning can be vague and unstructured
- Coastal demarcation is challenging
- Community awareness in conservation and zoning is poor

Based on the lessons learnt by WWF in implamenting functional zoning in Viet Nam and the experiences of other countries, zonation offers considerable opportunity to improve the protection of sea grass beds and coral reefs in Viet Nam. Functional zoning can be implemented under the following criteria: (1) Strictly prohibition area, (2) Sanctuary, (3) Habitat reserve, (4) Common use zone under control, and (5) Special use zone. The use of these criteria is dependent on the specific conditions and requirements at each zoning site of each zoning site. In order to effectively implement functional zoning in Viet Nam, site-specific research, detailed analysis, and appropriate legal preparation is crucial.

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Building legal framework for marine spatial planning in Viet Nam

Nguyen Le Tuan
Research Institute of Seas and Islands Management
Viet Nam Administration of Seas and Islands (VASI)

1. Introduction

Viet Nam's coastline stretches over three thousand kilometers, including thousands of islands and two distinct archipelagos. The sea is central to national development and international trade [2]. Marine resources are used by many sectors and represent an important part of the economy [15]. However, rapid and unsustainable development is leading to resource degradation and environmental harm; if the development course is not altered, Viet Nam's marine resources will be depleted in the next few decades [13]. Marine space management is an increasing challenge that is currently struggling to balance current economic gain with long term sustainable development.

The United Nations Convention on the Law of the Seas of 1982 (1982 UNCLOS for short) provides a legal foundation for marine spatial management. Chapter 17 of Agenda 21 (1992) emphasizes that marine and coastal area management must be "comprehensive by contents, preventive by nature, and forecastable by scales" [3]. Eco-system based integrated management, has the potential to reduce conflict and enhance inter-sectorial cooperation, to ensure sustainable development and efficient resource use to manage natural disaster impacts and socio-economic development.

Marine spatial planning (MSP) is an important management and control tool within the integrated management approach. Although it has been successfully applied around the globe for the past two decades, MSP is new to Viet Nam. If effectively integrated within the legal framework, MSP has the potential to sustainably manage Viet Nam's coastal planning challenges for a healthy and productive future.

2. Situation of applying marine spatial planning

The definition of MSP has not yet been globally defined and it is applied under several term, such as: "integrated sea use management" in Australia; "Sea use planning" and "ocean management" in Canada; and "marine planning" in England [7]. MSP is the "process of analyzing and allocating parts of three-dimensional marine spaces to specific uses (implemented by government authorities), to achieve ecological, economic, and social objectives that are usually specified through the political process" [6]. The British Ministry of Environment, Food and Rural Affairs (DEFRA) defines MSP as "a strategic planning aimed at adjusting, managing and protecting marine environment with focuses on complicated sea use activities, cumulative and potential conflicts" [7].

Globally, MSP has been adjusted and adapted to fit the specific needs of each country. The German Government has implemented MSP in all sea zones located within 12 nautical miles from the shore and has recently published the National MSP for Exclusive Economic Zones. The British Marine and Coastal Access Act (2009) includes 5 chapters and 21 articles specifying MSP policy detail, development, and adjustment [12]. France, Greece, and Poland have adapted MSP within a sectoral legal framework to potentially assist in future marine planning conflicts. The French "Sea Enhance Schemes" and Greek "Special Framework Planning for Tourism, Industries and Coastal Areas" have assisted in defining MSP [7]. The United States National Marine Policy (2010) has strengthened support for the development and implementation of MSP across many coastal states. Functional zoning, as a type of MSP, has served as a foundation for marine management in China for the past two decades [8].

Viet Nam does not yet have a efficient integrated model for sea use and current management capacity is lacking. There is little knowledge within local authorities and communities about the threats and challenges facing the coastal environment. Thus, incentive to protect and sustainably develop the area is limited. Moreover, communication, collaboration, and information sharing between authorities is lacking; leading to ineffective coastal management and awareness [4]. Environmental degradation is increasing as resources are depleted and conflict between stakeholders continues. It is imperative the MSP is adopted into the legal framework in order to address these challenges and bring integrated and unified management to the coastal and marine area.

Figure 1. Part of Quang Nam's coastline

3. Legal position of MSP in Viet Nam

Although the MSP definition is yet to be included in legal documents, the Law of the Seas (2012), effective 01/01/2013, contains a chapter discussing marine economic development and regulations regarding marine planning [9]; this includes:

- Analyzing and assessing natural, socio-economic conditions and the status of sea exploitation and use
- Determining orientation, objectives and direction for the use of marine resources and protection of marine environment;
- Zoning sea use for socio-economical development, national defense and security purposes determining areas prohibiting exploitation; designating exploitation areas, that need special protection for defense and security purposes, for environmental protection, ecosystem conservation and man-made islands, equipment and works constructed on sea;

- Developing locations, areas and expressing them on map of surface use zones, seabed use zones, islands use zones;
- Determining vulnerable marine areas such as mudflats, erosive beaches, protection forests, wetlands, coastal sands, determining buffer zone and appropriate measures for sea management and protection;
- Developing solutions and implementation plans.

These inclusions are similar to those stipulated in the Governmental Decree No 25/2009/ ND-CP (6/3/2009) regarding the integrated management of marine resources, marine environment, and island protection (hereinafter referred to as Decree 25) [5]. The Ministry of Natural Resources and Environment (MONRE) will take lead in implementing Decree 25 and will work closely with other line ministries, sectors, and coastal provincial peoples' committees to prepare a national plan for marine resource use and marine environment and island protection. The plan will then be submitted to the Prime Minister for approval. The Ministries of Defense and Public Secturity will be consulted on issues relating to national security. Decree 25 stipulates decentralization for the implementation of the marine resource use and marine environment and island protection planning process.

Based on Decree 25, MONRE issued Circular No. 19/2011/TT-BTNMT (10/6/2011) stipulating planning techniques, marine resource use adjustment, and marine environment and islands protection planning. Although there are content similarities between the Marine Resource Use, Marine Environment and Islands Protection Plan, and MSP [6, 11]; distinct differences remain. The international and regional MSP guidelines provide a procedure for managerial decision making; whereas current regulations for marine and island planning still focus primarily on process steps and requirements rather than the final output and plans to be achieved. Moreover, current national regulations regarding marine resource use and protection do not refer to MSP MSP. MSP focuses on: (i) goods and services management within a planned area; and (ii) how to achieve expectations and priorities over space and time [6, 7]. Viet Nam needs to expand the planning, approval, and institutional arrangement for the implementation of marine resource use and marine environment and island protection planning.

4. Building a legal framework for marine spatial planning in Viet Nam

The following fundamental issues must be addressed in order to build a legal framework for MSP:

a) Develop new or supplement existing legal regulations relating to the MSP process. Approved regulation much include specific legal conditions to ensure the equal participation of all relevant stakeholders and communities. This will assist in identifying priorities and developing attainable goals for the successful implementation.

   Marine spatial planning is a dynamic process that adapts to the natural changes in the environment and knowledge capacity. This ensures a continual review and renewal of relevant data and understanding to ensure the management policies are reflective of the surrounding situation. There is some confusion surrounding the various terms used to describe MSP. Therefore, to avoid misunderstanding, it is recommended to use "marine spatial planning" in all legal documents and framework regarding integrated management and planning for seas and islands.

   The marine environment is a multi-use space and a crucial resource for economic productivity, social development, and environment conservation. However, the demand for marine outputs (such as industry, food and energy) often exceeds capacity, especially in urbanized and industrial areas of high demand. Planning for the equal distribution of marine outputs can be difficult for natural self-sustaining services such as wildlife habitat and nutrition cycles. MSP ensures that the output capacity is fully understood so that marine use regulation and policy realistically reflect natural structures and cycles [6].

MSP legal regulation must clearly state the purpose of the system and the differences between MSP, marine exploitation, and sea use planning. MSP should work with, rather than replace, the marine exploitation and sea use plans of other sectors such as those for transportation, fisheries, energy, and conservation. However, MSP may assist these sectors in expanding knowledge and improving plan efficiency. MSP will bridge gaps between the various sectors working within the marine environment to reduce conflict and encourage collaboration and information sharing for the promotion of sustainable development of the area. Through the improvement of information collection, data analysis, functional categorization, and inter-regional management, MSP can balance the economic, social, and environmental needs of the marine region.

b) Clearly stipulate the scope of MSP in relation to the 1982 UNCLOS and the Viet Nam Laws of the Seas (2012) which have allocated marine zones within various legislative regimes. Although Viet Nam has been implementing an integrated management approach within the marine environment for the past five years, marine exploitation, particularly in near-shore zones, is still causing inter-sectorial conflict and environmental degradation. MSP is needed to reassess priorities, evaluate current planning methods, and expand sustainable MSP principles to the exclusive economic zones (EEZs). Marine space scoping should be in parallel with the appropriate institutional arrangements and MSP decentralization.

   To decentralize MSP and accomplish regulation goals, Decree 25 should be reviewed and the Integrated North Central and Central Coastal Management Programs approved under Decision No 158/2007/QĐ-TTg dated 9/10/2007 by the Prime Minister until 2010 and orientation to 2020 (called Program 158). Previous international experience with marine management suggests that MSP be implemented at three levels: nationwide marine and coastal zones; inter-provincial marine zones; and provincial marine space. The National Assembly, the Prime Minister, and MONRE will act as approving authorities for MSP at these levels.

c) MSP regulations should facilitate and cooperate with coastal area land-use planning. Researchers and managers are now considering the integration of river basin planning, with special emphasis on coastal watersheds. As such, Program 158 and Decree 25/2009/ND-CP include the coastal mainland as part of the scope for integrated coastal and marine management. Like MSP, land-use planning includes data analysis and conflict reduction as related to spatial use. Both planning strategies use diagrams or maps to illustrate the division of purpose-based zones. However, MSP differs from land use planning in its strategic and spatial complexity. Unlike land-use planning, which is focused only above ground, MSP must consider the layers of potential impact in the marine environment; from the sea-bed to the water column, and the water surface. Moreover, marine based activities are generally more dynamic and ownership rights are considerably harder to determine in the marine environment. Unlike land-based zoning, which deals primarily with basic legal claims and land-rights, MSP works with areas which have multiple indistinct and sometimes contradictory ownership claims; as such, many legal issues arise when trying to determine the framework for MSP and how the marine space will be divided. For example: fishing licenses are stipulated under fisheries regulations while licensing for mineral exploitation is considered based on mineral legislation.

d) The MSP development process results in a master plan based on detailed analysis and synthesis. The report is then submitted to a competent authority for consideration and approval. Diagrams or maps of the marine zones illustrate the distribution of exploitation activities, resource uses, and conservation areas. In preparation for these maps, legislation must be reviewed and adjusted to address the zoning issues. This involves creating a legal basis for map systems through the unification of rules and regulations related to the representation of marine space in mapping language.

   In many countries, mapping systems are stipulated under the system of “sea cadastral”. Although there are many

standards for determining marine boundaries, the majority fall into one of four categories [1]: natural standards; administrative boundaries; arbitrary distance; environmental considerations.According to the United Nations [14]: “there is obviously no single standard applicable to all cases, nor is there a single standard that meets all requirements for the effective determination of spaces to be managed”. While standards are a simple determination method, other methods could be based on competitiveness and importance of the environment. A basic framework given by Smith and Lowland [10] is more specific; it includes five variables or elements that need to be considered: meteorological factors, oceanographic and hydrological factors; geomorphologic factors; geographical; bio-geographical factors; exploitation activities; human's use of marine space; and legal factors (the legal regime of marine regions).

Researchers and managers often use two models throughout the planning process: (i) *marine spatial use relations* model which analyses the relationship between marine use activities within a space; or (ii) *Sea use and marine environment relations* model which considers the natural resources component as part of the marine environment [1]. Marine spatial determination is required for both models. Therefore, it’s necessary to legalize the basic framework for zoning, delineating, and expressing marine spatial units used for deploying technical infrastructures for integrated and unified coastal and marine management.

e) A synchronized legal system for developing, approving and implementing marine spatial planning is crucial. There is a shortage of high level legal documents and technical guidance documents and regulations. Current content fails to meet practical requirements and is in need of review and adjustment. For example: which method will be used for analyzing and identifying sea-use conflict? What is the most appropriate and effective method to encourage community and stakeholder communication and participation in planning? How can a highly specialized geographic information system (GIS) be developed and utilized?

Conflict management in planning development and implementation is a primary concern in the MSP process and a key issue which should be addressed in the legal framework. There is great need for a suitable system of legal documents that has the capacity to prevent and address conflict. The traditional top-down approach is inefficient and ineffective. In order to address conflict, it will be necessary to apply various methods such as: direct negotiation between relevant parties; reconciliation; support and consolidation of mutual understanding; third party referee; and the formation of relaistic rules based on thorough negotiation and discussion.

f) Globally, MSP has achieved successful results and provided a wealth of information and lessons learnt. Exchanges of international experience and suggestions for effective MSP strategies will be invaluable resources as Viet Nam continues to implement an integrated and unified management system for the sustainable development of the coastal and marine environment.

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Marine Spatial Planning approach in managing the coastal resources for sustainable marine development in Viet Nam

Nguyen Thi Trang Nhung
Department of Science, Technology and International Cooperation
Directorate of Fisheries

1. Introduction

Viet Nam is the third largest aquaculture producer and fourth largest fisheries exporter in the world. The national fisheries sector is a major contributer to the Vietnamese economy and the industry is closely linked with the domestic and export makets. In the past few years, the sector has been able to maintain high growth through improved productivity, quality, and efficiency.

However, this growth has not been sustainable and the coastal fishing communities are now suffering from resource depletion and production insecurity. Coastal sea planning, which has been unable to adapt to industry and environmental changes, greatly impacts the sustainability and health of the sector. To improve coastal management, the World Bank has financed a project titled “Coastal Resources for Sustainable Development” (CRSD) which aims to manage coastal fishing in a more effective and sustainable manner.

The project will adopt a coastal spatial planning approach which embraces interdisciplinary/multi-sectoral, ecology-based coastal planning. This new approach is termed Ecosystem Approach to Fisheries Management (EAFM).

2. Marine Spatial Planning and the CRSD Project

With increasing pressure from development sectors and growing concern about environmental protection, marine spatial planning (MSP) offers a practical approach to conflict resolution. MSP facilitates a cooperative approach which balances economic growth, environmental protection, and social responsibility.

Within the CRSD framework, MSP will be applied for the sustainable and integrated management of coastal areas in the key provinces. The multi-sectorial approach will encourage participation and rely upon the expertise of all stakeholders and sectors, such as aquaculture, fisheries, tourism, agriculture, and urban development.

MSP will serve as a platform for mainstreaming fisheries management and biodiversity conservation which will allow co-management with the local fishing communities. This mode of management aims to improve the incentives and motivation of resource users to sustainably manage their local marine resources. Exploitation rights may include, but are not limited to: the right of fishermen to fish in a group, the right of access to individual interests and benefits, the right to

Figure 1. Binh Tien Beach, Ninh Thuan Province

exploit a certain amount of aquatic products; the right to traditional exploitation methods encouraging the reorganization of production, development of the cooperative division model will improve communication and community-based management so that the communities have the information necessary to sustainably manage their own fishing activities. The CRSD framework has also adopted the MSP approach in order to determine the regulations and management of a Fish-Refugia and the surrounding area.

The CRSD Project is active from 2012-17 and MSP will be implemented in the coastal areas of eight key provinces of the project, including: Thanh Hoa, Nghe An, Ha Tinh, Binh Dinh, Phu Yen, Khanh Hoa, Soc Trang and Ca Ma. The project will focus on key issues such as: (i) educating central, provincial and local officers from different departments about MSP and the necessary tools and skills, environmental evaluation, planning and monitoring required for MSP application; (ii) conducting general zoning of the coastal areas and districts in the key provinces. This will be conducted through field trips and consultations with relevant stakeholders and parties. In areas of rich biodiversity, the project will finance in-depth studies which will later serve as the foundation for the preparation and implementation of the sustainable co-management of fishing trade; (iii) conducting Strategic Environmental Analysis (SEA) and MSP in key provinces for the provincial fishing trade master plan,.. Based on the SEA and MSP results, recommendations will be made on how to adjust the overall planning of the coastal fishing trade at the provincial level (until 2020); and (iv) organizing consultation workshops to enhance cooperation and share information between authorities and stakeholders. A strong communications strategy and professional trainings are essential to improve efficiency between planning and implementation.

3. Expected outcomes and deliverables of the project

A strong MSP strategy that can assist with the 2020 aquaculture master plan will be the primary outcome of the project. Under the framework, coastal management integration will ensure sustainable development throughout the region. Moreover, MSP implementation will contribute towards the responsible management of Viet Nam's fisheries and aquaculture trade, allowing the country to realize its international commitments towards sustainable development.

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Application of Marine Spatial Planning in Hai Phong

Nguyen Huu Cu
Institute of Marine Environment and Resources

1. Abstract

Hai Phong sits at an economic crossroad between two trade corridors and a major economic belt. Rapid development and industrialization is threatening economic, social, and environmental stability, and posing an increasing challenge for the planning sector. Ineffective management and poor planning strategies are degrading natural resources and pressuring marine and coastal ecosystems. Although high pollution is primarily land-based, trans-boundary and cross-boarded investments along the economic corridors and belt are spreading environmental degradation and furthering unsustainable development, To deal with these problems, a framework for Integrated Coastal Management (ICM) and Marine Spatial Planning (MSP) is currently being developed in Hai Phong city for 2020, with a vision to 2030.

2. Marine and coastal spaces of Hai Phong city

Hai Phong city is one of the densest population zones in Viet Nam. Ports, fishing zones (Lap Le, Cat Hai), tourism (Do Son, Cat Ba), and industrialization (Minh Duc, Quan Toan, Dinh Vu) stretch over 1,519.2 km^2 within seven coastal urban, six coastal rural, and 2 island districts (Cat Hai and Bach Long Vi). The coastal zone is bounded by 5 districts - Hong Bang, Ngo Quyen, Hai An, Duong Kinh and Do Son, 3 coastal districts - Thuy Nguyen, Kien Thuy and Tien Lang and one island district - Cat Hai. The urban population has increased by more than 12% in the past decade. Cat Hai, the largest district, represents 57.8% of the population and 71.2% of the area (2010).

Hai Phong city is one of the few coastal cities/ provinces in Viet Nam to have a dynamic economy comprising primarily of the industrial and service sectors. The city is the largest port for the Northern provinces and a center for industry, trade, and tourism. Hai Phong is a central economic zone and offers opportunity for global economic cooperation with the East Asia Region.

MSP will be implemented in coastal, urban and rural districts; as well as the sea area bounded by the maritime border with China; maritime borderline A with Quang Ninh province to the Northeast; borderline D with Long Chau archipelago to the North, and line C from the maritime border to the river mouth in Thai Binh. Four key areas in Hai Phong are exceptionally rich in natural resources and biodiversity: (Fig. 1), including:

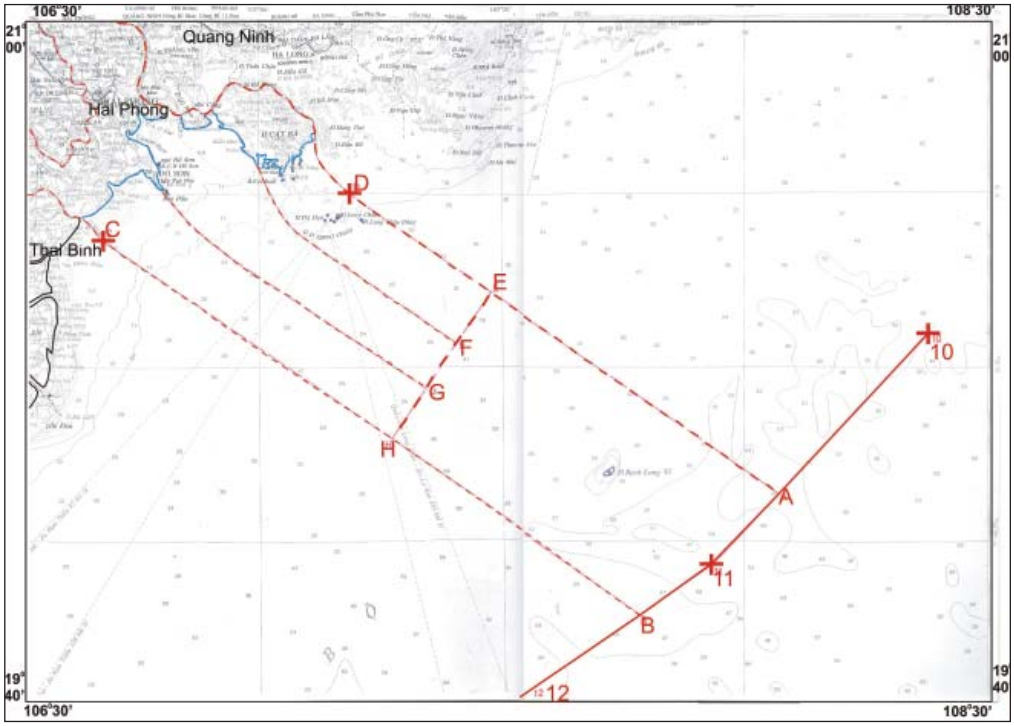
(1) Cat Ba - Long Chau: comprising of Cat Ba island, Long Chau archipelago, and the sea area from the coast to the 30 m isobaths EF;

(2) Bach Long Vi: comprising of the Bach Long Vi island and the surrounding sea, from the maritime border to the 30m isobaths, bounded by the four points A, B, H, E;

(3) The seas and funnel shaped estuary of Bach Dang: comprising of Cat Hai island and Hong Bang, Ngo Quyen, Hai An, Duong Kinh and Do Son districts; the coastal rural district of Thuy Nguyen and the sea area bounded by the 30 m isobaths FG;

(4) The seas and the estuary of Van Uc - Thai Binh: comprising of the coastal rural districts of Kien Thuy, Tien Lang and the sea area bounded by the 30 m isobaths GH.

Figure 1. The natural areas shape the coastal spaces of Hai Phong cIty



3. MSP Awareness in Hai Phong

In 2004, the UK Department of Environmental, Food and Rural Affairs (DEFRA), introduced the concept of marine strategic planning. They strategized regulation, management, and protection of land with an emphasis on multi-purpose use and conflict resolution. According to IOC-UNESCO (2010), MSP is an open process of spatial and time-based analysis and allocation of human activities in a certain marine area in order to achieve environmental, social and economic objectives, and often realized via a governmental management process. Many countries around the world have adopted MSP for the application of an integrated and holistic decision making process in regards to the effective management of marine space and resource use. It is a rational eco-system based approach aimed at achieving the optimal socio-economic results through the adaptation of systems that balance economic development with environmental and social protection. MSP develops an integrated plan, or vision, for a region and based on these plans, marine management authorities can decide whether to issue permits for resource exploitation. MSP is one a variety of stages implemented under marine management, including: monitoring and evaluation; research; community participation; and the creation of sustainable financial sources. Although this approach is new to Viet Nam, Integrated Coastal Management (ICM) strategies, an important prerequisite in the application of MSP, have been piloted in the country for nearly two decades.

Through the collaborative and effective use of planning for natural resource distribution, MSP minimized conflict between stakeholders. Although this has been mentioned in planning for the Hai Phong region, the approach is yet to be fully integrated into all aspects of marine space management.

The coastal area is one of the structural components of the marine space. ICM is always placed within the overall context of the coastal area. MSP is thus considered necessary for the ICM framework development in Hai Phong. Its is also essential in implementing the commitment signed by the Department of Natural Resources and Environment of Hai Phong with 9 other

coastal cities/provinces with the support of the Viet Nam Administration of Seas and Islands and the Partnership in Environmental Management for the Sea of East Asia (PEMSEA) on 03/03/2010.

The "Study and development of an integrated management plan for the coastal areas of Viet Nam, contributing to environmental safety and sustainable development" project (KHCN.6-07) was launched twenty years ago. Led by the Institute of Natural Resources and Environment from 1996-1999, the project focused on the coastal areas of Da Nang and Do Son - Cat Ba - Ha Long . Although project outcomes were limited, it set the foundation for the launch of several internationally sponsored ICM projects throughout Viet Nam. Nation-wide ICM continued with the ongoing KC.09/06-10 program from 2006-10; with four projects in the northern coastal area (focused on the coastal area in Hai Phong), and the north-central coastal area. From 2008 to 2010, Hai Phong city cooperated with Brest city (France) to conduct an environmental evaluation and ICM priority identification in Hai Phong. In 2011, Hai Phong city conducted a 5 day training course on MSP, in cooperation with the US National Oceanic and Atmospheric Administration (NOAA). Approximately 50 relevant officers participated.

4. MSP Application in Hai Phong

The Department of Natural Resources and Environment cooperated with the Institute of Marine Environment and Resources to develop a MSP project in Hai Phong city towards 2020, with a vision to 2030 (following Decision No. 210/QĐ-UBND dated 15/2/2012 of Hai Phong People's Committee (HPPC) on the issuance of the Work Program in 2012 for the HPPC, and the Official Letter number 1478/UBND-MT dated 23/3/2012). This project is of great importance to the implementation of the Strategy for Marine Economic Development within the region (in accordance with Resolution No. 27-NQ/TU dated 13/4/2009 of the Standing Committee of HPPC on the Action Program to implement the Resolution of the 10th Central Committee of the Communist Party on the Strategy for the Viet Nam Sea towards 2020; Resolution number 01/2009/NQ-HĐND dated 06/05/2009 of Hai Phong People's Council on marine economic development of Hai Phong City in 2015, with a vision to 2020; Decision number 1274/QĐ-UBND dated 2/8/2010 of HPPC on the approval of the *Marine economic development planning in Hai Phong, towards 2020 Project*).

The MSP project works towards the sustainable development of the Hai Phong region to protect the environment, economy, communities, and national security and sovereignty. Specific objectives are as follows:

(1) Create a synchronized database on the natural environmental conditions and resources to serve as a scientific foundation for MSP in Hai Phong towards 2020, with a vision to 2030.

(2) Develop an environmental management framework and rational area-specific resource-use plan to protect and promote socio-economic developments and manage climate change impacts.

(3) Propose procedures for the implementation of MSP.

To predict marine spatial changes around Hai Phong city, the project will undertake the following:

- Compile the proposed national and international development plans for the region.
- Analyze the current status of the trans-border pollution predictions.
- Predict changes in socio- economic activities and climate change impacts.
- Calculate the value added of the sea in Hai Phong in the process of global economic cooperation and integration.

MSP requires master and detail orientated plans that should be implemented in 3 phases: 2016-2020, 2021-2025 and 2026-2030. Master planning will be carried out throughout the Hai Phong marine space at a map scale of 1:200,000. Detailed planning for the natural areas will be composed at map scales of either 1:10,000 or 1:50,000. Project results will contribute towards a review of the current status of MSP and ICM as well as provide recommendations for further development in the field.

5. Conclusion

Hai Phong is a fast developing region that is currently implementing ICM and MSP strategies in attempt to effectively manage the many conflicting pressures of the area. It is a complex region that encompasses four district regions, each with a unique level of potential, conflict, and challenge. MSP is a holistic and integrated approach which, if implanted correctly, will improve management and minimize conflict through a sustainable balance of economic expansion, social development, and environmental conservation.

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Mangroves for the Future
INVESTING IN COASTAL ECOSYSTEMS

Mangroves for the Future (MFF) is a partnership-based initiative promoting investments in coastal ecosystems that support sustainable development. MFF provides a collaborative platform for the many countries, sectors and agencies tackling the challenges to coastal ecosystem conservation and livelihood sustainability and is helping them to work towards a common goal.

MFF builds on a history of coastal management efforts before and after the 2004 Indian Ocean tsunami, especially the call to sustain the momentum and partnerships generated by the immediate post-tsunami response. After focusing initially on the countries worstaffected by the tsunami – India, Indonesia, Maldives, Seychelles, Sri Lanka and Thailand – MFF has now expanded to include Pakistan and Viet Nam. MFF will also continue to reach out to other countries in the region facing similar challenges, with the overall aim of promoting an integrated, ocean-wide approach to coastal area management.

MFF seeks to achieve demonstrable results through regional cooperation, national programme support, private sector engagement and community action. This is being realized through concerted actions and projects to generate and share knowledge more effectively, empower institutions and communities, and enhance the governance of coastal ecosystems.

Although MFF has chosen mangroves as its flagship ecosystem, the initiative embraces all coastal ecosystems, including coral reefs, estuaries, lagoons, wetlands, beaches and seagrass beds. Its management strategy is based on specific national and regional needs for long-term sustainable management of coastal ecosystems. These priorities, as well as newly emerging issues, are reviewed regularly by the MFF Regional Steering Committee to ensure that MFF continues to be a highly relevant and responsive initiative.

Learn more at: www.mangrovesforthefuture.org