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The South China Sea Environment: The Need for Formalised Institutional Interaction between Science, Policy and Law

by

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Abstract

This essay is a survey of the conjunction and interaction between the scientific, policy and legal disciplines devoted to protection of the South China Sea's environment. It will first assess the state of scientific research on this water body, and then explore the connexions between the results of this scientific research with the policy initiatives and legal instruments designed to address the specific pollution issues and general degradation of this semi-enclosed sea. The present study is therefore predicated on the assumption that there is a continuing need for *formalised institutional cooperation* on the marine scientific research efforts into this body of water as a necessary prerequisite, *inter alia*, to establish the environmental baseline standards for measuring land-based sources of pollution into the South China Sea from its littoral States, as well as other pollution sources such as international shipping through this busy waterway between several of the biggest economies in the world. Such *formalised institutional co-operation* over marine scientific research can then form the basis for targeted policy decisions and specific legal measures designed to address the environmental threats uncovered by the concerted and collated marine scientific research on the South China Sea.

Introduction

This essay is a survey of the conjunction and interaction between the scientific, policy and legal disciplines devoted to protection of the South China Sea's environment. It will first assess the state of scientific research on this water body, and then explore the connexions between the results of this scientific research with the policy initiatives and legal instruments designed to address the specific pollution issues and general degradation of this semi-enclosed sea. Much scientific research has already been undertaken and continues to be carried out both within and across this marine region. However, the absence of an overarching legal and institutional framework for such scientific research to feed into concrete region-wide policy decisions, as well as legal measures and actions directed solely, or at least mainly, towards environmental protection, is notable.

The present study is therefore predicated on the assumption that there is a continuing need for *formalised institutional cooperation* on the marine scientific research efforts into this body of water as a necessary prerequisite, *inter alia*, to establish the environmental baseline standards for measuring land-based sources of pollution into the South China Sea from its littoral States, as well as other pollution sources such as international shipping through this busy waterway between several of the biggest economies in the

world. Such *formalised institutional co-operation* over marine scientific research can then form the basis for targeted policy decisions and specific legal measures designed to address the environmental threats uncovered by the concerted and collated marine scientific research on the South China Sea. It will be argued that increased and improved levels of *formalised institutional cooperation* over marine scientific research in the South China Sea can in turn lead to more effective global, regional, bilateral and national environmental protection instruments for this area. This is in marked contrast to both previous and current efforts to mitigate potential disputes over the South China Sea, which are characterised by their emphasis on geo-political, legal and resource-led economic perspectives, rather than environmental concerns *per se*.¹

When considering the current international governance efforts at addressing South China Sea environmental concerns, a structured approach based on the following (nominally) geographical tiers will be utilised. First, broader East Asian and/or wider South China Sea regional initiatives are discussed, before sub-regional, Southeast Asian-based efforts are considered, and finally, bilateral initiatives between South China Sea (specifically, Gulf of Thailand) littoral countries are addressed. While the following discussion will attempt to adhere to this nominally geographical approach, it should be appreciated that some of the regional efforts covered within individual sections overlap with each other in terms of their (State) membership, both from within and without this marine region.

Background

While the South China Sea continues to be a region of significant geo-strategic intrigue,² by far the most pressing set of issues arising from this largest of semi-enclosed seas revolve around its well-being as a large marine ecosystem (LME).³ Chief among the environmental threats to the South China Sea is the influx of pollution resulting from human activities, caused in turn by the sheer weight of population increases over the last few decades. Southeast Asia's population, especially when taking into account of the southern flank of the Chinese mainland that also abuts the northern aspect of the South China Sea, easily amounts to more than half a billion people today. Rising per capita consumption due to rapidly growing regional economies have also contributed to the burgeoning material aspects of marine pollution. Indeed, reports suggest that the wider 'East Asian Seas' region may now generate as much as half the world's marine plastic litter.⁴ These relatively new but growing sources of pollution are now beginning to generate real (negative) impact on biodiversity, for example, plastic waste entanglement with turtles, seabirds, and fish.

These *accumulated* marine environmental protection issues are now well known and scientifically documented as far back as the beginning of the present millennium, *i.e.* nearly twenty years ago and indeed, even before this. A 2005 Global International Waters Assessment (GIWA) report presented the results of several scaling, scoping, causal chain and policy options analyses conducted for the South China Sea (designated as GIWA region 54) in 2001-2002.⁵ This assessment determined that the most severe environmental issues

facing the South China Sea include: ‘Suspended solids resulting from deforestation and agriculture in hundreds of watersheds; Habitat loss and modification, through massive deforestation and associated siltation, conversion to agriculture and other land uses (freshwater, coastal and estuarine habitats) and destructive fishing practices (coastal, estuarine and marine habitats); Overexploitation and destructive fishing practices.’⁶

Unfortunately, scientific recognition of these accumulated environmental problems and multiple assessments of their severity has not prevented the South China Sea environment from continuing to be subsumed within the regional and extra-regional machinations of Great Power rivalry over this geopolitically significant area. Lying as it does amongst and between some of the biggest and fastest growing economies in the world today, this water body will always attract the attention of those who want to control, or at least influence, global shipping lanes. Moreover, as Tagliacozzo observes when beginning his *longue duree* historical account: ‘The South China Sea has been one of the busiest waterways in global history; its pedigree is ancient, even as its modern geopolitical importance remains undisputed. ... Yet the history of connection, both via trade and via political contacts, between China and the various polities of Southeast Asia has been more steady and influential than any more recent history of geostrategic unease.’⁷ Later on in his account however, he cautions that, ‘(i)t is in fact, the South China Sea of the twentieth into the twenty-first centuries that shows us how fragile this history of movement, trade and political accommodation has become. This broad maritime space is still criss-crossed by shipping as it always has been; indeed, the raw tonnage of transport is higher now than it ever has been in historical time. Yet there are worrying signs that an epoch of *mare clausum* – closed seas – could be approaching.’⁸

Mutual wariness and distrust of motives among the littoral States over these contested waters, in part caused by the extraneous over-reach of regional and global hegemony such as China, and the USA, respectively, as well as middle-order powers such as the UK, Japan, Australia, and even India,⁹ speak volumes to the lack of international co-ordination on the environmental front. This extends to the relative lack of *concerted* scientific research being undertaken in this region towards assessing the parlous state of South China Sea’s environment. Even an initially successful trilateral agreement between the national oil companies of China, Viet Nam and the Philippines for co-operation over seismic activities in the northern reaches of the South China Sea,¹⁰ stalled over the underlying territorial and maritime jurisdictional issues that this arrangement were originally designed to downplay. It is no surprise then to find that international co-operation levels over this regional marine environment are still generally low, and regular, scientific assessments for the region as a whole are few and far between. Specifically, established and long-standing *institutionalised* regional initiatives remain nascent.

On the other hand, it is possible to underestimate the scale of the task at hand, given the comparatively large geographical size, as well as hydrographical and biological complexity, of the South China Sea. It should be noted however that these high levels of geographical, historical, scientific, economic, political and legal complexity have not deterred expansive academic efforts at bringing

them together within a single resolutive mechanism. One radical alternative along these lines proposes that: ‘Given the rapid proliferation of international peace parks around the world, it is time to take positive steps toward the establishment of a Spratly Islands Marine Peace Park. Its purpose would be to manage the area's natural resources and alleviate regional tensions via a freeze on claims and claim supportive actions’,¹¹ thus testifying to the unlimited ambitions of academic ingenuity in responding to such complexities. While applauding such attempts to cut the Gordian knot of South China Sea complexities, the present effort is arguably less speculative in its approach but no less ambitious in its prescriptive injunctions. It begins by highlighting the relative lack of correlation between accumulated scientific evidence of environmental degradation and then focuses on the corresponding need for a robust international (regional) policy and legal framework for addressing this environmental malaise within the South China Sea governance matrix.

Within this context, it is significant to note that in 2002, as an essential aspect of intra-regional efforts to reduce the geopolitical tension which continues to afflict this part of the world to this day, the ASEAN Member States and the People’s Republic of China adopted a Declaration on the Conduct of Parties in the South China Sea,¹² providing, *inter alia*, the following statements:

‘1. The Parties reaffirm their commitment to the purposes and principles of the Charter of the United Nations, the 1982 UN Convention on the Law of the Sea, the Treaty of Amity and Cooperation in Southeast Asia, the Five Principles of Peaceful Coexistence, and other universally recognized principles of international law which shall serve as the basic norms governing state-to-state relations;

...

4. The Parties concerned undertake to resolve their territorial and jurisdictional disputes by peaceful means, without resorting to the threat or use of force, through friendly consultations and negotiations by sovereign states directly concerned, in accordance with universally recognized principles of international law, including the 1982 UN Convention on the Law of the Sea;

...

6. *Pending a comprehensive and durable settlement of the disputes, the Parties concerned may explore or undertake cooperative activities. These may include the following:*

- a. marine environmental protection;*
- b. marine scientific research; (emphasis added)*

...

The modalities, scope and locations, in respect of bilateral and multilateral cooperation should be agreed upon by the Parties concerned prior to their actual implementation.

7. The Parties concerned stand ready to continue their consultations and dialogues concerning relevant issues, through modalities to be agreed by them, including regular consultations on the observance of this Declaration, for the purpose of promoting good neighbourliness and transparency, establishing harmony, mutual understanding and cooperation, and facilitating peaceful resolution of disputes among them;

8. The Parties undertake to respect the provisions of this Declaration and take actions consistent therewith;

9. The Parties encourage other countries to respect the principles contained in this Declaration;

10. The Parties concerned reaffirm that the adoption of a code of conduct in the South China Sea would further promote peace and stability in the region and agree to work, on the basis of consensus, towards the eventual attainment of this objective.¹³

The explicit inclusion of *marine environmental protection* and *marine scientific research* (in that order) within the above Code of Conduct serves to highlight the growing recognition of both the importance of these two themes, as well as their intimate connexion in the furtherance of a comprehensive marine environmental governance regime for the South China Sea.

I. International Scientific Research Initiatives on the South China Sea Environment

When it comes to regional marine environmental protection generally, attention naturally shifts to the UN Regional Seas Programme, which is now nearly forty years in operation.¹⁴ According to the UN Environment Programme (UNEP) which administers, co-ordinates, and/or otherwise supports this long-standing initiative from its Nairobi headquarters, the Regional Seas Programme ‘aims to address the accelerating degradation of the world’s oceans and coastal areas through a “shared seas” approach – namely, by engaging neighbouring countries in comprehensive and specific actions to protect their common marine environment. Today, more than 143 countries have joined 18 Regional Seas Conventions and Action Plans for the sustainable management and use of the marine and coastal environment. In most cases, the Action Plan is underpinned by a strong legal framework in the form of a regional Convention and associated Protocols on specific problems.

All individual Conventions and Action Plans reflect a similar approach, yet each has been tailored by its own governments and institutions to suit their particular environmental challenges.¹⁵ These (regional) scientific evidence and policy bases in turn inform the legal basis for the applicable rules and standards to be included (or directly referenced within) the Framework-type Convention adopted by the participating States for the marine region in question.¹⁶ Indeed, ‘(t)he UNEP Regional Seas Conventions and Actions Plans have emerged over the last 40 years as the world’s *only* legal framework for protecting the oceans and seas *at the regional level*. In particular, the Regional Seas Conventions and Action Plans have worked ... to protect and restore the health, productivity and resilience of oceans and marine ecosystems, and to maintain their biodiversity. They implement protocols on land-based pollution, strengthen capacities at the national level on marine and coastal governance, and work to decouple economic growth from environmental pressures in the marine and coastal environment.’¹⁷ (*emphasis added*)

As mentioned above, across the globe, the Regional Seas programme now numbers at least eighteen (18) distinct marine regions in all, with fourteen (14) of these being formally established by a multilateral treaty instrument, followed in many cases by detailed Protocols around specific environmental threats or issues. For example, in the case of the first of these treaties, the 1976 Barcelona Convention on the Mediterranean Sea,¹⁸ has been followed-up by no less than seven so-called 'landmark' Protocols.¹⁹ Similar efforts were made towards a Convention specifically for the South China Sea region but so far to no avail. In retrospect, the absence of any formalised, institutional co-operation underpinned by a Regional Seas-type Convention based on the template of UNEP's eponymous programme for specific marine regions is symptomatic of the continuing tensions that beset this part of the world.

Aside from the South China Sea being a notable exception to the otherwise global reach of the UNEP Regional Seas Programme's codifying efforts, what is also significant about this UNEP programme is its emphasis on the initial Action Plan as a platform to build and consolidate accumulated scientific information and hence evidence on the specific environmental issues related to the marine region concerned. As the UNEP itself notes, 'Most of the Regional Seas Programmes function through Action Plans, which are adopted by member governments in order to establish a comprehensive strategy and framework for protecting the environment and promote sustainable development. An action plan outlines the strategy and substance of the programme, based on the region's particular environmental challenges as well as its socio-economic and political situation.'²⁰

Within the individually designated marine regions, the Regional Seas programme's Action Plans work through Secretariats or Regional Coordinating Units (RCUs) and Regional Activity Centers (RACs). The RCU is the nerve centre and command post of the Action Plan's activities and has the overall and practical responsibility for the implementation of the decisions of member countries (or contracting parties) regarding the operation of the action plan. The RCU is responsible for the follow-up and implementation of legal documents, the programme of work and of strategies and policies adopted by the member countries. The RCU also carries out the diplomatic, political and public relations functions of the action plan. Finally, the RCU cooperates with governments, other UN and non-UN agencies and NGOs, and facilitates the capacity building of its own regional activity centres and of member governments. The RACs serve all member states by carrying out activities related to the action plan as agreed and guided by the Conference of the Parties or intergovernmental decisions. The Regional Activity Centres (RACs) play key roles in the implementation of various components and activities of the action plan at regional, sub-regional, national and sometimes local levels. The RACs are an integral part of the Action Plan and report directly to the RCU. They are usually financially supported by the contracting parties and by the host country through the financial mechanisms of the action plan.²¹

I. a) *East Asian Seas Action Plan & Coordinating Body on the Seas of East Asia (COBSEA)*

As far back as in 1977, having been primed by a number of East Asian States, the UNEP Governing Council decided that ‘steps are urgently needed to formulate and establish a scientific programme involving research, prevention and control of marine pollution and monitoring’ for a regional action plan in East Asia.²² The Intergovernmental Meeting on the Protection and Development of the Marine Environment and Coastal Areas of the East Asian Region (Manila, 27-29 April 1981), attended by representatives of Indonesia, Malaysia, the Philippines, Singapore and Thailand, adopted the Action Plan for the Protection and Development of the Marine Environment and Coastal Areas of the East Asian Region, also known as the ‘East Asian Seas Action Plan’.²³ This Action Plan in turn established the Coordinating Body on the Seas of East Asia (COBSEA) as the regional inter-governmental policy forum that is the sole decision-making body for the East Asian Seas Action Plan and oversees its implementation.²⁴ At the request of participating countries, UN Environment also established the Regional Coordinating Unit for the East Asian Seas Action Plan in 1993, functioning as a Secretariat for COBSEA. The COBSEA Secretariat provides overall technical coordination and supervision of the implementation of the action plan.²⁵ The Secretariat is hosted by Thailand and administered by UN Environment. National Focal Points in each participating country act as a channel of communication, to coordinate participation of and guide national institutions in implementation of COBSEA-approved programmes.²⁶ National institutions provide the institutional basis for carrying out the projects under the action plan.²⁷

A decision to revise the East Asian Seas Action Plan was taken at the 10th meeting of the Coordinating Body on the Seas of East Asia (COBSEA) held in Bangkok, Thailand on 9-10 July 1993. This step was in line with the revision of the Long-Term Strategy of COBSEA which had to take into consideration Chapter 17 of Agenda 21.²⁸ The two major factors guiding this revision were the expansion of COBSEA to include first, the wider East Asian Seas region,²⁹ and second, the need for the Long-Term Strategy to be problem-oriented, management-driven and integrated in approach, with the ‘ultimate goal of an actual and real improvement in coastal and marine environmental quality’.³⁰ Thus, in 1994, the Action Plan was revised to involve another five countries - Australia, Cambodia, People's Republic of China, Republic of (South) Korea and Viet Nam,³¹ although Australia withdrew its membership of this Plan in 2011. In a nutshell, the early organizational efforts coalesced around the ‘Development of a regional database’, and the revised Action Plan was able to report that:

‘4. Since the inception of the action plan, activities arising from it, together with related programmes carried out in the region, have resulted in the following accomplishments:

4.1 Baseline information on the structure, distribution and dynamics of major marine ecosystems (e.g. coral reefs, mangroves, seagrass beds, soft bottoms) situated in the different countries;

4.2 Information on levels and trends in the distribution of important non-oil pollutants originating from land-based and offshore sources;

- 4.3 Information on levels and trends in the distribution of oil pollutants, from both land- based and offshore sources (including shipping);
- 4.4 Directories of scientific institutions, research centres, information centres and data sources in the region; and
- 4.5 Bibliographies of publications on relevant marine environmental issues in the region.’³²

Moreover, the Plan had already envisaged the need for ‘5. A regularly updated database (that) should integrate all this information into a compatible format including risk assessment estimates readily assessable to and usable through electronic networking by policy/decision makers, managers and other scientists.’³³ In this regard, the revised Action Plan was able to report (in 1994) that ‘6. A database on the status and distribution of marine ecosystems and their associated species has been developed by the ASEAN-Australia Economic Cooperation Programme (AAECP) Marine Science Project: Living Coastal Resources. A new phase of AAECP aims at establishing national decision-support systems by integrating different databases relevant to the coastal and marine environment. An important activity of the action plan would be to build on and expand these valuable databases to incorporate all information generated pertaining to the East Asian Seas. This will provide decision makers with a sound basis for the management and protection of the marine and coastal environment on a regional basis.’³⁴ However, there is little evidence that these early databases have been consolidated into an accessible repository of all (or at least most) information on the evolving state of the South China Sea over several decades now.

As noted above, the overall authority for implementation of this Action Plan is the COBSEA, which, *inter alia*, determines the content of the action plan, reviews its progress and approves its programme of implementation, including the financial implications.³⁵ The Regional Coordinating Unit of the East Asian Seas Action Plan (EAS/RCU) will assist COBSEA in the implementation of the action plan by serving as the Secretariat for the action plan.³⁶ The channel of communication between the EAS/RCU and the participating Governments in the East Asian Seas Action Plan will be through the respective National Focal Points. In matters of technical nature, the EAS/RCU may communicate with individuals and/or institutions concerned, providing copies of communications to the relevant National Focal Points.³⁷ Thus, COBSEA provides an inter-governmental mechanism for science-based policy-setting at the regional level.³⁸

I. b) Coral Triangle Initiative – A Positive Model for (Informal) South China Sea Environmental Co-operation?

The so-called ‘Coral Triangle Initiative’ (CTI) extends across a vast marine area of the south-western aspect of the Pacific Ocean. It is bordered by the Philippines, Indonesia (central and eastern), Malaysia (Sabah on Borneo island), Timor Leste, Papua New Guinea, and the Solomon Islands.³⁹ Geographically therefore it lies beyond the confines of the South China Sea, but it is introduced here as a model example of how an ostensibly (international) scientific research programme has transcended its relatively narrow beginnings to become a successful stakeholder forum for relevant and

concerned actors in this region, beyond just the governments themselves.

Fidelman *et al* have recently charted this progress towards inculcating multiple stakeholder views within the nascent international governance framework of the CTI.⁴⁰ They focused on identifying influential stakeholders, their beliefs and interests, their network relations, and their capacity to leverage resources towards meeting CTI goals.⁴¹ They then applied the 'Advocacy Coalition Framework'⁴² to examine the views of main CTI stakeholders to better understand their efforts to design and implement marine management policies. Fidelman *et al* conclude *inter alia* that: 'The CTI presents many characteristics of a nascent, collaborative policy subsystem, one which is newly formed or in the process of forming and involves collaborative over adversarial relations. Among the stakeholders consulted, there is largely strong support for the CTI objectives, convergence in policy beliefs (e.g., pro community-based conservation), and instances of collaboration at different levels. It is important to note that in collaborative policy subsystems, there are still disagreements among stakeholders. However, these disagreements are overcome by finding enough common ground to cooperate. In other words, despite the differences among CTI stakeholders, the goals of the Initiative may be close enough to their policy preferences and beliefs to enable collaborative action to achieve similar or related objectives.'⁴³

I. c) *Transboundary Diagnostic Analysis for the South China Sea*

A relevant, South China Sea-focused scientific research exercise that has the potential to emulate the nascent success achieved by the Coral Triangle Initiative described above is the 'Transboundary Diagnostic Analysis for the South China Sea'.⁴⁴ As the narrative provides in the final report/study for this project, 'Purpose of the Transboundary Diagnostic Analysis (TDA)': 'The transboundary diagnostic analysis of the South China Sea and its associated catchment areas, is a process that focuses on identifying water-related problems and concerns, their socio-economic root causes, and the sectoral implications of actions needed to mitigate them. The analysis further seeks to determine those issues which have transboundary, i.e. involves more than one country, causes and/or impacts, appropriate mitigation of which will have to be done on a regional or bilateral basis. The analysis then becomes the basis for a strategic action program which is coordinated both at the national and regional levels.'⁴⁵

Following on from the Transboundary Diagnostic Analysis (TDA), a further scientific research project entitled 'Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand', funded by the Global Environment Facility (GEF) and implemented by UNEP in partnership with seven riparian states bordering the South China Sea became fully operational in February, 2002. This project addressed three priority areas of concern identified in the TDA, namely the loss and degradation of coastal habitats, over-exploitation of fisheries in the Gulf of Thailand, and land-based pollution. As the final report on this project notes, it 'was rather unusual for a GEF project in that project execution is undertaken by, national level institutions contracted directly to UNEP as the Implementing Agency of the

GEF. In contrast most projects are implemented through an intermediate organization such as a regional commission or regional office of an International agency or NGO that becomes responsible for the contractual arrangements, fund management and due diligence monitoring of national level actions. Not only does this increase the overall transactions costs but it removes by one further step the GEF from its client the countries.’⁴⁶ This final report then makes an interesting evaluation of the unusual nature of this particular GEF project being undertaken by national institutions, as follows: ‘Since no regional commission exists with a specific mandate focused on the environment of the South China Sea, UNEP deals directly with the countries, which are now truly in charge, without filters, without false ambassadors, and money starved intermediaries.’⁴⁷ This preference for nationally-focused interactions and funding streams by relevant international organizations and agencies is supported by a more recent academic survey of marine and coastal management initiatives in East Asian seas, leading to the conclusion that ‘to scale up investments and to leverage larger amounts of co-financing to future GEF projects and programs, there should be an increased emphasis on funding to single country projects, as they are on average mobilizing many times as much co-financing as regional projects.’⁴⁸

As a (preliminary) conclusion to this section and introduction to the next section of this essay, we can observe that these extra-regional and regional initiatives, programmes, action plans, and projects, were initially devoted towards developing marine scientific research database(s) on the South China Sea environment, before being increasingly followed-up by regional management and governance-oriented initiatives and efforts. However, these follow-up efforts are not always undertaken in the most co-ordinated and transparent ways, as we shall see below.

II. International Governance Frameworks for Environmental Protection in the South China Sea

As noted above in the Introduction, this section assesses current international *governance* (as opposed to *legal*) frameworks devoted to environmental protection within the South China Sea. It takes a broadly geographical approach, mapping these extra-regional, regional, sub-regional, and bilateral arrangements onto two separate sections of discourse, namely, a) the wider South China Sea region; and b) South China Sea sub-regional and bilateral initiatives, always taking into account the overlapping nature of these arrangements in its discussion. Cumulatively, these projects were supposed to be laying the ground for strong(er) international policy and legal frameworks to address the identified environmental threats therein but as already noted, there is arguably a continuing paucity of international *legal* (as opposed to *governance*) frameworks for, and within the South China Sea region itself. This is notwithstanding the continuing adoption of extra-regional, regional and sub-regional arrangements devoted to scientific and management-oriented actions for South China Sea environmental protection. These multi-varied arrangements, however, appear to have ongoing institutional co-ordination issues, with very little evidence of collaboration between them, despite ostensibly covering similar themes of South China Sea environmental protection.

II. a) Wider South China Sea Regional Initiatives

i. Strategic Action Programme for the South China Sea

Following on from the mainly scientific research-based regional arrangements discussed above, a (more) policy-oriented instrument that was approved on 25 June, 2008 is the Strategic Action Programme (SAP) for the South China Sea.⁴⁹ Seven riparian States of the South China Sea initially signed-up to participate and implement this SAP, namely, Cambodia, People's Republic of China, Indonesia, Malaysia, Philippines, Thailand and Viet Nam. The draft SAP was based on the findings of the regional Transboundary Diagnostic Analysis (TDA), outlined above. The rationale for regional co-operation in the form of the Strategic Action Programme (SAP) was stated as follows: 'The environment of the South China Sea continues to degrade despite actions taken at the national, sub-regional and regional levels. Part of the problem stems from the transboundary marine problems in the region and their impact on the ecosystems and resources of the South China Sea. This provides the ecological impetus for co-operation that is also based on the fact that the region is a large marine ecosystem with intrinsic integrity and inter-connections between all trophic levels.'⁵⁰ As the SAP itself observes when charting the history of its own development, '(a) key element in this process has been the development of detailed National Action Plans by each country that address the specific concerns and issues relevant to the components of the draft Strategic Action Programme'⁵¹, all of these were planned for implementation by the end of 2007. A further significant and perhaps even unique element of this SAP is 'the inclusion of detailed economic values for coastal habitat goods and services and their use in the determination of regionally applicable Total Economic Values.'⁵²

From a legal perspective, the SAP was envisaged as part of an overarching proposed Framework for Management of the Marine Environment of the South China Sea, which was supposed to be underpinned by a Memorandum of Understanding (MOU) signed by the Environment Ministers of the countries involved, under which the SAP would interact with 'sub-regional and bilateral agreements' and 'national action plans'.⁵³ But there appears to have been no further actions in this regard. This is in line with the observation made earlier on in this analysis that ongoing tensions between the littoral States over territorial and maritime jurisdictional issues, as well as overflight and navigational issues involving extra-regional powers, continue to blight the outlook for co-operation within the South China Sea. As the SAP itself noted: 'Due to the geopolitical sensitivity of the South China Sea marine basin the countries expressed the wish that no international or regional entities, other than UNEP be involved in the management of the project.'⁵⁴

Nevertheless, the SAP identified continuing obstacles to formal regional undertakings of scientific, and management co-operation as follows:

- Financial constraints; continued long-term financing;
- Lack of understanding of the root causes of regional marine environmental problems;
- Lack of consideration of long-term impacts;

- Inability to predict the impacts of future threats;
- Lack of a regional and global perspective;
- Lack of respect and recognition of regional expertise among some high-level decision-makers;
- Lack of a regional political consensus;
- Lack of a regional network and mechanism for action; and,
- Lack of understanding of the benefits of regional co-operation.⁵⁵

To address these continuing obstacles and based on regional consultations, the SAP identified the following criteria and pathways to formal institutionalised co-operation for the South China Sea environment:

- A process-oriented focus to improving the effectiveness of actions and implementation is appropriate for regional cooperation;
- A strong, proactive institutional mechanism empowered to act effectively, results in the most effective regional co-operation: and lastly;
- That regional co-operation may take many forms, but it must be appropriate to the regional ethos and culture.⁵⁶

However, it was significant to note that the international consultation exercise conducted under SAP auspices also revealed that the regional consensus on the optimum way forward in this region was the preparation of a non-legally binding framework.⁵⁷ Moreover, the overall goals of this framework would be to create an environment at the regional level, in which collaboration and partnership in addressing environmental problems of the South China Sea, between all stakeholders, and at all levels is fostered and encouraged; and to enhance the capacity of the participating governments to integrate environmental considerations into national development planning.⁵⁸ According to the SAP, 'the recommended framework must also be functional and effective in resolving environmental problems and fostering strong regional cooperation and coordination of appropriate cost-effective actions. The framework must include, *inter alia*

- Sound science. The use of sound science must be incorporated into policy-making processes and underpin decisions to foster ecological and economic soundness.
- Ecologically effective actions. It is increasingly recognised that many laws, policies and actions are ineffective in terms of ecological improvements. Ecological ineffectiveness also results in waste of scarce financial resources. Ecologically effective actions must be based on sound science and not on perceptions.
- Cost effective actions.
- Economic valuation. Economic valuation of environmental goods and services as a tool for sound development planning.
- Knowledge-based decision-making. This entails gathering all relevant information for the purpose of making effective decisions. Studies indicate that working toward a consensual knowledge-base for decision-making purposes improves the effectiveness of decisions and it also improves cooperation.
- Consensual knowledge base. Promoting and building a consensual knowledge base (a base of information that the parties agree is applicable) facilitates cooperation and decision-making processes. This is particularly

true where progress on regional cooperation is stalled or slowed due to complexities or uncertainty surrounding the issue.

- Communication. The lack of effective vertical and horizontal communication has been identified as a serious impediment to effective cooperation.
- Periodic assessment and review and revision of instruments or actions as required. Significant amounts of money and valuable resources are wasted due to the failure to assess or review laws, policies, mechanisms and measures to ensure they are effective or even implemented. Where assessments indicate problems, it is imperative that revisions are undertaken.
- Adaptive management. This provides a flexible approach that allows for the inclusion of new information.⁵⁹

According to the SAP, the main areas for co-operation to be covered by the framework include:

1. Establishment and management of regional database;
2. To identify and collect data & information in the areas of:
 - Marine and coastal legislation, regulation and institutional arrangement and coordination related to the analyse of the contents of the Draft National Action Plan from the Perspective of the Regional Strategic Action Programme.
 - Ratified international and regional conventions and agreements on marine and coastal issues to find out the similarities and differences of all countries involved for Regional Cooperation perspectives.
 - Scientific and technical data and information, including monitoring data, economic data related to marine and coastal environment.
 - Experts and institutions in the region.
 - Experience of each country, including pilot projects that can serve as models;
3. Exchange of data, information and experience;
4. Regional prioritisation of environmental issues;

The coastal States should cooperate on a sub-regional or regional basis to identify and prioritize regional and transboundary environmental issues. States should co-operate with each other in addressing the prioritized marine environmental issues in the South China Sea. Each Party should mobilize necessary resources, capacities and services, as well as develop legal, financial and economic arrangements, including the adoption of a strategic plan for the management and conservation of coastal and marine resource to reach the targets stated in the South China Sea SAP.

5. Public Awareness and Education

Public awareness should be raised through countries' education systems, campaigns and other activities at the regional, national, and local community levels, especially those living along the coastlines, on the following issues:

- Ecological unity of the South China Sea and Gulf of Thailand;
- Social, economic and environmental benefits arising from the proper exploitation, management and conservation of marine resources of the South China Sea and Gulf of Thailand;

- Social, economic and environmental adverse impacts possibly arising from the degradation of the ecosystems of the South China Sea and Gulf of Thailand; and
- Necessity of regional cooperation on the exploitation, management and conservation of the marine resources of the South China Sea and Gulf of Thailand.⁶⁰

All of the above policies, measures and actions are to be undertaken within a management framework that:

- Restricts the membership of the policy/decision making body to government representatives only;
- The policy/decision making body may invite a limited number of observers from regional and international agencies and institutions as deemed appropriate;
- Includes a high level scientific and technical body that serves: a) as a forum for reconciling both sectorial and national interests and priorities; and, b) as the source of independent scientific and technical advice to the policy making body;
- Ensures and maintains a separation between discussions of scientific and technical matters from discussions dealing with policy and principles at both the national and regional levels;
- Facilitates and ensures the incorporation of sound scientific and technical advice and information into politically based decision-making;
- Emphasises the use of experts and consultants from the participating countries, having regional knowledge and perspectives;
- Fosters the establishment of epistemic communities within the region and utilises effectively their advice and experience;
- Permits and encourages networking and interactions among and between specialist epistemic communities;
- Emphasises and fosters networking at all levels and amongst all stakeholders;
- Fosters and strengthens both “horizontal” (inter-country) and “vertical” (intra-country) interactions and networking between individuals at all levels of SAP implementation and execution;
- Encourages adaptive management, which is subject to periodic review in line with the reviews of the SAP;
- Is developed through a process of detailed planning and consultation that ensures consensus regarding the final, agreed management framework; and,
- Is managed and operated by committed, experienced, independent, and full-time professionals, guided by and responsible to the policy/decision making body.⁶¹

Moreover, according to the SAP, the proposed management framework should contain the following components:

‘Memorandum of Understanding adopted at the ministerial level

The MoU serves as the political instrument for the implementation of the entire Strategic Action Programme.

Regional Strategic Action Programme

The regional Strategic Action Programme will be the operational arm of the Memorandum of Understanding and outlines the actions that need to be taken to address environmental degradation in the South China Sea and Gulf of Thailand.

Sub-regional and bi-lateral Agreements

Countries are encouraged to enter into sub-regional and bi-lateral agreements to address issues relating to the implementation of the SAP. The Memorandum of Understanding will form the umbrella under which these sub-regional and bilateral agreements are negotiated and implemented.

Existing National Action Plans

During the course of the UNEP/GEF project entitled “Reversing Environmental Degradation in the South China Sea and the Gulf of Thailand”, participating countries have prepared National Action Plans (NAPs) for habitats, fisheries and land-based pollution. The existing NAPs will form the national basis for action in implementation of the SAP.⁶²

Finally, and bringing us right up to date, a further UNEP/GEF initiative entitled ‘Implementing the Strategic Action Programme for the South China Sea’ was launched in 2016 and projected to run until 2021,⁶³ in partnership with six out of the seven environment Ministries that originally adopted the SAP (excluding Malaysia). The overall objective of this initiative is to assist these participating countries in meeting the targets of the approved Strategic Action Programme (SAP) for the South China Sea through the provision of technical assistance as required in implementing national activities in support of the SAP; and the provision of strong regional co-ordination of the process of SAP implementation.⁶⁴

ii. COBSEA & Regional Action Plan on Marine Litter

Reverting to COBSEA’s governance role within the wider South China Sea-East Asian Seas region, it should be noted that presently, COBSEA activities are guided by the Strategic Directions 2018-2022.⁶⁵ These Strategic Directions 2018-2022 focus on two substantive themes: ‘Land-based Marine Pollution’; and ‘Marine and Coastal Planning and Management’; as well as an overarching ‘Governance’ theme.⁶⁶ The two substantive themes identify priority issues relevant to the region’s marine and coastal environment and sustainable development, where COBSEA has a particular mandate or comparative advantage to catalyse and deliver policy development, projects and other activities. The ‘Governance’ theme on the other hand, addresses COBSEA as a regional policy mechanism and identifies priorities in creating the necessary conditions for COBSEA and its Secretariat to efficiently deliver their mandates.⁶⁷ By serving as a forum for exchange of experiences, policy and practice related to the two substantive themes, COBSEA’s role as a co-ordinating regional body is thereby confirmed.

Moreover, ‘COBSEA activities towards implementation of the East Asian Seas Action Plan under the “New Strategic Direction for COBSEA (2008-2012)” have focused on Information Management; National Capacity Building;

Strategic and Emerging Issues; and Regional Cooperation, emphasizing, in particular, land-based sources of marine pollution, sustainable management of critical habitat, related spatial planning including to build climate change resilience, as well as assessment and knowledge management.’⁶⁸ As the COBSEA reports, ‘(n)otable achievements include development of a State of the Marine Environment Report, adoption of a Regional Action Plan on Marine Litter, implementation of a regional project on coastal and marine spatial planning, development of two UN Environment GEF projects for implementation of the Strategic Action Programme for the South China Sea, and implementation of sub-regional projects addressing coastal erosion, environmental sustainability in the dive tourism industry, and participation in natural resource governance on small islands.’⁶⁹

Specifically, in relation to marine litter, participating countries and the COBSEA Secretariat are now also guided by the Regional Action Plan on Marine Litter (RAP MALI) adopted by the 24th Intergovernmental Meeting in 2019. According to paragraph 8 of this Action Plan, the specific objectives are to:

‘Prevent and reduce to the minimum marine litter pollution in the marine and coastal environment of the East Asian Seas Region;
Foster sustainable consumption and production in a multi-stakeholder whole lifecycle approach to prevent and reduce leakage at source;
Remove to the extent possible already existent marine litter by using environmentally acceptable methods;
Improve monitoring and assessment of marine litter and its impacts for a science-based approach;
Enhance knowledge sharing and awareness about marine litter and its impacts amongst all stakeholders and all groups of society in the East Asian Seas Region;
Support national efforts towards adequate institutional, policy and implementation frameworks, cross sector coordination and regional and international cooperation.’⁷⁰

This Marine Litter Action Plan comprises four (4) main actions, of which the third is most pertinent to the thesis advanced by this essay, namely, ‘Action 3: Monitoring and Assessment of Marine Litter and assessment programmes’, which observes that: ‘One of the significant barriers to addressing marine litter is the absence of adequate *science-based monitoring and assessment programmes*.’⁷¹ (*emphasis added*) The Plan also notes that: ‘Monitoring and assessment are indispensable in identifying marine litter status and trends and its most critical impacts, and to support development, tracking and evaluation of policy and management interventions. There is a need to improve knowledge on the main types, sources and amounts of litter that enter the marine and coastal environment, to enable assessment of marine litter status and trends, the impact of marine litter on the marine and coastal environment and human health, as well as the socio-economic aspects of marine litter. Sound marine litter monitoring and reporting is also required to track progress towards the Sustainable Development Goals (SDGs), including target 14.1, and contribution to other relevant SDGs and associated targets.’⁷²

Complementing this COBSEA Regional Action Plan on Marine Litter, the COBSEA Working Group on Marine Litter was established to promote implementation of this Action Plan, provide strategic as well as technical support and advice to the COBSEA Intergovernmental Meeting and COBSEA Secretariat; exchange information that supports implementation of the COBSEA Regional Action Plan on Marine Litter; and promote regional cooperation in the context of the COBSEA Regional Action Plan on Marine Litter. To fulfil its functions, the COBSEA Working Group on Marine Litter will, *inter alia*, 'Identify and share knowledge and scientific evidence where available, identify capacity and other gaps and needs, and provide guidance on information exchange, knowledge management, technical cooperation, education, training and technology transfer or other efforts to address such gaps and needs; ...'⁷³

iii. Partnerships in Environmental Management for the Seas of East Asia (PEMSEA)

Separately, under the auspices of UNEP's sister programme, the UN Development Programme (UNDP), the 'Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) was created with a similar mission - to foster and sustain healthy and resilient coasts and oceans, communities and economies across the Seas of East Asia through integrated management solutions and partnerships'.⁷⁴ Unlike COBSEA, PEMSEA draws its fourteen (14) State membership from the wider East Asian region, encompassing Japan, the Republic of (South) Korea and even the Democratic People's Republic of (North) Korea, as well as most of the South China Sea regional States, latterly even including Timor-Leste (East Timor).⁷⁵ However, there is arguably little direct evidence of much needed co-ordination, collaboration and/or co-operation between this arrangement and that of COBSEA - considered above.

According to PEMSEA, which is based in Quezon City, the Philippines, it has provided solutions for effective management of coasts and oceans across the shared seas of East Asia for over two decades,⁷⁶ in the following ways: 'PEMSEA aims to proactively build effective intergovernmental and intersectoral partnerships and expand the capacities of countries and other stakeholders with innovative, cross-cutting policies, tools and services for integrated coastal and ocean management. PEMSEA applies integrated coastal management (ICM) as its primary approach for generating and sustaining healthy oceans, people and economies.'⁷⁷ Moreover, PEMSEA is the regional coordinating mechanism for the Sustainable Development Strategy for the Seas of East Asia (SDS-SEA), a shared marine strategy among 14 countries in the region. In this role, PEMSEA works with national and local governments, companies, research and science institutions, communities, international agencies, regional programs, investors and donors towards implementation of the SDS-SEA. The SDS-SEA was initially adopted by 12 governments in December 2003, namely: Brunei Darussalam; Cambodia; China; Democratic People's Republic (DPR) of (North) Korea; Indonesia; Japan; Malaysia; Philippines; Republic of (RO) (South) Korea; Singapore; Thailand; and Viet Nam, with the signing of the Putrajaya Declaration of Regional Cooperation for Sustainable Development of the Seas

of East Asia. In 2006, the governments of Lao People's Democratic Republic (PDR) and Timor-Leste also adopted the SDS-SEA. In 2009, PEMSEA was granted international legal personality, and together with the SDS-SEA was recognized as the regional governance mechanism and framework for the sustainable management of the seas of East Asia.⁷⁸

As originally drafted, the SDS-SEA did not create a new set of obligations but rather complemented existing ones. Following a review of the SDS-SEA in 2015,⁷⁹ it was updated to address the changing context in ocean governance, in light of new or amended international and regional agreements, and especially the 2015 Sustainable Development Goals (SDGs). It now provides a framework for policy and programme development and implementation at the regional, national and local levels for achieving the goals and targets set by these various global instruments. The SDS-SEA 2015 contains seven strategies, and related objectives and action programs for sustainable development of coasts and oceans. While the SDS-SEA 2015 is considered to be non-binding, over time countries have developed confidence in the development and application of integrated coastal and ocean management as an effective tool for achieving the SDS-SEA objectives.⁸⁰ Building on this progress, strategic targets have been identified for monitoring and assessing progress with SDS-SEA 2015 implementation across the region. The SDS-SEA 2015 and strategic targets were adopted during the Fifth Ministerial Forum on 20 November 2015 in Danang, Viet Nam. According to PEMSEA, '(t)he updated strategy is the region's concrete response to the UN SDGs, and will lay down a stronger commitment from the countries of the region to ensure a sustainable path for the Seas of East Asia.'⁸¹ The four specific SDS-SEA 2015 Targets are as follows:

TARGET 1:

By 2017, a self-sustaining PEMSEA Resource Facility (PRF) managing and coordinating a suite of products, services and financing mechanisms for advancing SDS-SEA implementation at the regional, national and local levels.

TARGET 2:

By 2018, a regional State of Oceans and Coasts reporting system to monitor progress, impacts and benefits, and to continually improve planning and management of SDS-SEA implementation.

TARGET 3:

By 2021, national coastal and ocean policies, and supporting legislation and institutional arrangements set up and functional in 100% of PEMSEA Partner Countries, consistent with international environmental and sustainable development commitments and based on best available scientific information.

TARGET 4:

By 2021, ICM programs for sustainable development of coastal and marine areas covering at least 25% of the region's coastline and contiguous watershed areas, supporting national priorities and commitments under the UN SDGs, UNFCCC, Aichi Biodiversity Targets, UNISDR Post-2015 Framework for Disaster Risk Reduction, and other relevant environmental and sustainable development targets subscribed to by PEMSEA Partner Countries.'⁸²

Furthermore, a 2018-2022 SDS-SEA Implementation Plan (IP) has been established, composed of 3 Priority Management Programs and 3 Governance Programs. The Priority Management Programs include: a) Biodiversity Conservation and Management; b) Climate Change and Disaster Risk Reduction and Management; and c) Pollution Reduction and Waste Management. The cross-cutting Governance Programs include: a) Ocean Governance and Strategic Partnerships; b) Knowledge Management and Capacity Development; and c) Blue Economy Investment and Sustainable Financing.⁸³ In turn, each Priority Management and Governance program includes 3 parts: (1) an introductory section providing an overview of the priority issue area/program, the region's current situation and major efforts undertaken, and remaining gaps and challenges; (2) a summary of key international and regional commitments directly relevant to respective priority program; and (3) a matrix of the overall objective of the priority program, expected outcomes to 2022, indicators of benefit/impact, and targeted actions and schedule to which PEMSEA Country and Non-Country Partners may indicate/identify relevant activities of possible collaboration/initiatives (ongoing/planned) that would help contribute to achieving the region's targets.⁸⁴

As a living document, the PEMSEA Partners, in coordination with the Secretariat of the PEMSEA Resource Facility (PRF), will continue to collaboratively identify priorities, outputs and indicative actions that align with the SDS-SEA IP 2018-2022, and jointly implement initiatives/activities that would be identified.⁸⁵ To ensure regular monitoring of progress and gaps, progress/achievements of Partners and collaborating organizations will be highlighted during national and regional events, as well as documented via PEMSEA's Annual Report and the triennial State of Oceans and Coasts (SOC) Report.⁸⁶ As Kirk has recently observed in an overview of PEMSEA's role and activities within the context of UNDP's contribution to global ocean governance, '(t)hese examples point to the development of regional regimes by focusing on the use of practice to develop shared understandings – the regime building approach. ... the key element appears to be creation of common understandings at the regional level.'⁸⁷

At this juncture, however, it may be reiterated that neither the COBSEA, nor PEMSEA arrangements described in the last two sub-sections *explicitly* refer to dovetailing efforts to ensure non-replication of their collective efforts. The lack of explicit co-ordination with each other can be partially explained by their different (State) memberships, albeit with a significant number of States being members of both organizations. On the other hand, this apparent discrepancy between UNEP-led COBSEA & UNDP-led PEMSEA efforts over largely the same area of marine space lends credence to the argument that there is now a need for a single, overarching, formalised institutional framework to bring all scientific research results, management options, and policy decision-making structures under one umbrella-type *governance* (or even *legal*) arrangement for the South China Sea's environment.

II. b) South China Sea Sub-Regional and Bilateral Initiatives on the Marine Environment

i. Association of South East Asian Nations (ASEAN) Initiatives on the South China Sea Environment

A further significant, Southeast Asian region-wide initiative that adopts a comprehensive and holistic approach to the environment of the South China Sea is the Declaration for a Decade of Coastal and Marine Environmental Protection in the South China Sea (2017-2027) adopted by the ten Association of South East Asian Nations (ASEAN) Member States and China.⁸⁸ This Declaration provides, *inter alia*, as follows:

‘Affirming the commitment of Governments under the Declaration on the Conduct of Parties in the South China Sea (DOC), particularly on undertaking cooperative activities on marine environmental protection;

Recognizing that the preservation and sustainable management of the coastal and marine environment is vital to the economic well-being and enhanced quality of life of the peoples of ASEAN Member States and China;

Noting that the current environmental situation in the South China Sea requires collective attention and action to protect the marine ecosystem and biodiversity, in particular on vulnerable marine ecosystems and their physical and biogenic structure, including coral reefs, cold water habitats, hydrothermal vents and seamounts, of certain human activities;

Emphasizing the need to promote responsible fishing practices, environmentally friendly fishing methods, and combatting illegal, unreported and unregulated fishing (IUUF), to ensure sustainable fishery resources and achieve food security; ...

Noting that a precautionary and ecosystem-based approach based on the best available science in marine resources management to ensure its rational and sustainable development could be applied as appropriate;

Noting that coordinated and cooperative regional efforts are essential for the scientific conservation and management of marine resources and environment, biodiversity, and coastal zone of the ecosystem of the South China Sea;

Acknowledging that conservation of endangered and migratory wildlife species warrants cooperation from countries within the region where such species spend any part of their life cycle;

Reiterating the need to continue developing and sustaining environmentally-friendly mechanisms to mitigate the effects of climate change and transboundary marine environmental pollution and degradation;

Recognizing the significance of the sustainable management and conservation of fresh water eco-systems such as lakes and rivers, wetlands, and adjacent estuaries along coastal areas in the overall health of the marine environment;

Further recognizing the importance of protecting the South China Sea as a natural resource base for economic and social development for the present and future generations and recognising the benefits that would be gained from having the South China Sea as a sea of peace, stability and prosperity; ...’⁸⁹

ii. The ASEAN Framework of Action on Marine Debris

Recognising that marine debris is a transboundary issue which requires integrated regional cooperation in addition to robust national strategies and actions to address marine debris, the ASEAN Framework of Action on Marine Debris was developed to act on the recommendations from the ASEAN Conference on Reducing Marine Debris in ASEAN Region in Phuket in November 2017, taking into account the East Asia Summit (EAS) Conference on Combating Marine Plastic Debris in Bali in September 2017. This Framework of Action was formally welcomed by all ASEAN Member States at the Special ASEAN Ministerial Meeting on Marine Debris on 5 March 2019 in Bangkok, Thailand,⁹⁰ and then followed-up by the Bangkok Declaration on Combating Marine Debris in ASEAN Region (*sic*) adopted on 22 June, 2019.⁹¹ Of these two related initiatives, the Framework of Action is more comprehensive and pithy, initially comprising four (4) priority areas, namely: (i) Policy Support and Planning; (ii) Research, Innovation, and Capacity Building; (iii) Public Awareness, Education, and Outreach; and (iv) Private Sector Engagement. Each priority area then provides further ‘Frameworks’ for collaborative actions and activities, summarised as follows:

Under Framework I: Policy Support and Planning:

A. Promote and organise regular regional policy dialogue, sharing information and knowledge, and strengthening regional coordination on prevention and reduction of marine debris from land- and sea-based activities.

B. Mainstream multi-sectoral policy measures to address marine debris in national and ASEAN’s development agenda and priorities, including having comprehensive waste management systems to prevent pollution and circular economy approaches; develop and implement extended producer responsibility (EPR) policies and schemes, including deposit refund, and take-back for reusing and recycling; encourage national authorities in collaboration with businesses to develop and promote product sustainability and circularity criteria to stimulate the market for sustainable products and secondary raw materials while concurrently, addressing the unsustainable use and disposal of single-use plastic products; develop/strengthen upstream policies for land-based leakage (including single-use plastics), and sea-based leakage (e.g. ghost nets, and waste from fishing vessels, maritime transport and marine tourism); welcome inter-sectoral initiatives and collaboration to effectively address marine debris through various relevant ASEAN-led mechanisms; encourage national and local governments to incorporate marine debris issues in their priorities.

C. Encourage ASEAN Member States to implement relevant international laws and agreements related to waste management - such as MARPOL Annex V ship-generated waste, Basel Convention, and UN Environment Assembly resolutions 3/7 on Marine Litter and Microplastics, by incorporating these international laws and agreements related to waste management into regional platforms; provide support for enabling conditions to the implementation of the international laws and agreement; conduct regular dialogue through

webinar and/or through Basel Convention Regional Centre for South-East Asia (BCRC-SEA).

D. Develop a regional action plan on combating marine debris in the ASEAN Region by applying integrated land-to-sea policy approaches; establish a taskforce on development of ASEAN regional action plan on combating marine debris as a mean to:

- 1.1. exchange information on existing national policy instruments to combat marine debris.
- 1.2. develop elements for a regional action plan.
- 1.3. compile the regional action plan in accordance with the national and regional context.
2. Review and analyse best practices of Regional Seas Programmes to combat marine debris.
3. Conduct feasibility study/consultative meeting on development of an ASEAN agreement on management of marine debris pollution.
4. Conduct feasibility study/consultative meeting on establishment of an ASEAN Centre on Combating Marine Debris.
5. Contribute to EAS efforts to develop the regional plan of action on combating marine plastic debris.

Framework II: Research, Innovation and Capacity Building:

A. Compile regional baseline on status and impacts of marine debris in the ASEAN Region; review and analyse information and data on status and impacts of marine debris in the ASEAN region, and develop a regional baseline report; assess information and data gaps, and identify possible approaches to bridge the gaps.

B. Strengthen regional, national and local capacities to develop and implement national action plans/initiatives; explore standardisation of methods for the measurement and monitoring of marine debris, based on existing/established protocols; conduct capacity assessment on addressing marine debris issue where appropriate and when requested to assess the existing capacity and capacity need of the ASEAN Member States to address marine debris issues; provide trainings on combating marine debris among ASEAN Member States as well as with support from external parties including monitoring and management of marine debris.

C. Enhance scientific knowledge, transfer marine technology and promote innovative solution to combat marine debris; support research and sharing of scientific knowledge, technology and innovation development among ASEAN Member States, including by engaging research institutions, public and private sectors, international partners, and other relevant stakeholders; promote cooperation and partnership across research institutions to collect and exchange data and information and develop collaboration on combating marine debris including through national and international events/meetings, exchange visits; promote efforts to identify and replicate innovative solutions implemented by cities for combating marine debris; enhance research/study on marine debris, including plastics and microplastics; explore the possible development of a network for sharing marine debris data and information;

promote efforts on research and development cooperation on the development of environmentally-friendly alternatives in combating marine debris.

D. Promote integration and application of scientific knowledge to enhance science-based decisions and policies on marine debris prevention and management; promote science-policy interface in order to enhance interaction between scientist and policy maker, and accessibility to scientific information; disseminate scientific knowledge through various communication channels such as peer-review publication, conferences/meetings and mass media; encourage participation of scientist in policy-making process, when appropriate, in order to provide evidence-based inputs to the policy; encourage scientists to incorporate multiple points of view, especially from policy maker, into study design, delivery and communication.

Framework III: Public Awareness, Education and Outreach:

A. Promote public awareness on status and impacts of marine debris and microplastics; develop communication materials on status and impacts of marine debris by incorporating science-based information; disseminate the information/materials to general public via advance communication platforms, mass media and public events.

B. Accelerate advocacy strategy/programme to promote behavior change to combat marine debris, and to incorporate marine debris issue into ASEAN's Culture of Prevention Initiative; develop communication plan to promote public awareness and behavior change; adapt and apply best practices and campaigns which successfully change behaviour; share alternative solutions and practices to prevent and reduce land- and sea- based debris; integrate scientific finding on status and impacts of marine debris in advocacy strategy/programme; engage multi-stakeholders including youth, public and private sectors, and government agencies in advocacy programs and outreach activities on combating marine debris.

C. Promote platforms for knowledge sharing, innovative solutions and best practices to combat marine debris; organise expert exchange platforms and/or study-trip programmes; establish ASEAN information platform to exchange information and share innovative solution and best practices.

Framework IV: Private Sector Engagement:

A. Promote collaborative actions with private sector and industry associations to implement measures to address marine debris issues; support private sectors to implement measures to address marine debris issues.

B. Encourage private sector investment in and contribution to combat marine debris; engage private sector in campaigns such as programme and campaign on circular economy, product life-cycle management, sustainable consumption and production and "3R" approaches; mainstream private sectors support to develop research and innovation such as through project funding, and prioritise Corporate Social Responsibility (CSR) activities on

combating marine debris; promote private sector investment in redesigning products/packaging and alternative materials; engage value chain stakeholders to establish enabling mechanisms/infrastructure to increase waste recovery and recycling rates.⁹²

iii. The 2008 Cambodia-Vietnam (Provincial) Arrangement for Coastal Ecosystems and Natural Resources Management

Finally there is growing evidence that the above extra-regional, regional and sub-regional initiatives have spawned specific bilateral intra-governmental arrangements on shared marine environments. An example of this is the Memorandum of Agreement (MoA) was entered into between the People's Committee of Kien Giang Province (Viet Nam) and the Governor of Kampot Province (Cambodia) on 29 March 2008 in Kampot, Cambodia. Under this MoA the two parties agree to implement the policy and framework for cooperation in the management of coastal ecosystems and natural resources between the provinces of Kien Giang and Kampot in order to strengthen environmental protection, biodiversity conservation, and welfare of each province.⁹³

Conclusions and Recommendations

This essay has explored the scope of current interaction between the science, policy and law disciplines as they converge around the blighted marine environment of the South China Sea. In doing so, this essay has conducted an outline survey and assessment of the range of international scientific research initiatives, international governance efforts, policy decisions, as well as legal measures and actions attempting to address the parlous state of this particular marine environment. This survey of international initiatives and efforts has covered a number of applicable extra-regional, regional, sub-regional, and bilateral initiatives, programmes, action plans and projects devoted to assessing the sources of pollution affecting the ecosystem health and biodiversity levels of this semi-enclosed sea. Summarising the results of these assessments has revealed that the rich sources of information on the environmental threats developed by the co-operative efforts on scientific research is arguably not matched by correspondingly robust, *formalised institutional* governance frameworks, policy decisions, and legal measures environment that co-operation at the region-wide level now demands. Moreover, there appears to be a lack of provision for institutional co-ordination and collaboration between and amongst the plethora of initiatives that now converge on the South China Sea environment, even though their organizational entities are at least partially supported by the UN, albeit through different programmes, namely, the UNEP & UNDP, respectively.

Overall, therefore, this non-exhaustive exercise of collating previous and continuing *collective* regional marine scientific research efforts has identified the need for a *formalised institutional* approach to continue developing the informational database drawn from present and future scientific research endeavours in the South China Sea. Both previously and presently, marine scientific research on the South China Sea environment has proceeded on an individually conceived project-to-project basis. Although there is some

evidence of continuity between these individual projects, building towards a comprehensive set of environmental data on the South China Sea, the formal establishment of a designated institutional repository of regional data on the South China Sea marine environment would serve to consolidate all (or at least most) of this data in one place. A *formalised institutional* governance framework for regional, bilateral and national marine scientific research activities (incorporating an established repository for all scientific databases) would also fulfil a vital co-ordinating role between these research activities. Following the above prescriptions could also, *inter alia*, prevent replication of similarly conceived research efforts and thus avoid wasteful endeavours.

Other international policy-oriented exercises have advocated similar actions. For example, the Center for Strategic & International Studies (CSIS) Working Group on the South China Sea has recommended that the littoral States, *inter alia*, ‘Cooperate on marine scientific research, which is necessary to assess the health of the maritime environment and effectively implement conservation efforts’, in the following ways:

- ‘Claimants should coordinate joint marine scientific research cruises throughout the South China Sea with experts from all claimants invited to participate.
- Each claimant should facilitate visits by experts from other claimant nations to conduct research on islands and reefs that it occupies, with due regard given to the need to restrict access to sensitive military sites. Claimants should all agree that research trips would be organized without prejudice to the outstanding claims of other parties and that participation would not imply recognition on the part of individual researchers or governments of the claims of the organizer.
- Claimants should host regular scientific workshops supported by all neighboring governments with participation of experts from across the region and beyond.
- Governments should invest, both individually and as a group, in programs to raise public awareness of the importance of and threats to fisheries as a common, renewable resource.’⁹⁴

While it is important to note that the Strategic Action Programme (SAP) for the South China Sea has already promoted similar actions to that suggested here, it is nevertheless submitted that an international governance body such as a ‘South China Sea Marine Scientific Research Institute’, could become a necessary and significant stepping-stone in the pathway to a binding international legal instrument addressing the environmental threats affecting the South China Sea today. Towards this end, the establishment of such an entity could be underpinned initially by a Memorandum of Understanding (MOU) or similar type of formal, albeit perhaps not legally binding, agreement between all the regional States of the South China Sea, with possible provision for associate membership to extra-regional States that are keen to support and participate in research activities within this marine basin. Such an entity would deliver up to date, comprehensive, over-arching scientific studies on

the state of the South China Sea environment, consolidating the accumulated but arguably disparately located scientific evidence on this vital subject. These comprehensive studies will in turn form the basis for, *inter alia*, agreeing and establishing the requisite environmental baselines to measure pollution and biodiversity levels against. These environmental quality gauges can then feed into an international (regional) policy and legal framework with a view to forming the bases for concrete legal actions by individual States, both to reduce toxic output into the South China Sea, as well as build a network of marine protected areas for fragile ecosystems across this Sea. All of this hopefully to be undertaken before it is too late for the South China Sea environment.

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¹ For example, since 1990, the Indonesian government has organized so-called ‘Track Two’ Workshops on Managing Potential Conflicts in the South China Sea, attended by government and military officials in their private capacities, as well as by academics drawn mainly from the littoral States of the South China Sea and external experts. This continuing dialogue process aims to manage potential conflicts by exploring areas of cooperation among the littoral States in the South China Sea area, but it has only recently been devoted to exploring the environmental threats to this region. For an initial account of the semiotics of these workshops, see: Ted L. McDorman, ‘The South China Sea Islands Dispute in the 1990s - A New Multilateral Process and Continuing Friction’, *International Journal of Marine and Coastal Law*, Vol. 8, Issue 2 (May, 1993) 263-285. For a recent study of their implications on regional and bilateral relationships among littoral South China Sea States, see, for example, Yann-Huei Song (Billy), ‘The South China Sea Workshop Process and Taiwan’s Participation’, *Ocean Development & International Law*, Vol. 41, Issue 3: Issues in the South China Sea (2010) 253-269.

² Recent contributions to this genre include Sarah Raine and Christian Le Miere, *Regional Disorder: The South China Sea Disputes*, IISS/Routledge (2017)

³ D. A Feary, A. M. Fowler & T.J. Ward, ‘Developing a rapid method for undertaking the World Ocean Assessment in data-poor regions – A case study using the South China Sea Large Marine Ecosystem’, *Ocean & Coastal Management*, Vol.95, July 2014, 129-137.

⁴ See: J. R. Jambeck et al. 2015 “Plastic waste inputs from land into the ocean,” *Science*, Vol.347, No. 6223; and Ocean Conservancy 2016: ‘Stemming the Tide: Land-based Strategies for a plastic-free ocean’. Accessible at:

⁵ For the purpose of this assessment, the South China Sea region was defined as comprising of nine nations; China, Vietnam, Cambodia, Thailand, Malaysia, Singapore, Indonesia, Brunei and the Philippines. According to the report, this Large Marine Ecosystem and its catchments are bounded to the west by the Mekong River (GIWA region 55), north by East China Sea (GIWA region 36), east by the Sulu-Celebes (Sulawesi) Sea (GIWA region 56) and Small Island States (GIWA region 62), and south and southeast by Indonesian Seas (GIWA region 57). See: Executive Summary, Global International Waters Assessment South China Sea, GIWA Regional assessment 54, Published by the University of Kalmar on behalf of UNEP (2005) at 9.

⁶ *Ibid.*, at 9.

⁷ Eric Tagliacozzo, ‘The South China Sea’, *Oceanic Histories*, ed by David Armitage, Alison Bashford & Sujit Sivasundaram, Cambridge University Press (2018) 113-133, at 113.

⁸ *Ibid.*, at 129.

⁹ For recent contributions on the Indian perspective in the South China Sea, see, for example, Nandini Jawli, South China Sea and India’s Geopolitical Interests, *Indian Journal of Asian Affairs*, Vol. 29, No. 1/2 (June-December, 2016) 85-100; and David Scott. ‘India’s Role in the

South China Sea: Geopolitics and Geoeconomics in Play', *India Review*, Vol.12, No.2 (2013), 51-69.

¹⁰ See: China National Offshore Oil Corporation (CNOOC), Vietnam Oil and Gas Corporation (PETROVIETNAM), and Philippine National Oil Company (PNOC), Joint Statement on the Signing of a Tripartite Agreement for Joint Marine Seismic Undertaking in The Agreement Area in the South China Sea, adopted on March 14, 2005. Accessible at: <http://ph.china-embassy.org/eng/zt/nhwt/t187333.htm>

¹¹ John W. McManus, Kwang-Tsao Shao & Szu-Yin Lin, 'Toward Establishing a Spratly Islands International Marine Peace Park: Ecological Importance and Supportive Collaborative Activities with an Emphasis on the Role of Taiwan', *Ocean Development & International Law*, Vol. 41, Issue 3: Issues in the South China Sea (2010) 270-280.

¹² Done on the Fourth Day of November in the Year Two Thousand and Two (2002) in Phnom Penh, the Kingdom of Cambodia. Accessible at: https://asean.org/?static_post=declaration-on-the-conduct-of-parties-in-the-south-china-sea-2

¹³ *Ibid.*

¹⁴ Information on this Programme can be accessed at:

<https://www.unenvironment.org/explore-topics/oceans-seas/what-we-do/working-regional-seas/regional-seas-programmes>

¹⁵ See UNEP, Regional Seas Programme website at:

<https://www.unenvironment.org/explore-topics/oceans-seas/what-we-do/working-regional-seas/why-does-working-regional-seas-matter>

¹⁶ *Ibid.*

¹⁷ See UNEP, Regional Seas Programme website at: <https://www.unenvironment.org/explore-topics/oceans-seas/what-we-do/working-regional-seas/why-does-working-regional-seas-matter-0>

¹⁸ Full title: Convention for the Protection of the Mediterranean Sea against Pollution was initially adopted in 1976 and entered into force in 1978, before being amended in 1995, and renamed Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, with this amended version in force in 2004.

¹⁹ See: UNEP, Regional Seas Programme, 'Mediterranean' webpage, accessible at:

<https://www.unenvironment.org/explore-topics/oceans-seas/what-we-do/working-regional-seas/regional-seas-programmes/mediterranean>

²⁰ *Ibid.*

²¹ *Ibid.*

²² UNEP Governing Council, Decision 88 (v), 1977.

²³ UNEP/IG.26/6, Annex IV.

²⁴ See: Paragraph 52 of the East Asian Seas Action Plan. More information on COBSEA is accessible at: <https://www.unenvironment.org/cobsea/who-we-are>

²⁵ *Ibid.*, at paragraph 55.

²⁶ *Ibid.*, at paragraph 59.

²⁷ *Ibid.*, paragraph 60.

²⁸ UNEP(OCA)/EAS IG.4/7, paragraph 58.

²⁹ Now including Cambodia, People's Republic of China, Republic of Korea, and Viet Nam, in addition to the original COBSEA member States, namely, Indonesia, Malaysia, the Philippines, Singapore and Thailand.

³⁰ UNEP(OCA)/EAS IG.4/7, Annex V.

³¹ UNEP(OCA)/EAS IG5/6 (1994) Annex IV

³² UNEP(OCA)/EAS IG.5/6 Annex IV, at 1.

³³ *Ibid.*

³⁴ *Ibid.*, at 2.

³⁵ *Ibid.*, at para.34, p.6

³⁶ *Ibid.*, at para.35, p.7.

³⁷ *Ibid.*, at para.36, p.7.

³⁸ See: COBSEA Strategic Directions 2018-2022. Secretariat of the Coordinating Body on the Seas of East Asia (COBSEA) and United Nations Environment Programme, Bangkok (2018), at para.14. Accessible at:

<https://wedocs.unep.org/bitstream/handle/20.500.11822/31820/COBSEA2022.pdf?sequence=1&isAllowed=y>

³⁹ Full title: The Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security (CTI-CFF). The CTI is a multilateral partnership working together to sustain extraordinary marine

and coastal resources by addressing crucial issues such as food security, climate change and marine biodiversity. It was established in 2009 and is now underpinned by an Agreement on the Establishment on the Regional Secretariat of the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF) scheduled to enter into force on 20th November 2014. More information on the CTI is accessible at: <http://www.coraltriangleinitiative.org/>

⁴⁰ Pedro Fidelman, Louisa S. Evans, Simon Foale, Christopher Weible, Franciska von Heland, Dallas Elgin, 'Coalition cohesion for regional marine governance: A stakeholder analysis of the Coral Triangle Initiative', *Ocean & Coastal Management* 95 (2014) 117-128, at 117.

⁴¹ *Ibid.*, at 125.

⁴² Initially designed by Paul Sabatier and Hank Jenkins-Smith to explain political behaviour and policy change, see: Sabatier & Jenkins-Smith, *Policy Change and Learning: an Advocacy Coalition Approach*, Westview Press, Boulder, CO. (1993)

⁴³ Fidelman *et al* (2014) at 125.

⁴⁴ Talaue-McManus, L. 2000. Transboundary Diagnostic Analysis for the South China Sea. EAS/RCU Technical Report Series No. 14. UNEP, Bangkok, Thailand. Accessible at:

⁴⁵ *Ibid.*, at para.1.2.

⁴⁶ Managing Multi-Lateral, Intergovernmental Projects and Programmes, the Case of the UNEP/GEF Project, entitled: Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand', IW-Learn Knowledge document UNEP/GEF/SCS/Inf.1, UNEP (2005) Accessible at: <http://wedocs.unep.org/bitstream/handle/20.500.11822/28960/TDA.pdf?sequence=1&isAllowed=y>

⁴⁷ *Ibid.*

⁴⁸ Anna Tengberg & Annadel S Cabanban, 'Lessons learned from investing in marine and coastal management initiatives in the East Asian Seas', *Marine Policy*, Vol.38 (2013) 355-364, at 363.

⁴⁹ Strategic Action Programme for the South China Sea. UNEP/GEF/SCS Technical Publication No. 16, UNEP (2008) Accessible at: <https://scssap.org/documents/o6-FR-Inc-SCS-Strategic-Action-Programme.pdf>

⁵⁰ Strategic Action Programme (SAP) for the SCS (2008) at 61.

⁵¹ *Ibid.*, at 2.

⁵² *Ibid.*, at 2.

⁵³ See: Diagram in SAP, *ibid.*, on front/cover page of SAP document.

⁵⁴ *Ibid.*, at ?

⁵⁵ *Ibid.*, at 61.

⁵⁶ *Ibid.*, at 61 & 62.

⁵⁷ *Ibid.*, at 62.

⁵⁸ *Ibid.*, at 62.

⁵⁹ *Ibid.*, at 62-63.

⁶⁰ *Ibid.*, at 63.

⁶¹ *Ibid.*, at 63.

⁶² *Ibid.*, at 64.

⁶³ See: Project Document, accessible at: <https://view.officeapps.live.com/op/view.aspx?src=https%3A//scssap.org/documents/UNEP-SCS-SAP-ProDoc-Draft-10-cp.doc>

⁶⁴ Accessible at: <https://scssap.org/>

⁶⁵ See: COBSEA Strategic Directions 2018-2022. Secretariat of the Coordinating Body on the Seas of East Asia (COBSEA) and United Nations Environment Programme, Bangkok (2018) *op. cit.*

⁶⁶ *Ibid.*, at para.19.

⁶⁷ *Ibid.*

⁶⁸ *Ibid.*, at para.13.

⁶⁹ *Ibid.*

⁷⁰ See COBSEA Regional Action Plan on Marine Litter 2019. Secretariat of the COBSEA and United Nations Environment Programme, Bangkok, COBSEA (2019), at para.8. Accessible at:

⁷¹ *Ibid.*, at para.11.

⁷² *Ibid.*, at para.11.

⁷³ See: Para.5 of APPENDIX 3: TERMS OF REFERENCE OF THE COBSEA WORKING GROUP ON MARINE LITTER, COBSEA Regional Action Plan on Marine Litter 2019.

⁷⁴ See: 'About PEMSEA', accessible at: <http://www.pemsea.org/about-PEMSEA>

⁷⁵ Although there is some uncertainty here, as only twelve States are identified as PEMSEA ‘Country Partners’ on its website. Accessible at: <http://pemsea.org/about-pemsea/our-partners/country-partners>

⁷⁶ See: ‘About PEMSEA’, *ibid.*

⁷⁷ *Ibid.*

⁷⁸ See: PEMSEA’s ‘History’, accessible at: <http://www.pemsea.org/about-pemsea/history>

⁷⁹ Full title: Regional Review (of the) Implementation of the Sustainable Development Strategy for the Seas of East Asia (SDS-SEA) 2003-2015, PEMSEA, November, 2015. Accessible at: <http://pemsea.org/publications/reports/regional-review-implementation-sustainable-development-strategy-seas-east-asi-o>

⁸⁰ See: PEMSEA’s Regional Marine Strategy’, at: <http://www.pemsea.org/our-work/regional-marine-strategy>

⁸¹ *Ibid.*

⁸² *Ibid.*

⁸³ *Ibid.*

⁸⁴ *Ibid.*

⁸⁵ *Ibid.*

⁸⁶ *Ibid.*

⁸⁷ Elizabeth A. Kirk, ‘UNDP and Ocean Governance’, in Attard, Fitzmaurice and Ntovas (eds), *The IMLI Treatise on Global Ocean Governance, Vol.II: UN Specialized Agencies and Global Ocean Governance*, OUP (2018) 81-101, at 92.

⁸⁸ Accessible at: <https://asean.org/storage/2017/11/Declaration-for-a-Decade-of-Coastal-and-Marine-Environmental-Protection-in-the-South-China-Sea-2017-2027.pdf>

⁸⁹ *Ibid.*

⁹⁰ Accessible at: <https://asean.org/asean-framework-action-marine-debris/>

⁹¹ Accessible at: <https://asean.org/bangkok-declaration-combating-marine-debris-asean-region/>

⁹² Accessible at: <https://asean.org/storage/2019/06/3.-ASEAN-Framework-of-Action-on-Marine-Debris-FINAL.pdf>

⁹³ Accessible at:

http://www.unepscs.org/Demonstration_Sites/Demonstration_Sites/Cambodia_and_Vietnam_Sign_MoA.html

⁹⁴ A Blueprint for Fisheries Management and Environmental Cooperation in the South China Sea, *CSIS Expert Working Group on the South China Sea*, September 13, 2017. Accessible at: <https://amti.csis.org/coc-blueprint-fisheries-environment/>