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Ecosystem Approach to Regional Seas

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I. REGIONAL SEAS PROGRAMME

1. The UNEP Regional Seas Programme¹, launched in 1974, is one of UNEP's most significant achievements in the past 35 years. It aims to address the accelerating degradation of the world's oceans and coastal areas through sustainable management and use of resources and by engaging littoral countries in specific actions to protect shared marine environments. It has accomplished this by stimulating the creation of regional seas programmes for sound environmental management coordinated and implemented by countries sharing a common body of water.
2. Today, more than 143 countries participate in 13 Regional Seas programmes (Black Sea, Wider Caribbean, East Asian Seas, Eastern Africa, South Asian Seas, ROPME Sea Area, Mediterranean, North-East Pacific, Northwest Pacific, Red Sea and Gulf of Aden, South-East Pacific, Pacific, and West and Central Africa) established under the auspices of UNEP.. Secretariats of seven of these regional seas programmes are administered by inter-governmental organisations or regional centres while the remaining six are administered by UNEP. These regional seas programmes received financial and technical support from UNEP in the initial phases of development of an action plan and its initial implementation.
3. The Regional Seas programmes function through an Action Plan. In most cases, such Action Plans are underpinned with strong legal frameworks in the form of regional Conventions and associated Protocols addressing specific problems. In addition to the 13 Regional Seas programmes, 5 partner programmes in the Antarctic, Arctic, Baltic Sea, Caspian Sea and North-East Atlantic regions participate in UNEP's coordination activities under the Regional Seas Programme.
4. IAt the regional level, the regions, the Regional Seas programmes work through Secretariats or Regional Coordinating Units (RCUs) and Regional Activity Centers (RACs). An RCU is a nerve center and command post of the action plan's activities and has the overall and practical responsibility for the implementation of the decisions of member States (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 strategies and policies adopted by

¹ The term "a regional seas programme" is used to denote a programme for specific regional seas, normally governed by Inter-Governmental Meetings of littoral states and, in some cases, by legally binding instruments, such as a framework convention and associated protocols. All regional seas programmes seek their programmatic activities in the Action Plans and supportive thematic action plans (such as marine litter action plans, LBS action plans, etc.). The terms "*UNEP Regional Seas Programme*" refers to the coordination programme of UNEP over UNEP-administered and non-UNEP-administered regional seas programmes. Currently, 18 regional seas programmes are participating in this coordination programme (see www.unep.org/regionalseas).

the member States. 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 centers and 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 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 plan².

5. At its onset, the regional seas programme was conceived as an action-oriented programme encompassing a comprehensive, inter-sectoral approach and to environmental problems in marine and coastal areas addressing not only the consequences, but also the causes, of environmental degradation. Each regional programme is shaped according to the needs of the region concerned. The overall strategy to be followed was defined by UNEP's Governing Council as³:
 - *Promotion of international and regional conventions, guidelines and actions for the control of marine pollution and for the protection and management of aquatic resources;*
 - *Assessment of the state of marine pollution, of the sources and trends of this pollution, and of the impact of the pollution on human health, marine ecosystems and amenities;*
 - *Co-ordination of the efforts with regard to the environmental aspects of the protection, development and management of marine and coastal resources; and*
 - *Support for education and training efforts to make possible the full participation of developing countries in the protection, development and management of marine and coastal resources.*
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6. In order to fulfill the coordination function, UNEP organises annual global meetings of the regional seas conventions and action plans. At s the ninth global meeting of regional seas conventions and action plans in 2007, new global strategic directions for the regional seas programmes 2008-2012: enhancing the role of the regional seas conventions and action plans were adopted⁴. The strategic directions include the following elements:
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 - Enhance the sustainability and effectiveness of Regional Seas Programmes through increasing country ownership, incorporating regional seas conventions and

² These financial mechanisms are normally in the form of regional seas trust funds. For the regional seas programmes administered by UNEP, UNEP functions as trustee of the fund.

³ UNEP. 1982. Achievements and Planned Development of UNEP's Regional Seas Programme and comparable programmes sponsored by other bodies. UNEP Regional Seas Reports and Studies No.1.

⁴ UNEP. 2007. Global Strategic Directions for the Regional Seas Programmes 2008-2012: Enhancing the Role of the Regional Seas Conventions and Action Plans. UNEP(DEPI)/RS.9/6.

- protocols into national legislation, promoting compliance and enforcement mechanisms, involving civil society and the private sector, building capacities, ensuring viable national and international financial arrangements, as well as developing assessment/evaluation procedures, where appropriate;
- - Contribute to the implementation of the Beijing Declaration of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, especially the provision related to the development and implementation of protocols addressing land-based pollution sources and activities;
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 - Strengthen regional cooperation on preparedness and response to pollution from maritime accidents with the International Maritime Organization (IMO) and promote the implementation, as pertinent, of IMO conventions;
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 - Contribute to the effective implementation of the 2010 biodiversity targets and the WSSD Plan of Implementation targets for promoting the establishment of networks of marine and coastal protected areas and planning of proper coastal land and watershed use by 2012 including the designation of important wetlands under the Ramsar Convention;
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 - Emphasize the need to implement the ecosystem approach in integrated marine and coastal management (IMCAM) as an overarching management framework for addressing threats to the sustainability of regional seas;
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 - Assess and address the impact of climate change on the marine and coastal environment, in particular, the potential social, economic and environmental impacts and consequences on fisheries, tourism, human health, marine biodiversity, coastal erosion, and small islands ecosystems. Promote cooperation for formulating regional climate change adaptation strategies;
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 - Intensify regional activities in support of the WSSD Plan of Implementation and the Jakarta Mandate of the Convention on Biological Diversity, notably by identifying critical issues of marine biodiversity, protecting its major components, and promoting its sustainable use; more specifically, focusing on:
 - a. Addressing the protection of i) marine biodiversity beyond areas of national jurisdiction; and ii) deep-sea biodiversity at the regional scale;
 - b. Cooperation with FAO and regional fisheries management organisations (RFMO) to address environmental impacts of fisheries and promote an ecosystem management approach;
 - c. Participation in the Coral Reef Initiative and the implementation of the SIDS Mauritius Strategy, as appropriate;
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- Recognize the need for economic valuation of marine and coastal ecosystem services for decision making and policy formulation; and
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 - Facilitating the mainstreaming of its activities within broader development and economic planning processes including the poverty reduction strategies in developing countries.
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7. It is understood that each regional seas programme has achieved a differing level of implementation of its Action Plan. Unfortunately, no centralized information exists to indicate the level of achievement of the implementation of Action Plans in different regions. While these Action Plans are under implementation, there are a number of developments in a global and regional marine policy debates that could provide additional opportunities for the regional seas programmes to enhance their respective programme directions and developments. Of particular importance are following discussions, decisions and actions:
- - i. **Regular Process:** At the World Summit on Sustainable Development, held in Johannesburg, South Africa, from 26 August to 4 September 2002, States agreed, in paragraph 36 (b) of the Johannesburg Plan of Implementation (JPOI), to “*establish by 2004 a regular process under the United Nations for global reporting and assessment of the state of the marine environment, including socio-economic aspects, both current and foreseeable, building on existing regional assessments*” (the so-called “Regular Process”). At the first meeting of the Ad Hoc Working Group of the Whole, States discussed options to achieve the deadline of 2014 for the completion of the first cycle of the Regular Process. Based on the Ad Hoc Working Group recommendations, the General Assembly decided to organise workshops at the earliest possible opportunity in order to inform the first cycle of the Regular Process. It is important to note that the original JPOI indicated that the regular process would be established based on the “regional assessments” and that most of the regional seas programmes have mandates to issue regular state of the marine environment reports.
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 - ii. **Ecosystem approach:** The Johannesburg Plan of Implementation adopted at the World Summit reaffirmed the Millennium Declaration and its associated development goals. Furthermore, in the Johannesburg Plan of Implementation the international community agreed, among other things, to:
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 - Paragraph 30 (d) “*Encourage the application by 2010 of the ecosystem approach*”; and
 - Paragraph 30 (e) “*Promote integrated, multidisciplinary and multisectoral coastal and ocean management at the national level and encourage and assist coastal States in developing ocean policies and mechanisms on integrated coastal management*”.
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 - The Convention on Biological Diversity has also endorsed the ecosystem approach. Both the second and third Intergovernmental Reviews of the Global

Programme of Action for the Protection of the Marine Environment from Land-based Activities advocated the adoption of an ecosystem approach.

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- iii. **Aichi Targets:** At its tenth meeting of the conference of the parties to the Convention on Biological Diversity, the Parties decided on the biodiversity related targets. Of relevance to regional marine and coastal environment are the following:
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 - a. *“by 2020, at least 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes;*
 - b. *by 2020, all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits; and*
 - c. *by 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.”*
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- iv. **GEF International Waters** The International Waters focal area was created as one of the original focal areas of the Global Environment Facility in 1992. It is the only focal area in which the GEF does not function as a financial mechanism for a global multilateral environmental convention. The marine and coastal portfolio of GEF International Waters projects typically include projects targeting so-called Large Marine Ecosystems (LMEs) defined by the National Oceanic and Atmospheric Administration of the USA and following the five-module approach of the NOAA LME Programme. GEF takes the approach of developing transboundary diagnostic analysis and strategic action programme for each LME, which is analogous to the assessment and regional seas Action Plans mechanisms within the UNEP Regional Seas Programme. The GEF international waters projects highlighted a need to apply an ecosystem-based approach at the scale of Large Marine Ecosystems and, possibly, follow up to address actual threats and sources of stress to the LME functions and integrity initially triggered by GEF funding and by associated and follow-up investments.
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- v. **Rio+20 Sustainable Development Goals** At the Rio+20 conference, states decided to develop a set of sustainable development goals in addition to the Millennium Development Goals adopted in 2000. Sustainable development of oceans, marine and coastal resources and environments is a key to overall sustainable development. UNEP would be ready to assist the Regional Seas to

establish their own sustainable development goals, particularly focusing on the environmental related issues in harmony with the globally-coordinated development of the Rio+20 goals if the regional seas member states wish to develop regional goals in response to the Rio+20 outcomes.

- vi. **Marine biodiversity beyond National Jurisdiction** The UN General Assembly resolution 66/231 requested the Informal Working Group on Marine Biodiversity beyond National Jurisdiction to look into the possibility of developing a legal scheme for the protection of marine biodiversity beyond national jurisdiction in association with the United Nations Convention on the Law of the Sea. There is a growing conviction at the international level of the need to protect the biodiversity in the areas beyond national jurisdiction. Some of the regional seas programmes started work on this issue as far as their mandates allow and there is increased expectation that these issues could be discussed and acted on within their mandates as determined by the member states or parties.

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II. INTRODUCING AN ECOSYSTEM APPROACH TO REGIONAL SEAS

8. The ecosystem approach⁵ to the management of marine resources has been endorsed by international bodies and initiatives such as the Convention on Biological Diversity and the Millennium Ecosystem Assessment as a valuable conceptual framework for analysing and acting on the linkages between people and their environment. The Johannesburg Plan of Implementation also adopted the target to encourage the application of the ecosystem approach by 2010 for the sustainable development of the oceans, particularly in the management of fisheries and the conservation of biodiversity. Numerous countries are acting to meet the ecosystem-related challenges and to address integrated marine and coastal management. Within UNEP, the ecosystem approach is defined as a strategy for the integrated management of land, water and living resources that provides sustainable delivery of ecosystem services in an equitable manner (UNEP Ecosystem Management Introduction of such an approach to different geographic scales and planning time spans require diverse considerations and stakeholder action.
9. The seventh meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea (12–16 June, 2006, in New York, United States of America) addressed ecosystem approaches and oceans. The meeting agreed on elements relating to ecosystem approaches and oceans. The report, subsequently submitted to the UN General Assembly at its sixty-first session, proposes that the General Assembly invite States to consider that improved application of an ecosystem approach will require, among other things,

⁵ There are different terms used by different organisations and groups of countries, such as “ecosystem approach”, “ecosystem-based approach”, “ecosystem-based management”, “ecosystem management”, and “integrated ecosystem management”. The present paper uses the terms defined in various inter-governmental fora and would not endeavor to re-define or make clear the differences among, these terms.

capacity building through technology, knowledge and skill transfer, particularly to developing countries, including small island developing States and coastal African States, and the exchange of information, data and lessons learned. It will further require capacity-building in support of science, information management and exchange, monitoring, control and surveillance, assessment and reporting, as well as public outreach and education.

10. In response to the needs of the member States expressed in a number of inter-governmental forums dealing with the introduction of the ecosystem approach, the regional seas programmes introduced, to varying degrees, the ecosystem approach within their respective programmes. However, while not done in a globally coordinated manner, it is concluded that there exist plenty opportunities for the regional seas to fully incorporate the ecosystem approach and to respond to the recent inter-governmental discussions and decisions as outlined in Chapter 1 above.
11. Different regional seas programmes have different regional seas scales but, generally speaking, the following elements are identified to constitute an ecosystem approach to regional seas:
 - The geographic coverage of the management is not only based on the political boundaries, and should take into consideration of ecological functions and continuity;
 - Ecosystems are supported by inter-linked biological, geochemical and hydrological processes and their interaction with human activities and socio-economic events. The assessment of ecosystems should consider all these ecosystem processes and functions, including human socio-economic activities;
 - Ecosystems can produce goods and services that are used for human benefit. By introducing ecosystem-based management, optimal use of these ecosystem services as well as the generation and equitable sharing of additional benefits may be achieved; and
 - Ecosystems are vulnerable to internal and external stresses and drivers for change. The degree and extent of the production of ecosystem services is also subject to to the magnitude of impacts of such stresses. In order to maintain the ecosystem integrity and to optimise the use of ecosystem services for human benefit, the ecosystem-based management would need to address the sources of stress and actual threats that are, in many cases, associated with human activities.
12. The issues that may have functioned as barriers to the introduction of an ecosystem approach in the regional seas programme are as follows:
 - The Action Plans agreed among the countries under the regional seas programme focus on assessment, monitoring and normative actions (guidelines and tools development and, at most, pilot application) and normally do not include actions addressing the sources of pollution and threats to the ecosystem functioning. As a

- consequence, the action taken under the Action Plan did not result in the improvement in the quality of the ecosystems;
- The geographic coverage of the regional seas action plans and conventions were decided through political considerations;
 - The Action Plans were developed in line with the UNEP mandate and the UNEP partnership with other international organisations and do not particularly focus on key sectors that have impacts on the environmental conditions of regional seas. A typical example of this is the fisheries sector. It is considered to be a sector that has impacts on the functioning of the marine and coastal ecosystems, but Regional Seas Action Plans do not normally include action where further partnership with FAO and FAO coordinated Regional Fishery Bodies would benefit addressing these issues;
 - Under the Action Plans, a regular state of the marine environment reporting was carried out but such assessments did not take an approach where drivers for ecosystem changes and threats to ecosystem functioning were identified. This assessment failure did not lead to identification of specific actions to address the causes of degradation of quality and functions of the ecosystems.
13. In recent years, many donors provide funding for activities that can lead to change in the environmental status that can trigger transformational changes eventually bringing about change in the environmental conditions. While many good actions were identified under the regional seas framework, actual results emanating from these actions have not been documented. Alternatively, no effort was made to delineate the normative action and the actual impacts of them on the marine and coastal environmental conditions. In any case, a limited effort has been made in tracking down the level of achievement in the implementation of the Action Plans by the regional seas programmes.
14. The long term objective of adopting an ecosystem approach in the regional seas programmes is to encourage participating governments to adopt an integrated ecosystem approach to regional marine and coastal environment. The actions that are implemented should aim ultimately at maintaining ecosystem integrity and enhance and wisely use coastal and marine ecosystem services to achieve regional ecosystem-based management objectives. By introducing such an approach, the regional seas programmes may wish to revise the action plans and start measuring the level of achievements of the implemented actions on the overall ecosystem status and functioning to produce specific benefits for human beings. In achieving the objective of the Ecosystem Approach to Regional Seas (EARS), the following steps are recommended to be followed by the regional seas programmes:
- Within the geographic scope of a regional seas programme, identification of units for assessment of the marine and coastal ecosystems, based on the nature of the constituent marine ecosystems;

- Assessment of assessment geographic areas, especially their quality, functions, ecosystem services and threats, further to the state of the marine environment reporting;
- Establishment of a system of monitoring of the change in ecosystem quality and function based on selected sets of environmental indicators linked with the Regular Process and other assessment of globally agreed environmental targets
- Agreement by littoral countries on a set of ecosystem objectives and targets;
- Revision or re-establishment of the regional seas action plans, comprising a set of actions by the littoral countries to address threats to ecosystem functions in support of achieving the agreed ecosystem-based objectives and targets; and
- Tracking down the status of achieving the ecosystem based objectives and indicators through the agreed set of indicators.

III. PROGRAMMATIC STEPS FOR THE REGIONAL SEAS PROGRAMMES IN THE IMPLEMENTATION OF THE ECOSYSTEM APPROACH TO REGIONAL SEAS

III.A. Geographic definition of marine ecosystems in the regional seas programme

15. Each regional seas programme has its own definition of geographic coverage of the programme. It ranges from definitions using longitudes and latitudes to the coverage of territorial seas and exclusive economic zones of the participating countries. The geographic boundaries of the regions, as well as the contents of the programmes to be implemented within them, were to be defined by the Governments concerned, taking into account a variety of criteria based, for example, on biophysical factors, jurisdictional structures, political priorities and/or statistical factors. This should have been done in co-operation with those concerned with diverse sectors and interests, including coastal settlements, industrialization, agriculture, fisheries, human health, transportation, science and indeed the full range of human activities in the region. Looking at the history of the development of the Action Plans, the definition of the geographic coverage of the programmes was not necessarily defined based on bio-physical or geochemical factors but, in many cases, based only on political discussions and considerations by the concerned States. Certainly, the defined geographic coverage was not based on the ecosystem functions and integrity.
16. There have been a number of initiatives to define ecosystem boundaries in the marine and coastal areas of the globe, including the definition of Large Marine Ecosystems by the National Oceanic and Atmospheric Administration of the United States of America⁶, Global International Waters Assessment of UNEP⁷

⁶ UNEP. The UNEP Large Marine Ecosystem Report: A Perspective of Changing Conditions in LMEs of the World's Regional Seas. UNEP Regional Seas Studies and Reports No. 182, which is downloadable from www.lme.noaa.gov/.

⁷ UNEP. 2006. Challenges to International Waters: Regional Assessments in a Global Perspective, which is downloadable from www.unep.org/dewa/giwa/.

and WWF Marine Eco-Regions of the World⁸. For specific regions, definition of assessment units was made such as the sub-region definition for the Mediterranean state of the marine environment⁹ and regions under the OSPAR Quality Status Report.¹⁰

17. It is noted that the definition of marine ecosystems may involve further discussion among the member States or Parties on expansion of the geographic coverage of the programme or may lead to a call for other States to join in regional seas programmes where marine ecosystems extend into other areas of national jurisdiction.

III.B. Assessment of regional seas , especially their ecosystem quality, functions, ecosystem services and threats

18. Once the marine ecosystems within the regional seas geographic coverage are redefined, based on the features and issues related to these marine ecosystems, assessment of these ecosystems would need to be conducted. A number of ecosystem assessment methodologies exist and these can be amenable in carrying out the assessment for marine ecosystems. Of particularly importance are the DPSIR framework (OECD) and causal chain analysis (GIWA) approaches. UNEP has also introduced an approach of integrated environment and climate change assessment framework.
19. Most of the regional seas programmes carried out assessments of the state of the environment and issued state of the regional marine environment reports. Based on these reports, each regional seas programme has an understanding of priority marine environmental issues and the major causes of these issues. One aspect of the assessment, although the actual achievement thereof should be reviewed, is a clear identification of the causes for change in ecosystem status and quality.
20. The proposed approach here is to carry out assessments based on indicators. It is suggested that the UNEP Marine Ecosystem Unit lead on the development of a set of indicators focusing on a number of common regional marine ecosystem issues and major sources of stress and threats to the functioning of these marine ecosystems based on existing indicators, including those developed for the Baltic Sea and for the Mediterranean. The global set of indicators should also be in line with the items for assessment for the Regular Process, Global Coral Reef Monitoring Network and Transboundary Waters Assessment Programme and matched with the Sustainable Development Goals. The indicator system would support the countries in their reporting to the Multilateral Environment Agreements. A sub-set of global indicators would be identified to be applicable to all the regions that should constitute key features and functions of the marine ecosystems, common to all marine ecosystems. In addition to these common

⁸ <http://www.worldwildlife.org/science/ecoregions/marine/item1863.html>

⁹ UNEP. 2011. Initial Integrated Assessment of the Mediterranean Sea: Fulfilling Step 3 of the Ecosystem Approach Process.

¹⁰ OSPAR Commission 2010. The Quality Status Report 2010.

- indicators, each regional seas programme should be able to choose additional indicators relevant to marine ecosystem issues in the region and relevant to the major causes for these regional issues. The indicators selected should be linked with the ecosystem-based objectives and targets (see below III-D) so that indicator-based tracking of achievements would be possible.
21. The GEF International Waters projects normally include a transboundary diagnostic analysis (TDA)¹¹. The majority of them have adopted a narrative and anecdotal analysis of ‘transboundary’ issues relevant to large marine ecosystems in case of marine environment, and transboundary river basins or shared aquifers in case of inland water systems. Many of them accompany causal chain analyses following the table format prepared within GIWA. The advantages of the GEF International Waters TDA are that: (i) the analysis presents major transboundary issues, concerns and threats agreed upon by the littoral countries; (ii) identification and prioritisation of problems and threats lead to identification of actions that are to be included in Strategic Action Programmes; and (iii) the causal chain analysis tool allows a qualitative analysis of causal relations between anthropogenic actions, the state of ecosystems and impacts on socio-economic conditions. The disadvantages of the TDA are that: (i) the analysis was expressed in a one-time anecdotal description and does not easily allow tracking down of chronological changes in ecosystem status; (ii) qualitative analysis of causal chains is not easily achieved without relying on physical models; (iii) the analysis is diagnostic, i.e., it constitutes an analysis of the current state of the ecosystems and includes limited prognostic analysis of the state of ecosystems, particularly in relation to longer-term climate change impacts; and that (iv) the TDA itself does not normally include analysis of ecosystem services and their values, but such analysis was carried out as a post-TDA process without close links with or feedbacks to TDAs.
22. It would be ideal to connect the state of the marine ecosystems and the threats and stresses to them through existing models, such as rapid assessment of contaminant sources and Ecopath/Ecosim. The application of such models would allow the littoral states to have a better understanding of the linkages between the sources of contaminants/threats and the status and health of ecosystems. However, application of physical models is not always easy and would force member States to spend long periods and resources on the assessment. In order to overcome this shortcoming, indicator-based assessment is suggested. Further study will be needed as to what indicator system can represent all ecosystem functions and causal relationships between the state of the ecosystems and the stress and threats to them.

¹¹ A comparative analysis of the marine transboundary diagnostic analysis can be found in: Pernetta, J. and J.M. Bewers. 2012. Transboundary diagnostic analysis in international waters interventions funded by the global environment facility. *Ocean and Coastal Management*: 55(2012)1-12

III-C: Establishment of a system of monitoring of the change in the ecosystem quality and functions

23. Once the indicators are agreed by the concerned states in a specific regional seas programme, these states can move toward establishing a regional system of monitoring of these indicators. Some of the regional seas programmes already have regional monitoring systems, such as the Mediterranean Pollution Assessment and Control (MedPol) Programme and the Pollution Monitoring Regional Activity Centre of the Northwest Pacific Action Plan (POMRAC of NOWPAP). In most of regions, the littoral states are already carrying out national monitoring activities with varying content and selected variables. Accordingly, states may wish to establish a network of component monitoring programmes in the regional seas relying on the national monitoring activities. If the indicators are closely linked with the items included in the Regular Process and the Ecosystem Objectives and Targets, the monitoring of indicators directly contributes to the regular reports under the Regular Process and to the measuring of success and level of achievements of the regionally-determined Ecosystem Objectives and Targets. It is however noted that this whole system depends on the adoption of common and standardised techniques or a suitable normalization procedure agreed upon as the means of monitoring the indicators.
24. Many of the regional seas programmes use their own resources for reinforcing the capacity of monitoring of the marine environment. Although the results of such capacity building activities are yet to be analysed, the proposed monitoring system does not target the monitoring for the sake of monitoring of the marine environmental status but clearly targets the establishment of indicator-based monitoring of the status of the marine ecosystems, generating regular reports based on the agreed indicators and allowing chronological analysis of the status of ecosystems and threats to them. It also enables tracking down the impacts of management and policy efforts on the actual state of the marine ecosystems and the socio-economic benefits generated by them in order to demonstrate the impact of policies and specific investments in the region.
25. Many of the regional seas programmes have limited financial resources. As discussed in Chapter 2, the regional seas Action Plans place emphasis on environmental assessment as well as management and not many resources were allocated to the on-the-ground actions to address the sources of contaminants and threats to ecosystems. The proposed approach here is to establish a less resource-intensive, indicator-based monitoring programme, drawing on the existing data/information systems and monitoring programmes in the concerned region, in particularly on a national scale. This is because the regional seas programmes and their member states need to allocate increased resources towards implementation of actions on the ground directly addressing the sources of stress and threats to ecosystems.

26. The UNEP Marine Ecosystem Unit would develop a model monitoring programme for regional seas and assist any regional seas programmes willing to introduce such a programme. The Unit would also liaise with the global data set holders, so that the monitoring programmes on a regional basis could utilize available data and information from global datasets (e.g., Marine Life Census, GOOS, TWAP, etc.).

III-D Agreement by littoral countries on a set of ecosystem objectives and targets

27. As a result of the assessment described in III-B above, the littoral states to the regional seas will have a better understanding of the key regional issues associated with the functions of the regional-scale marine ecosystems and the causes of these issues. The assessment should allow the littoral states to establish the objectives of their joint action in the shared regional sea marine ecosystems. They could also establish a measurable and time-bound targets for their joint actions in three categories: (i) the maintenance/improvement of the ecosystem functions (for example, recovery of the fish stock level of 200x by the year 20yy); (ii) the reduced level of stress or threats (for example, aa % reduction in nitrogen input to the regional seas by the year 20bb compared to the baseline level in 200c); and (iii) the policy processes and measures (for example, dd ha increase of marine protected areas designed by the year 20ee, or ff million US\$ invested on the mangrove conservation during 20gg-20hh).
28. These regional targets should be compatible with the marine related inter-governmental targets, such as marine related Aichi Targets under the Convention on Biological Diversity and ecosystem related targets on fisheries under the UNCLOS and FAO processes. Most importantly, the United Nations member States will start developing Sustainable Development Goals (SDGs) based on the outcomes of the Rio+20 conference in June 2012. Regional targets should be in alignment with the future SDGs so that the contribution of each regional seas programme to the achievement of the SDGs related to oceans should be clearly recognised and tracked by the respective regional seas programmes.
29. Some of the regional seas programmes already set ecosystem-based objectives and/or targets particularly those under the strategic action programmes developed under GEF-funded projects, including the Mediterranean (SAP-Med and SAP-Bio), South China Sea as part of the East Asian Seas programme, although different SAPs define different types of objectives and targets with varying timeline for their achievements. Furthermore, the Mediterranean Action Plan set wider sustainable development indicators and an outlook for sustainable development while the achievements are tracked using agreed indicators¹².

¹² INFO/RAC. Mediterranean Strategy for Sustainable Development: A Framework for Environmental Sustainability and Shared Prosperity. Plan Bleu. 2012. 20 years of Sustainable Development in the Mediterranean: Review and Outlook. Blue Plan Notes. No. 22. June 2012.

30. Achievements of the objectives and targets set by the member States and Parties will be monitored through the indicators agreed at III-B. Indicator monitoring programmes should issue reports on a regular basis in order to inform the member States on the achievements of the regional objectives and targets.
31. The UNEP Marine Ecosystem Unit could assist the regional seas programmes in defining the objectives and targets to be agreed by the member States.

III-E Revision or re-establishment of the regional seas action plans

32. As discussed in Chapter I above, the regional seas Action Plans form a basis for regional cooperation and for addressing common or shared concerns and issues in the marine and coastal areas. However, the level of achievements in the implementation of the Action Plan in each region is not well reported by a respective regional seas programme. Once ecosystem based objectives and targets are set clearly, each regional seas programme may look into the existing Action Plans to find out if the proposed actions would contribute to the achievements of the Ecosystem Objectives and Targets. If not, a new set of actions should be defined to achieve the ecosystem objectives and targets in the form of either a revised Action Plan or a new action programme, comprising new actions strategically addressing the sources of problems and threats which are relevant to the ecosystem objectives and targets.
33. If the action needed to achieve the ecosystem objectives and targets is to address the sources of problems and threats to the ecosystem functions and integrity, such action should be classified as follows:
 - Capacity building for the coastal and marine ecosystem assessment, monitoring and management;
 - Development of regional and national policies and regulations;
 - Initial sets of demonstration activities to test implement innovative and emerging approaches and practices; and
 - Investment for on-the-ground interventions, most probably replicating efficient approaches and technologies in partnership with financial institutions.
34. The above-noted actions naturally require a range of partners for implementation. Revised action plans should clearly specify the partners invited and the extent of interest potential partners show in the implementation of the action plans.
35. The proposed actions in the revised action plan should accompany the budgets. Ideally the budgets should be divided into the national baseline budget and incremental budget. The latter needs to be raised from financial institutions, bilateral donors and international and regional organisations in addition to the

funding mechanisms each regional seas programme has (e.g., regional seas trust funds).

36. The UNEP Marine Ecosystem Unit will contribute to the action planning process in the following assistance areas:
- Development of guidelines and guidance documents, through a group of experts (access to blue carbon financing, marine spatial planning, ecosystem restoration technologies, etc.) for innovative action and good practices; and
 - Compiling and sharing of lessons learnt on action planning and ecosystem-based management programmes.
37. The UNEP Regional Seas Coordination Office has inter-regional information sharing facilities and is organising annual global regional seas meetings. It is advocated that these facilities should be fully utilised for inter-regional exchange and mutual learning.

III-F Implementation and monitoring of the revised regional seas action plans

38. The monitoring of the implementation of the revised action plans should be carried out against the ecosystem objectives and targets through measurements of the agreed indicators. The indicator monitoring framework should provide the member States with necessary information on the level of achievement in the ecosystem objectives and targets.
39. The UNEP Marine Ecosystem Unit will compile the information from the regional seas programmes on a regular basis, so that the Unit can issue global status and outlook reports on the marine and coastal areas. Such information from the regions would also be a good input to the UN Regular Process on the reporting of the state of the marine environment. For this purpose, each regional seas programme participating in the Ecosystem Approach to regional Seas should use a minimum set of common indicators, thereby allowing inter-regional comparisons.

IV. RECOMMENDATIONS

40. The regional seas programmes are recommended to review the proposed Ecosystem Approach to Regional Seas. It is understood that under the GEF-funded or other projects, some of the proposed actions were implemented by regional seas programmes. UNEP would seek a few regional seas programmes to introduce this programme on a voluntary and pilot basis with modest and limited financial support.
41. As indicated above, the UNEP Marine Ecosystem Unit would take necessary actions in support of the regional seas programmes implementing the Ecosystem

Approach to Regional Seas. The table below indicates the action necessary on the side of the regional seas programmes and the UNEP Marine Ecosystem Unit.

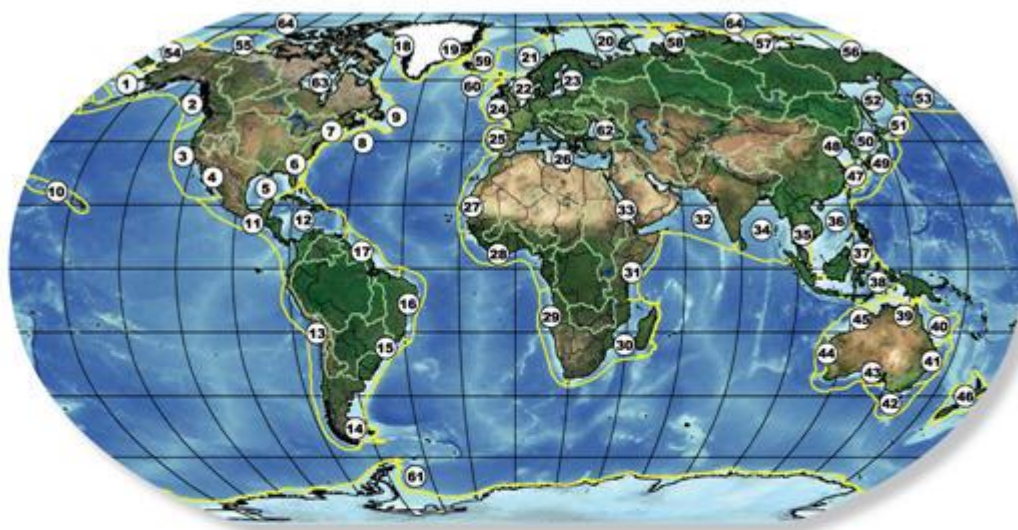
42. As the initial step, during the current biennium (2012-2013), the Marine Ecosystem Unit is willing to organise the following activities:

- Organise a meeting of ecosystem approach to regional seas with focus on discussing assessment, action planning and governance, together with the regional seas representatives; and
- Organise an expert meeting on the indicators for use by regional seas with input from regional seas programmes and based on the results of the Global Marine Biodiversity Outlook

Table 1: Necessary Action for Ecosystem Approach to Regional Seas

Step	Action by regional seas programme	Action by UNEP
Geographic definition of marine ecosystems in the regional seas programme	Define the geographic coverage of marine ecosystem assessments.	Provide information on marine ecosystems.
Assessment of regional seas ecosystems, especially their quality, functions, ecosystem services and threats	Identify and agree on a set of indicators for assessment consistent with the Regular Process and TWAP; and identify sources of information and data for each indicator.	Develop a global set of indicators from which the regional seas programmes can select for their own use.
Establishment of a system of monitoring of the change in the ecosystem quality and function based on the measurement of indicators	Develop an indicator monitoring programme in conformity with the national or existing programmes.	Develop a prototype monitoring programme for the global indicators.
Agreement by littoral countries on a set of ecosystem objectives and targets	Develop and agree on ecosystem objectives and targets to be compliant with the UN Sustainable Development Goals.	Support the regional seas programmes in formulating objectives and targets.
Revision or re-establishment of the regional seas action plans	Revise or redevelop regional seas action plans to achieve the ecosystem objectives and targets; and apply the global guidelines and guidance to formulate and implement necessary actions, particularly demonstration activities.	Develop guidelines and guidance documents to support the regional seas programmes in developing necessary action to achieve the objectives and targets; and Organise an expert group to help develop the guidelines and guidance; and compile and share lessons learnt and good practices.
Implementation and monitoring of the revised regional seas action plans	Monitor the implementation of the action plan and ecosystem objectives and targets	Globally compile regional information to produce a global marine ecosystem outlook

Annex A: Large Marine Ecosystems

Large Marine Ecosystems of the World and Linked Watersheds

- | | | | | | |
|-------------------------------------|-------------------------|---------------------------|--|----------------------|------------------|
| 1 East Bering Sea | 13 Humboldt Current | 25 Iberian Coastal | 37 Sulu-Celebes Sea | 48 Yellow Sea | 60 Faroe Plateau |
| 2 Gulf of Alaska | 14 Patagonian Shelf | 26 Mediterranean Sea | 38 Indonesian Sea | 49 Kuroshio Current | 61 Antarctic |
| 3 California Current | 15 South Brazil Shelf | 27 Canary Current | 39 North Australian Shelf | 50 Sea of Japan | 62 Black Sea |
| 4 Gulf of California | 16 East Brazil Shelf | 28 Guinea Current | 40 Northeast Australian Shelf-
Great Barrier Reef | 51 Oyashio Current | 63 Hudson Bay |
| 5 Gulf of Mexico | 17 North Brazil Shelf | 29 Benguela Current | 41 East-Central Australian Shelf | 52 Okhotsk Sea | 64 Arctic Ocean |
| 6 Southeast U.S. Continental Shelf | 18 West Greenland Shelf | 30 Agulhas Current | 42 Southwest Australian Shelf | 53 West Bering Sea | |
| 7 Northeast U.S. Continental Shelf | 19 East Greenland Shelf | 31 Somali Coastal Current | 43 Southwest Australian Shelf | 54 Chukchi Sea | |
| 8 Scotian Shelf | 20 Barents Sea | 32 Arabian Sea | 44 West-Central Australian Shelf | 55 Beaufort Sea | |
| 9 Newfoundland-Labrador Shelf | 21 Norwegian Shelf | 33 Red Sea | 45 Northwest Australian Shelf | 56 East Siberian Sea | |
| 10 Insular Pacific-Hawaiian | 22 North Sea | 34 Bay of Bengal | 46 New Zealand Shelf | 57 Laptev Sea | |
| 11 Pacific Central-American Coastal | 23 Baltic Sea | 35 Gulf of Thailand | 47 East China Sea | 58 Kara Sea | |
| 12 Caribbean Sea | 24 Celtic-Biscay Shelf | 36 South China Sea | | 59 Iceland Shelf | |

Figure A-1: Large Marine Ecosystems (http://www.lme.noaa.gov/index.php?option=com_content&view=article&id=47&Itemid=41)

