SOUTH ASIA CO-OPERATIVE ENVIRONMENT PROGRAMME

SOUTH ASIAN SEAS PROGRAMME

SOUTH ASIAN SEAS PROGRAMME

6th Inter-governmental Meeting of Ministers

Dhaka, Bangladesh
5 – 6 November 2019

REPORT OF THE SIXTH INTER-GOVERNMENTAL MEETING OF MINISTERS OF SOUTH ASIAN SEAS PROGRAMME

South Asia Co-operative Environment Programme

South Asian Seas Programme
No. 146/24A, Havelock Road, Colombo 5, Sri Lanka

CERTIFICATE

The Report of the Sixth Inter-governmental Meeting of Ministers of the South Asian Seas Programme held on 5 – 6 November 2019 in Dhaka, Bangladesh is herewith submitted to the members of the Inter-governmental Meeting of Ministers and the Consultative Committee, in fulfilment of the financial and administrative procedures of SACEP and SASP.

Dr. Abas Basir
Director General
30th January 2020

Report of the Sixth Inter-governmental Meeting of Ministers of South Asian Seas Programme (SASP)

5 – 6 November 2019
Dhaka, Bangladesh

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SOUTH ASIAN SEAS PROGRAMME

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SIXTH INTER-GOVERNMENTAL MEETING OF MINISTERS (IMM.6)
6TH NOVEMBER 2019
DHAKA, BANGLADESH

1. INTRODUCTION

The Sixth Inter-governmental Meeting of Ministers of the South Asian Seas Programme (IMM.6-SASP) was held in Dhaka, Bangladesh on 5 – 6 November 2019 back to back with the 15th Meeting of the Governing Council of South Asia Co-operative Environment Programme (15GC-SACEP).

2. ATTENDANCE

The meeting was attended by Representatives from the following Member Countries viz: Bangladesh, India, Maldives, Pakistan and Sri Lanka.

It was also attended by representatives from the United Nations Environment Programme (UNEP), Convention on International Trade in Endangered Species (CITES), Secretariat of the Basel, Rotterdam and Stockholm Conventions (BRS) and IGES Centre Collaborating with UNEP on Environmental Technologies (CCET) as observers. List of Participants is at **Annex 1**.

3. INAUGURATION

A joint inauguration was held for the 6th Inter-governmental Meeting of Ministers, South Asian Seas Programme (IMM.6-SASP) and the 15th Meeting of the Governing Council of South Asia Co-operative Environment Programme (15GC-SACEP) as both the meetings were held back to back.

The welcome Address was delivered by Dr. Abas Basir, Director General, SACEP. (**Annex 2**)

The welcome Address of the host country was delivered by Mr. Mahmud Hasan, Additional Secretary, Ministry of Environment, Forest and Climate Change, Government of the Peoples Republic of Bangladesh. (**Annex 3**)

The out-going Chairman of GC-SACEP, the Head of Delegation, Mr. Idrees Malyar, Deputy Director General of the National Environmental Protection Agency, Government of Afghanistan then addressed the august gathering. (**Annex 4**)

The out-going Chairman of IMM-SASP, the Head of Delegation, H.E Mr. Shah Faisal Kakar, Acting High Commissioner of Pakistan in Bangladesh, then addressed the gathering. (**Annex 5**)

This was followed by the speech of the Special Guest, H.E Ms. Habibun Nahar, MP. Hon' Deputy Minister, Ministry of Environment, Forest & Climate Change, Government of Bangladesh. (**Annex 6**)

The Special Guest, Hon' Mr. Ahmed Mujthaba, Minister of State for Environment, Republic of Maldives then delivered is speech. (**Annex 7**)

The august gathering was then addressed by the Special Guest, Hon' Mr. Prakash Keshav Javadekar, Minister for Environment, Forest and Climate Change, Government of India. (**Annex 8**)

H.E Mr. Md. Shahab Uddin, MP. Minister, Ministry of Environment, Forest & Climate Change, Government of Bangladesh then delivered his speech at the Inaugural Session of the 15GC-SACEP and IMM.6-SASP. (**Annex 9**)

The Chief Guest for the Inaugural Session of the 15GC-SACEP and IMM.6-SASP, H. E. Dr. A. K. Abdul Momen, MP. Hon' Minister, Ministry of Foreign Affairs, Government of Bangladesh, then delivered his inaugural address. (**Annex 10**)

This was followed by the address of the Chairperson, Mr. Abdullah Al Mohsin Chowdhury, Secretary, Ministry of Environment, Forest & Climate Change, Government of Bangladesh. (**Annex 11**)

The vote of thanks was given by Dr. A. K. M. Rafique Ahammed, Director General, Department of Environment, Government of Bangladesh. (**Annex 12**)

4. ELECTION OF OFFICE BEARERS

In accordance with the provisions of Articles of Association of SACEP, H.E Mr. Md. Shahab Uddin, MP. Minister, Ministry of Environment, Forest & Climate Change, Government of Bangladesh was elected as Chairman of the IMM.6-SASP. Hon' Mr. Prakash Keshav Javadekar, Minister for Environment, Forest and Climate Change, Government of India was elected as Vice Chairman of the Meeting. Hon' Mr. Ahmed Mujthaba, Minister of State for Environment, Republic of Maldives, was elected as Rapporteur.

5. ADOPTION OF AGENDA AND ORGANISATION OF WORK

The IMM.6-SASP discussed and adopted the Agenda of the Meeting. A copy of the Adopted Agenda is at **Annex 13**.

6. COUNTRY STATEMENTS / BRIEF OPENING REMARKS BY THE MEMBER STATES

The Heads of Delegations from Bangladesh, Maldives, Pakistan and Sri Lanka made collective statements as the IMM.6-SASP was held back to back with the 15GC-SACEP and Government of India made a separate statement under the Agenda Item. **(Annex 14)**

7. STATEMENTS BY THE OBSERVERS

United Nations Environment Programme, Regional Office for Asia and the Pacific (UNEP-ROAP), Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Secretariat of the Basel, Rotterdam and Stockholm Conventions and the IGES Centre Collaborating with UNEP on Environmental Technologies (CCET) presented collective statements as the IMM.6-SASP was held back to back with the 15GC-SACEP .

8. PRESENTATION OF THE REPORT OF THE PREPARATORY MEETING OF NATIONAL FOCAL POINTS BY THE RAPPORTEUR

Mr. Ahmed Wisam, Environment Analyst, Ministry of Environment, Republic of Maldives in his capacity as the Rapporteur, presented the Report of the Preparatory Meeting of the National Focal Points / Senior Government Officials held on 5 November 2019 along with the recommendations of the meeting to the 6th Inter-governmental Meeting of Ministers for its endorsement. (**Annex 19**)

9. DISCUSSIONS AND ENDORSEMENT OF THE RECOMMENDATIONS AGREED UPON AT THE PREPARATORY MEETING OF NATIONAL FOCAL POINTS

Based on the Presentation of the Progress Report made by the Director General under the following categories;

1. Institutional Matters
2. Programme Matters
3. Financial Matters

and the recommendations of the Preparatory Meeting of the National Focal Points, of the 6th Inter-governmental Meeting of Ministers adopted the Report of the Preparatory Meeting of the National Focal Points. The decisions of the IMM.6-SASP under various clauses are as below :

9.1 INSTITUTIONAL MATTERS

9.1.1 APPOINTMENT OF THE SENIOR PROGRAMME OFFICER-REGIONAL / SOUTH ASIAN SEAS PROGRAMME

The Secretariat informed the IMM.6-SASP that the Senior Programme Officer-Regional of the South Asian Seas Programme, Dr. Sivaji Patra, nominee of Government of India will complete his tenure 1st October 2020 and Government of Maldives has been notified on 1st October 2019, at the end of the second year tenure of the present Senior Programme Officer-Regional, to nominate a suitable candidate for the position in accordance with the approved Criteria for the post

of the Senior Programme Officer-Regional of the South Asian Seas Programme to assume duties by 17th September 2020 with an overlap of 2 weeks.

Government of India requested the Secretariat to include Oceanography and Ocean Science to the selection criteria.

9.1.2 INCREASE OF THE SALARY OF THE SENIOR PROGRAMME OFFICER-REGIONAL – SASP

The 6th Inter-governmental Meeting of Ministers approveed the increase of the Salary of the Senior Programme Officer-Regional/SASP, by US $ 500/- amounting to a total monthly salary of US $ 3,000/- from 6th November 2019 onwards.

9.2 PROGRAMME MATTERS

9.2.1 Development and Implementation of National and Regional Oil and Chemical Spill Contingency Planning for South Asia

The 6th Inter-governmental Meeting of Ministers of the South Asian Seas Programme requested the Secretariat to take necessary support as required from IMO for implementation of the Regional Oil and Chemical Spill Contingency Plan in the SAS Region and sharing of technical expertise of the Member States among each other.

The meeting recommended SACEP/SASP to coordinate and facilitate the activity.

9.2.2 Ballast Water Management (BMW) under the GloFouling Project of the International Maritime Organization (IMO)

IMM.6-SASP requested the Member States to share knowledge and experience on the ratification and implementation of the BWM Convention, including between Parties and non-Parties. The Meeting was informed that SACEP/SASP joined the GloFouling Project of IMO as the Regional Coordinating Organization (RCO) for the South Asian Seas Region which is a sub- activity of the Ballast Water Management strategy.

The SAS Member States agreed to cooperate with SACEP/SASP under the objectives of the GloFouling project activity.

9.2.3 Sustainable Nitrogen Management for South Asia

IMM.6-SASP was informed that the progress of the activity was reported under 15th Meeting of the Governing Council (GC) of SACEP held back to back with the IMM.6-SASP. Recommendation of 15GC-SACEP is highlighted below:

SACEP established 'the South Asian Nitrogen Hub', in collaboration with the Centre for Ecology & Hydrology and many other organizations across the UK and South Asia. The Hub is funded by UK Research and Innovation (UKRI) under its Global Challenges Research Fund (GCRF).

Over the next five years, South Asian Nitrogen Hub (SANH) will study the impacts of the different forms of pollution to form a coherent picture of the nitrogen cycle.

Regional Framework Policy on Nitrogen Management will be developed and adopted which will support cleaner and more profitable farming, as well as industrial recycling of nitrogen, fostering development of a cleaner circular economy for nitrogen. The activities are proposed to be carried forward according to the roadmap developed.

15th Meeting of the Governing Council (GC) of SACEP requested the Member States to :

a) *Forward relevant data and information to the review as well as prepare the status report.*

b) *Co-ordinate and support SACEP for necessary policy development and implementation by the national legislations*

9.2.4 Implementation of Regional Marine and Coastal Biodiversity Strategy for the South Asian Seas Region

The 6th Inter-governmental Meeting of Ministers of the South Asian Seas Programme reviewed the Regional Marine and Coastal Biodiversity Strategy and adopted for implementation. (**Annex 15**)

The Meeting further recommended the SACEP/SASP to develop a Project Proposal in coordination with International Funding Agencies including Global Environment Facility (GEF) for implementation of the Regional Marine and Coastal Biodiversity Strategy.

9.2.5 Regional Marine Litter Action Plan for South Asia

The 6th Inter-governmental Meeting of Ministers of the South Asian Seas Programme reviewed the Regional Marine Litter Action Plan for South Asia and adopted. (**Annex 16**)

9.2.6 Collaborate activities with Global Coral Reef Partnership

The Meeting was informed that the Secretariat is organizing a Regional Workshop with the following objectives :

- To contribute to the production of the 2020 report on Status of Coral Reefs of the world.
- To sign a Data Sharing Agreement with SASP member countries.
- To strengthen the South Asia Coral Reef Task Force.

The members noted the importance of the Agenda item and encouraged the SACEP/SASP to assist the SASP member countries in implementation of such activities.

9.2.7 Promotion of the London Protocol in the South Asian Seas Region

The 6th Inter-governmental Meeting of the Ministers of the South Asian Seas Programme requested the member countries to consider signing and ratifying the London Protocol and reaffirm the support of SACEP/SASP on collaborative activities with the International Maritime Organization for the common benefit of the SAS Region.

9.2.8 Sustainable Blue Economy Initiatives of SAS Region

The meeting was that for sustaining the Blue Economy Initiatives SACEP/SASP prepared a Project Proposal in line with Global Environment Facility-Seven (GEF-7).

The IMM.6-SASP endorsed the initiative which will be supported by GEF/UNEP for successful implementation in SAS region.

9.2.9 WORK PROGRAMME (2020-2021) Annex 17

The Meeting decided to continue the on-going activities of SASP and approved the Work Programme proposed for 2020 – 2021.

9.3 FUNDING AND FINANCIAL MATTERS

9.3.1 Country Contributions

SACEP/SASP Secretariat thanked the member countries for clearing the arrears of the Country Contribution of the South Asian Seas Programme to a commendable rate. Further it was informed by the Secretariat that it is important to clear the balance arrears of the SASP country contributions for smooth and effective functioning of the secretariat.

9.3.2 External Funding

The IMM.6-SASP recommended that the account statements of SASP may reflect a line item on the Institutional Service Charges received under South Asian Seas Programme from External Funding Sources in future.

9.3.3 Secretariat Budget (2020-2021)

Under the South Asian Seas Programme a 10% increase in the Annual Country Contribution from January year 2014 is requested as the present agreed country contribution of SASP was recommended at the Second Inter-governmental Meeting of Ministers of SASP held on 1st July 2002.

The 6th Inter-governmental Meeting of Minister of SASP, as recommended by the Preparatory Meeting of National Focal Points approved the SASP Budget for the Years 2020 – 2021 with the present agreed annual contributions until such concurrence is obtained. **(Annex 18)**

10. APPROVAL OF THE ANNUAL AUDITED REPORTS OF ACCOUNTS FOR THE FINANCIAL YEARS ENDING 31ST DECEMBER, 2011, 2012, 2013, 2014, 2015, 2016 AND 2017

The meeting approved the Audited Reports of Accounts for the years 2011, 2012, 2013, 2014, 2015, 2016 and 2017.

11. ANY OTHER BUSINESS

No matter was discussed under this Agenda Item.

12. ADOPTION OF REPORT

The 6th Inter-governmental Meeting of Ministers considered the Report on 6th day, of November 2019 and adopted.

13. CLOSURE OF MEETING

The Chairman thanked the Hon' Ministers and delegates for their valuable support and co-operation, the SACEP/SASP Secretariat for their excellent work and officials of the Ministry of Environment, Forest & Climate Change, Government of Bangladesh for all the hard work in making the 6th Inter-governmental Meeting of Ministers a success.

He then declared the meeting close.

SOUTH ASIAN SEAS PROGRAMME (SASP)

06TH INTER-GOVERNMENTAL MEETING OF MINISTERS

06 November 2019
held in Dhaka, Bangladesh

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Annex 1
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Welcome Address by

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Director General, SACEP
at the Inaugural Session of the

15th Meeting of the Governing Council of
South Asia Co-operative Environment Programme (SACEP)
&
6th Intergovernmental Meeting of Ministers of
South Asian Seas Programme

held in Dhaka, Bangladesh

6th November 2019

Hon' Ministers
Excellencies
Distinguished Delegates
Invitees
Ladies and Gentlemen,

Very good morning!

On behalf of South Asia Co-operative Environment Programme, it is my great pleasure to welcome you all to the joint opening of the 15th Meeting of the Governing Council of South Asia Co-operative Environment Programme and the 6th Inter-governmental Meeting of the Ministers of the South Asian Seas Programme.

At the outset, I express my sincere gratitude to the Government and the people of Bangladesh for hosting this Governing Council Meeting in the beautiful city of Dhaka and also for the great hospitality extended to us. This is the second time that the Government of Bangladesh is hosting the Governing Council of SACEP. Previously, Government of Bangladesh hosted the 2nd Meeting of the Governing Council way back in April 1985.

Hon' Ministers, distinguished delegates,
Being established in 1982, SACEP in its four decades of existence as a key regional intergovernmental organization of South Asia, played a vital role in safeguarding the prestigious environment of the region. I am happy and proud to say that during the four decades of its existence, SACEP initiated a number of activities which were beneficial to the region as well as global community. One of such recent landmarks was the UN Resolution on Sustainable Nitrogen Management which was initiated by SACEP and adopted successfully at the 4th Meeting of the UN Environment Assembly in Nairobi, March this year. I take this opportunity to express our sincere thanks to Government of India for leading the Nitrogen Management Resolution on request of SACEP as per the decision of the 14th Governing Council Meeting and all other seven Member States for their support extended at the UNEA-4 for its successful adoption.

Excellencies, ladies and gentlemen,
Our environment is constantly changing. There is no one denying this fact. However, as our environment changes, so does the need to become increasingly aware of the problems

that surround us. In this 21st century, the whole world is facing a number of environmental challenges which are very common to our region as well. The frequency and the intensity of natural phenomena like typhoons, flash floods, droughts, etc. have been increased as never before. Climate change presents the single biggest threat to sustainable development everywhere and its widespread, unprecedented impacts burden the people. On the other hand, our natural resources including rich biological diversity is under tremendous pressure due to over utilization for meeting the ever-increasing demand of food and other essential needs of the increasing population.

Waste management is another major issue faced across the region. The over consumption of resources and un-precedential utilization of plastics are creating a crisis of waste disposal. So, it is time for all of us to consider how we can make changes in our daily lives to reduce the heavy burden of wastes particularly of plastic pollution on our communities, on our wildlife, and on our health. It is estimated that nearly one third of the plastic packaging we use escapes collection systems, ending up to oceans, clogging our city streets and polluting our natural environment. Every year, up to 13 million tons of plastic leak into our oceans, where it smothers coral reefs and threatens vulnerable marine wildlife. I am delighted to recognize here that a number of our Member States have been brave enough to implement stringent measures on plastic waste like banning the single use plastics. I invite the other Member States also to consider following the similar path to become a region which is free of plastic waste.

Implementation of effective and coherent policies is a key to achieve Sustainable Development Goals. In this connection, science-based policy making is crucial, but still a challenge as there is not enough scientific studies or research work undertaken to support the required decision making. In order to facilitate the science-based policy making, SACEP in partnership with UK Centre for Ecology & Hydrology and also with around 50 other organizations across the UK and South Asia Region, established the South Asia Nitrogen Hub. Over the next five years, the hub will be funded by UK Research and Innovation (UKRI) under its Global Challenges Research Fund. Under this platform, for the first time SACEP was able to connect more than 50 high profile research institutions from the region and beyond, to work on Sustainable Nitrogen Management in South Asia.

Hon' Ministers, Excellencies,

SACEP pays special attention to protect coastal and marine environment in its programme of actions. As five Member States of SACEP are maritime countries, we host and implement a separate programme under SACEP called South Asian Seas Programme (SASP) which is

also one of the 18 Regional Seas Programmes of UNEP. One of the major achievements gained under this programme is the signing of the MoU for Co-operation on Response to Oil and Chemical Pollution in South Asian Seas Region and the associated Action Plan by all 5 Member States.

Ladies and Gentlemen,

SACEP's all programme activities are implemented in collaboration and support of our Member Countries and in partnership with bilateral and international partners. Over the years, SACEP developed close partnerships with many UN Agencies, Convention Secretariats, Donors and other international agencies and it is witnessed by the participation of those agencies at their highest level in this meeting.

Hon' Ministers, Excellencies,

This is my first experience of Governing Council as the Director General of SACEP after assuming duties in August, last year. But I have participated in previous Governing Councils as part of the delegation of my Country, Afghanistan. I take this platform to thank my government and all Member States of SACEP for giving me an opportunity to lead this esteemed organization. During past one year of assuming duties as the Director General, I visited almost all the Member Countries to understand their priorities and expectations which was very much helpful in developing SACEP Strategy and planning our future activities. I am confident that we shall be successful in addressing the environmental challenges of this region collectively. I always believe that collective and co-operative approach would simplify the efforts in addressing current environmental challenges we are facing.

At the end, I would like to thank all delegates who attended the preparatory meetings of the National Focal Points of the Governing Council of SACEP and the Inter-governmental Meeting of the Ministers of SASP for their hard work and fruitful contributions.

Once, again on behalf of SACEP, I welcome all of you and wish your stay in Bangladesh a memorable.

Thank you.

Welcome Address by

Mr. Mahmud Hassan
Additional Secretary
Ministry of Environment, Forest and Climate Change
Government of the People's Republic of Bangladesh

at the Inaugural Session of the

15th Meeting of the Governing Council of
South Asia Co-operative Environment Programme (SACEP)
&
6th Intergovernmental Meeting of Ministers of
South Asian Seas Programme

held in Dhaka, Bangladesh

6th November 2019

Bi-smi llāhi r-raḥmāni r-raḥīm

Hon' Chairperson of today's inauguration, Mr. Abdullah Al Mohsin Chowdhury, Secretary Ministry of Environment, Forest & Climate Change of the Government of People's Republic of Bangladesh.

Today's Chief Guest, Hon' Foreign Minister, Ministry of Foreign Affairs, Bangladesh Dr. A.K. Abdul Momen.

Hon' Special Guest Mr. Md. Shahab Uddin, MP. Minister, Ministry of Environment, Forest and Climate Change.

Hon' Minister Mr. Prakash Keshav Javadekar, Minister of Environment, Forest and Climate Change, India.

Hon' State Minister for Environment, Republic of Maldives, Mr. Ahmed Mujthaba.

Hon' Ms. Habibun Nahar, MP. Honorable Deputy Minister, Ministry of Environment, Forest and Climate Change, Bangladesh

Distinguished Guests, Delegates,
Members of Print Media, Print and Electronic Media,
Assalamu alaikum and a very good morning!

I welcome all of you to the Inaugural Session of the 15th Meeting of the Governing Council South Asia Co-operative Environment Programme and the 6th Inter-governmental Meeting of Ministers of the South Asian Seas Programme. I'm pleased to be associated with this gathering here, which has the focus on the protection and the management of environment in South Asia Region.

Distinguished Delegates,
The Government of Bangladesh has taken various important steps towards the protection of environment. Among them, we developed the national environmental policy and its biological diversity act. Under the able leadership of H.E Hon' Prime Minister Sheikh Hasina, Bangladesh is on a rapid development path. Here we'll be able to quote our strength for sustainable development.

Ladies and Gentlemen,

As 2020 is nearer, we have 10 years to 2030 which is important to achieve the sustainable development goals. In today's context, local and global environmental issues are interlinked and regional cooperation is the key to sustainable development. SACEP can facilitate member countries to address the challenges by the knowledge management, transfer technology and many other key areas common to the region to ensure sustainable development of the countries in the region. Also, the South Asian Seas Programme can play a vital role in sustainable marine ecosystem and conservation of seas.

Excellencies, Ladies and Gentlemen,

I extend my sincere thanks to all senior officials and all other delegates specially the present Chief Guest and other dignitaries present here. I wish all of you, all the best and hope we will be able to reach an effective result in this meeting through our discussions and mutual cooperation.

Once again, I thank you all.

Khuda Hafiz

Address by

Mr. Idrees Malyar
Deputy Director General
National Environmental Protection Agency
Government of the Islamic Republic of Afghanistan and
Out-going Chairman of GC-SACEP

at the Inaugural Session of the

15th Meeting of the Governing Council of
South Asia Co-operative Environment Programme (SACEP)
&
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held in Dhaka, Bangladesh

6th November 2019

In the Name of God, The Merciful, The Compassionate

Your Excellencies
Distinguished Delegates
Ladies and Gentlemen

I would like to once again extend the sincere gratitude of the Government of the Islamic Republic of Afghanistan to the Government of the People's Republic of Bangladesh for hosting this 15th Meeting of the Governing Council of SACEP. To the Minister of Environment, Forest and Climate Change, His Excellency Mr. Md. Shahab Uddin, I would like to say thank you for the hospitality of the country and people of Bangladesh during these past few days. In addition, as the outgoing chair of SACEP, I would like to thank all Member States for their commitment and participation during the past term, and would like to encourage them to provide the same level of support and dedication in the coming term under the chairpersonship of Bangladesh.

As we reflect on the discussions of the last few days, I don't think it is necessary to remind any of us here, how important our efforts are. One only needs to pick up a newspaper or switch on a television in any of our countries – indeed, anywhere in the world – to see how widespread and profound the impacts of global environmental degradation and changes are on our countries and our people. Whether we look at the rural communities or urban population, subsistence agriculture or digital economies, industrial production or tourism sector, human health or economic stability, one thing is very clear: the integrity and wellbeing of our natural environment is of central importance to all of them.

Honourable Delegates,
As we move towards the election of our office bearers and adoption of the programme of work during the rest of today's proceedings, let us bear these issues in mind. Let us resolve to taking action, specific to each of our particular national contexts, but in recognition that this is a global cause for which we all need to fight together. Just because Afghanistan is a land-locked country, this doesn't mean that we are unaware of or uncaring about marine plastic pollution or the state of coral reefs around the world. We recognise that the interconnectedness of natural ecosystems means that these issues are as much ours to address as the melting of glaciers or winter air pollution in Kabul.

And it is through a forum such as this one in which we can join hands with our brothers and sisters across the region and say that we are ready for action, together and unified.
Ladies and gentlemen,

I would like to conclude by thanking all Member States once more for the privilege that Afghanistan had of chairing this organisation. I would like to wish Bangladesh well as the chair for the next period and express my appreciation to Bangladesh in advance for the good leadership that I know we will see during the coming term. And not least, I would like to thank all fellow delegates for the demonstration of will to resolve our regional and global environmental crisis that we have seen in the past few days, concluding in today's 15th Governing Council Meeting. I am grateful for our joint commitment towards collaborative action, and am proud to be able to say that Afghanistan is a member of the South Asia Co-operative Environment Programme. May we continue to go from strength to strength as we work together for the good of our environment, our peoples and our planet.

I thank you for your kind attention.

Address by

H. E. Mr. Shah Faisal Kakar
Acting High Commissioner
High Commission of the Islamic Republic of Pakistan in Dhaka
and
Out-going Chairman of IMM-SASP

at the Inaugural Session of the

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Heads of delegations of SACEP member countries
Excellences
Ladies and Gentlemen,

Good morning

First of all, I would like to thank the Government of the Peoples Republic of Bangladesh for inviting Government of Pakistan to participate in the 15th Meeting of the SACEP Governing Council of South Asia Co-operative Environment Programme (SACEP) and the 6th Inter-governmental Meeting of Ministers of the South Asian Seas Programme.

Pakistan being a pioneer member of this esteemed organization and the out-going chair of the Inter-Governmental Meeting of the Ministers of the South Asian Seas Programme is very much glad to see the South Asian Seas Programme growing under the umbrella of as a visible Regional organization.

I am delighted to welcome Government of Bangladesh for taking over the chairmanship of the Inter-Governmental Meeting of the South Asian Seas Programme and would like to wish them all the best in providing dynamic leadership to the programme.

Excellencies

Presently, climate change is one of the most important issues faced by the all of us. I believe that SASP together with SACEP could take the lead role in the South Asian Region in order to effectively deal with the issue of climate change. Pakistan believes that the all member states have a role to play in addressing this critically important issue individually and collectively. In this regard Pakistan will give the fullest support in enhancement of cooperation and knowledge sharing in the South Asian region.

Ladies and Gentlemen,

It is alarming to hear that the waste is getting accumulated in the world's oceans as marine litter day by day. 80 per cent of the waste generated ends up in the ocean due to land-based activities.

We all are aware that the coastal region of South Asia is rich in biological wealth, but also it is known as an area of multiple vulnerabilities.

The constantly expanding coastal population and increasing developmental activities in our region has exacerbated pressure on coastal and marine resources, with growing evidences of degradation of the coastal and marine environment due to continued exploitation.

The Ministry of Climate Change of Government of Pakistan in this regard has taken some efforts to address and reduce marine litter and micro plastic under SACEP and UNEP sponsorship, had conducted a study and developed the marine litter action plan. The report served as a building block for the SACEP regional marine litter action plan. The action plan was a culmination of efforts put in place by 5 member countries of SACEP.

Effective execution of SACEP's regional marine litter action plan will be a milestone to address marine litter in the Arabian Sea. Government of Pakistan therefore looks forward to an effective International facilitation for execution of SACEP's marine litter action plan to curved the manners of marine litter and micro plastic at the regional level.

Furthermore, Government of Pakistan has notified Astola Island and its territory and territorial waters was first marine protected area of Pakistan on 15th June 2017. Pakistan has also initiated a process for declaration of further two marine protected areas Miani Hor and Churna Island.

South Asian Seas Programme (SASP) is the appropriate regional platform to work on the need-based actions for protection and sustainable management of marine environment and the fullest support is extended by Government of Pakistan.

At the end Pakistan is thankful to the SACEP member countries, Government of Bangladesh and the SACEP secretariat for their support during the period of Pakistan's chairmanship of South Asian Seas Programme and is pleased to handover to Bangladesh being the Host Country.

I Thank you all.

Address by Special Guest

H.E Ms. Habibun Nahar, MP.
Honarable Deputy Minister
Ministry of Environment, Forest & Climate Change
Government of the People's Republic of Bangladesh

at the Inaugural Session of the

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Mr. Chairperson
DG SACEP
Honourable Ministers of SACEP Member States
Invited Guests
Distinguished Participants
Ladies and Gentlemen,

Assalamu alaikum and good morning to you all.

First of all, I warmly welcome you all in this Meeting. I feel honoured to be present here and to say a few words before you.

Ladies Gentlemen,
I would like to pay my profound tribute and deepest gratitude to the Father of the Nation, Bangabandhu Sheikh Mujibur Rahman, the greatest Bengalee of all times and the architect of independent Bangladesh.

Ladies and Gentlemen,
We know that South Asia Co-operative Environment Programme (SACEP) was established by the South Asian countries to promote and support protection, management and enhancement of the environment in the South Asian region. SACEP is committed to support the member countries to overcome the issues related to environment, air pollution, waste management, biodiversity protection and other important issues. SACEP has established "the South Asian Nitrogen Hub", which will contribute to protection from marine pollution, air pollution and climate change from land-based sources in South Asia. SACEP/SASP is promoting the London Protocol (LP) in the South Asian Seas Region and working on Sustainable Blue Economy Initiatives in South Asian Seas Region.

Ladies and Gentlemen,
Bangladeshis is one of the largest deltas in the world with a network of 230 rivers and rivulets and a coastline of 710 km's hosting a unique diversity of ecosystems.
The South Asian region is highly vulnerable to the impact of marine pollution. Oil and chemical pollution, marine litters, ballast water, nutrient pollution from industries, chemical loading from agricultural activities, sewage and solid waste are the main source

of marine pollution in South Asian Seas Region. According to the Economic Forum world's ocean may have more plastic debris than fish by the year 2050.

Bangladesh is trying to keep pace with the international legal regime on marine pollution through enacting appropriate legislation with a view to addressing the issue. A wide range of policies and strategies related to marine pollution are adopted and enacted by Government of Bangladesh.

Ladies and Gentlemen,
I do believe SACEP's activities in the area of environment in South Asian countries will definitely contribute to strengthen the friendship and co-operation between the countries.

Ladies and Gentlemen,
The excellent support and cooperation provided by SACEP in the sphere of environment in South Asian countries is really appreciable. It is time to work together with a view, ensuring a better and peaceful region.

I wish you a good health, success and happiness.

Thank you so much.

Address by Special Guest

Hon' Mr. Ahmed Mujthaba
Minister of State for Environment
Republic of Maldives.

at the Inaugural Session of the

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South Asia Co-operative Environment Programme (SACEP)
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Bi-smi llāhi r-raḥmāni r-raḥīm

Chairperson of the Governing Council
Hon' Ministers
Ladies and Gentlemen,

Assalamu alaikum
Very good morning!

Let me first take the opportunity to thank the Government of Bangladesh for the generously hosting this important meeting. On behalf of the Government of Maldives and on my own behalf I would like to thank you once again for the excellent hospitality.

Mr. Chair,
South Asia is a home to globally significant ecosystem and biodiversity. It is also home to more than a billion people. Our growing population and development trajectories have put immense pressure on the environment. From pollution to habitat loss we today face many challenges and addressing these require collective concerted efforts by all of us. SACEP can play an important role in this regard hosteling regional cooperation and addressing environmental challenges that we faced today.

At the Governing Council meeting the Maldives noted the need for SACEP to develop a forward looking strategy strategic approach to better position the organization to respond these emerging needs and challenges.

I am very happy to see the Secretariat at work and presented us with the draft long term strategy for SACEP. I urge all member states to engage with this process and contribute with a view to further improve the strategy before the adoption. I take the opportunity to iterate the support of the Maldives in advancing the work of SACEP.

Mr. Chair,
It will be a remiss of me not to take the opportunity to congratulate SACEP and thank the member states, particularly Sri Lanka for their efforts to successfully see through the endorsement of the Nitrogen Resolution at UNEA early this year. This was the first UNEA resolution that we had developed through SACEP and its member states.

I thank the SACEP Secretariat in taking initiative to bring us together to bring the important issues to the Global platform. I look forward to more such resolutions being developed through SACEP.

Mr. Chair,
I do not intend to take much of your time. Before I conclude let me take the opportunity to thank the common efforts of the Director General and his team. I have confidence on SACEP to continue as a nodal Organization for environmental cooperation in the region and help to further prompt regional collective action.

I would like to thank once again the Government of Bangladesh for hosting us here. I look forward fruitful discussion over the course of today's meetings and I thank once again.

Address by Special Guest

Hon' Mr. Prakash Keshav Javadekar
Minister for Environment, Forest and Climate Change
Republic of India

at the Inaugural Session of the

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Very good morning to everybody

His Excellency Dr A K Abdul Memon
Honorable Minister for Foreign Affairs, People's Republic of Bangladesh
Hon. Shri Md. Shahab Uddin, Minister for Environment , Forests and Climate Change, People's Republic of Bangladesh,
Honorable Shri Ahmed Mujthaba, Minister of State for Environment, Republic of Maldives,
Honorable Ms. Habibun Nahar, Deputy Minister for Environment, Forests and Climate Change, People's Republic of Bangladesh
Delegates to the 15th Governing Council Meeting of SACEP
Ladies and gentlemen.

His Excellency Dr A K Abdul Memon, Honorable Minister for Foreign Affairs, People's Republic of Bangladesh ; Hon. Shri Md. Shahab Uddin, Minister for Environment , Forests and Climate Change, People's Republic of Bangladesh; Honorable Shri Ahmed Mujthaba, Minister of State for Environment , Republic of Maldives ; Honorable Ms. Habibun Nahar, Deputy Minister for Environment, Forests and Climate Change, People's Republic of Bangladesh, delegates to the 15th Governing Council meeting of SACEP , ladies and gentlemen. It gives me great pleasure to address this august gathering.
India attaches great importance to its engagement with SACEP in furthering cooperation and coordinated response to environmental issues in the region. Hon'ble Prime Minister Narendra Modi ji has already raised the bar on global cooperation, highlighting 'Sabka Sath, Sabka Vikas', that refers to the values of cooperation and collaboration for development of all. SACEP is a perfect platform to voice the concerns of this large and important part of the globe and find collaborative solutions to pressing environmental challenges.

India is one of the founding members of SACEP, and I am happy to announce that it has committed funds of 1,50,000 USD for building a floor of the proposed SACEP Secretariat and official residence building, to strengthen institutional arrangements. SACEP has an important mandate to foster regional environmental cooperation , and it is equally important that its institutional capacity be strengthened to help deliver its mandate.

With rising prosperity of millions of people around the globe, there is increase in the pressures on natural resources and that's why there is global consensus that sustainable prosperity on the planet is impossible without taking care of environment and ecosystems. Cities are engines of growth worldwide and this is the case for South Asia too. Cities contribute significantly to GDP, tax revenues and job opportunities. Rapid urbanization has led to an urban population boom. However, this unprecedented growth has led to certain environmental challenges, making our cities vulnerable towards increased water stress, heat island effect, growing carbon emissions of urban origins, severity of extreme weather events such as urban floods and droughts , that are being experienced in all the mega cities in this region.

Considering these facts, it is obvious that decisions made by South Asia will be significant in global sustainability equation during this century.

In this part of South Asia – Bangladesh, India, Pakistan, Maldives and Sri Lanka share Indian Ocean and constitute South Asian Seas (SAS) region, which in recent past has become highly vulnerable to the impact of marine pollution. I am glad that we are discussing such common challenges towards economic and social development and are trying to work for environmental protection not only at country but at regional levels too.

India, has set a target to become a 5 trillion Dollar economy by 2024 . This goal is aligned with meeting the Sustainable Development Goals (SDGs), achieving commitments under Paris Agreement and addressing other environmental issues like air and water pollution. Government of India's intention to invest Rs. 100 lakh crore (US$ 1.4 trillion) in infrastructure in next 5 years includes target of significant investments in clean energy, better waste management, afforestation, smart cities, urban green spaces, electric mobility, public transport, sanitation, air and water pollution control . I understand SACEP has been working on some of these pressing challenges and India would continue to support SACEP workplans technically and financially.

I would now like to highlight some key policies and programs initiated by GOI in these priority areas. Plastics has become a part of everyone's life and India is no exception. Indian plastics industry's growth rate is one of the highest in the world and due to rapidly expanding incomes, consumption of plastic is likely to increase. To address this challenge, many steps have already been taken with strong public engagement. We amended the Plastic Waste Management Rules in 2016 to make source segregation of waste mandatory and introduced Extended Producer Responsibility (EPR) whereby brand owners and

companies producing or using plastics are held responsible for management of plastic waste. During World Environment Day 2018 Hon'ble Prime Minister Mr. Narendra Modi pledged that India will ban all single use plastic by 2022. Further, India has also imposed a complete ban on plastic waste imports.

The Swachh Bharat Mission (Clean India Mission) is our flagship program with funding of US$ 7.3 billion focusing not just on cleanliness and sanitation but also on scientific processing of Municipal Solid Waste (MSW) through reuse, recycling, composting etc. We have also put in place a regulatory regime for management of hazardous wastes like e-wastes, biomedical wastes along with plastic waste, as already mentioned.

I am happy to note that the South Asian Seas Program, an important component of SACEP, has done work towards protection of the marine environment by developing a regional marine litter action plan and strategy for implementation. I have been informed that this has paved the way for getting in principle approval from the World Bank with a grant of USD 40 million for a project on 'Plastic Free Rivers and Seas in South Asia'. I hope the proposed project is developed in consultation with SACEP member countries, in keeping with their priorities and is implemented successfully in the region.

As a signatory to the Paris Agreement, India is committed to achieve its Nationally Determined Contributions (NDCs) of reducing its emission intensity of its GDP by 33-35% by 2030 from 2005 levels and to create an additional carbon sink of 2.5 to 3 billion tonnes of CO2 equivalent. Further, we will also ensure that 40 % of cumulative installed electric capacity comes from non-fossil fuel based sources. India and France have together launched the International Solar Alliance of nations to tap the energy of the Sun, the perennial and cleanest source of energy. As a responsible member of the Global Community, India is committed to undertake mitigation and adaptation actions to combat climate change, in keeping with its National circumstances and development imperatives. In the coming years, several new initiatives with substantial climate benefits have been planned such as (i) encouraging sustainable mobility with more than 30 per cent of vehicles as e-vehicles by 2030 (ii) pursue a goal of 20 per cent blending of ethanol in petrol and 5 per cent blending of bio-diesel in diesel by 2030 (iii) Promote the use of Compressed Bio Gas (CBG) from various waste / biomass sources like agricultural residue, cattle dung, sugarcane press mud, municipal solid waste etc., through scheme on Sustainable Alternative Towards Affordable Transportation (SATAT) (iv)expand and widen Pradhan Mantri Ujjwala Yojana (PMUY) aimed at reducing deforestation and safeguarding the health of women & children by providing them with LPG as clean cooking fuel (v) Increase

the share of non-fossil fuel sources in the energy mix with plan to install a cumulative 175 GW of renewable power by 2022 and further enhance it to 450 GW and (vi) Launch of Water Conservation Campaign ('Jal Shakti Abhiyan') with five important interventions including water conservation and rainwater harvesting; renovation of traditional and other water bodies/tanks, reuse; bore well recharge structures; watershed development; and intensive afforestation. Further, with a view to provide holistic solutions through resource efficiency, we are formulating a national policy for resource efficiency to reduce burden on the environment and to strengthen the sustainability and competitiveness of our economy.

I am glad to note that the Regional Oil and Chemical Spill Contingency Plan has been endorsed by all member states of South Asian Seas Program along with the Ballast water management strategies for the region. This will play an important role in preserving marine and coastal biodiversity. India is happy to support further research and the SASP work plan in this area.

We are committed to equitable, inclusive and sustainable development model of growth. SACEP countries have strong understanding of our common challenges, and the cooperation can collectively provide affordable and practical solutions to many problems faced by our people. I request this forum to discuss on ways and means to take this cooperation forward.

On behalf of India I wish the DG and staff of SACEP the very best for their work and hope that the significant steps taken by SACEP in the recent past would help in environmental protection and sustainable development of the region as a whole.

Thank you

Address by Special Guest

H.E Mr. Md. Shahab Uddin, MP.
Minister, Ministry of Environment, Forest & Climate Change
Government of the People's Republic of Bangladesh

at the Inaugural Session of the

15th Meeting of the Governing Council of
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Good Morning

Honourable Chief Guest, Minister for Foreign Affairs
Distinguished Ministers and Representative from the Member Countries of SACEP
Director General of SACEP
Distinguished Delegates
Guests and Observers from Bangladesh and abroad,
Ladies and Gentlemen,

As the Minister of the Environment, Forest and Climate Change of the host country, for the 15th meeting of the Governing Council of SACEP and 6th Inter-governmental meeting of Ministers of SASP, I am greatly honoured to have His Excellency Honourable Minister for Foreign Affairs Dr. A. K. Abdul Momen, MP to inaugurate this meeting as Chief Guest. On behalf of the Government of Bangladesh, I would like to welcome distinguished Ministers, Representatives, Members and Delegates from the member countries of SACEP and SASP, delegates from the UN organizations and all those present here.

Distinguished Delegates,
First of all, I pay my profound -tribute and deepest gratitude to the Father of the Nation, Bangabandhu Sheikh Mujibur Rahman, the architect of independent Bangladesh. I remember with profound respect, all the martyrs of the fateful night of August 1975. I also pay tribute to the foremost competent comrades of the Father of the Nation who was killed in jail, thirty lakh martyrs in the war of liberation, all the valiant freedom fighters and two lakh women who were brutally persecuted during the war. I pray to the Almighty Allah for the salvation of their souls.

Ladies and Gentlemen,
We live in the region where the environment is fragile and still under great pressure. Hence, SACEP has a difficult but necessary task to save our environment.
South Asia is home to a lot of people whose basic human dignity has been denied. Population pressure and poverty have led to unsustainable exploitation of our natural resources. Most our forest have been destroyed. Our rivers and what's left of it have been polluted. The flora and fauna are endangered. Cities are overcrowded and unhealthy.

Recurring natural calamities, the intensity of which is increasing year by year. Cold spells and heat wave kill more people. Land erosion and flooding are common phenomenon. Rainfall is becoming unpredictable and erratic. After all, South Asia has not been spared the effect of global climate change and its negative fallout.

Distinguished Delegates,
Protection of the environment, however, is indispensable for a future of our region. We have too much at stake. SACEP must take a leadership role and work closely with UNEP and other bodies to coordinate regional and international efforts. We must promote curative and preventive measures.

Distinguished Delegates, Ladies and Gentlemen,
Article 18A of the Constitution of Bangladesh, proclaims that "the State shall endeavour to protect and improve the environment and to preserve and safeguard the natural resource, biodiversity, wetlands, forests and wild life for the present and future citizens." Inserting this article in the Supreme Law is a milestone in the history of Bangladesh.
Under the dynamic leadership of Her Excellency Honourable Prime Minister Sheikh Hasina, the present Awami League Government has attached highest priority to protection of the environment as well as wild life to attain Sustainable Development Goals (SDGs) declared by the United Nations.

Excellences,
Distinguished Delegates,
Ladies and gentlemen,

Countries alone cannot find solutions for certain problems that we face today. Regional approach is therefore imperative. Globalization is inevitable. Therefore, the role of SACEP that has a great experience since its inception in 1981.
I think the deliberations during the last three days of the senior officials of the National Focal Points have led to make necessary recommendations for the future SACEP. I am sure that by the end of this opening session, we would be able to adopt a resolution to ensure the commitment for the proposed programme for SACEP to function efficiently and effectively in its future endeavour.

I firmly believe that through the collaborative efforts of the governments and every individual in the society of SACEP member countries, we will be able to implement the initiatives which are going to be taken by today's GC Meeting of SACEP and IMM of SASP. I wish this important meeting success.

Thank you
Joy Bangla
Joy Bangabandhu
Long Live Bangladesh.

Address by Chief Guest

H.E Dr. A. K. Abdul Momen MP.
Hon' Minister, Ministry of Foreign Affairs
Government of the People's Republic of Bangladesh

at the Inaugural Session of the

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Hon' Minister Shahab Uddin, MP. Minister of Environment, Forest and Climate Change, Bangladesh
Hon' Minister Prakash Keshav Javadekar, Minister for Environment, Forest and Climate Change, India
Hon' Ahmed Mujthaba, Minister of State for environment, Maldives
Hon' Minister Madam Habibun Nahar MP. Deputy Minister of Environment, Forest and Climate Change, Bangladesh
Dr. Abas Basir, Director General of SACEP
The Secretary General of CITES
Distinguished Delegates
Excellencies
Ladies and Gentlemen

Good morning!

I am delighted to be here at the inauguration of the 15th meeting of the Governing Council of South Asia Co-operative Environment Programme. I must commend Ministry of environment, Forest and Climate Change the SACEP Secretariat and all other who collaborated in organizing this event. Let me appreciate and congratulate the SACEP members for the continues efforts in promoting regional cooperation in environment and climate change issues in the context of sustainable development.

Excellencies,
You are aware that Bangladesh has offend been cited as a development miracle despite vulnerability to climate change impacts, Bangladesh continue to prosper over last 10 years. Bangladesh reputed the heights economic growth among the list of 26 countries the last 10 years with 188% expunction of our Gross GDP followed by Ethiopia, China and India. This year GDP growth has reached to 8.13% and aspire ADP highest amongst 45 Asia Pacific countries. This development miracle has a secret and let me call it the Bangladesh secret, Sheikh Hasina magic. It is the collective journey towards fulfilment of the dream of making Bangladesh a Sonar Bangla, the golden – by the Father of the Nation Bangabandhu Sheik Mujibur Rahman. And thanks to the vision, pragmatism, leadership and statesmanship by his daughter, our Hon' Prime Minister Sheikh Hasina and the dynamic people of Bangladesh for achieving this miracle. Bangladesh is well and truly in its journey to a developing country by 2021 and hopefully will attain the SDGs by 2030

becoming a developed country by 2041 and the prosperous delta by 2100. Towards this end we continue to embark the pragmatic programme for the rapid economic and social development. Poverty eradication, sustainable growth, protection of environment, human resources development and digitization are some of the features of the development strategy. Over the past 10 years we have been adopting progressive and timely policies and actions that have resulted in impressive inclusive development. Poverty and inequality are two major obstacles for development besides climate change.

Bangladesh is one of the firstest poverty reduction race in the world with poverty dropping from around 42% in 2006 to around 21.3% in 2018. And extreme poverty from 28% to 11.3%. Our externship goal development initiatives like my village, my town etc, etc have contributed to inclusive development. Bangladesh has been ranked 34 in the World Economic Forums inclusive development index living are the South Asian countries way behind. In our development approach we want inclusive development no one is left behind. Ladies and Gentlemen,

Although we are doing well, we have faced with a big challenge and it is erratic climatic change. Our vulnerability to climate change impacts is well evidenced and well documented. I must not bore you with fact and figures to illustrate Bangladesh is one of the world's most vulnerable countries to climate change rather I would reiterate how Bangladesh will become one of the most resilient countries in the world. Have a just for your information one meteorize in the sea level is likely to uproot nearly 30 million people of Bangladesh and climate vulnerability is costing nearly 1-3% to be annual GDP growth rate. Nevertheless, with our limited resources we addressing the consequences of climate change despite being a developing country we spent more than 1% of GDP in combating climate change. We are pushing a low carbon amusing a low carbon development path with increasing emphasis on renewable energy, energy efficiency and energy conservation.

Over the last few years we have been stalled more than 5 million solar home systems in off grid areas and more than 3.5 million improved crook stocks. We have built over 14,000 cycloid shelters and we mobilized nearly 42,000 volunteers for cyclone disaster warning at ours notice. We have taken initiatives to increase tree coverage from 22% to 24% in the next 5 years. So far Bangladesh has created 200,000 hectares of coastal forest as shelter belt to protect from tidal surges and waves. Bangladesh is also successfully managing 600,000 hectares of Sundarban mangrove forest a great carbon sink. We have been engaged in creating resilient forests in offshore areas to protect forest depending communities and habitats important in forest diversity.

Excellencies,

Bangladesh being one of the most vulnerable countries to climate change is also at the forefront for learning how to tackle the adverse impacts of climate change. This is a great opportunity for us to demonstrate our own strategy to adapt to climate change. Well resilience as well as share our knowledge and experience building climate, setting up climate adaptation center in Bangladesh to share our experience and expertise to other climate vulnerable countries. Tackling climate change is directly linked with sustainable development and resilience building. In line with this perspective under the leadership of Prime Minister Sheik Hasina Bangladesh is carrying forward its efforts for sustainable development with specific blends for carbon budgeting, decarbonization of manufacturing pathways and low carbon industrialization. Considering multi-dimensional vulnerabilities fall by climate change and disasters our government has recently adapted delta plan 2100 which will provide Bangladesh with the sustainable development pathway for the next 100 years.

Distinguished Delegates,

The halting of the global climate change and reduce disaster risk is largely depending on the implementation of the 2030 agenda.

The recently adapted global compact for migration has also exonerate that investing in escalating global cooperation for climate change mitigation adaptation would country berede to the elimination of the adverse diverse and structural factors that compel people to leave their country of origin.

You all know we have given sheltered to 1.1 million forcibly displaced Rohingya from Myanmar in our 6800 acres of forestland in Kakes Bazar. It is an extreme vulnerable location and their presence is affecting our ecosystem. It is the responsibility of global leadership specially the South Asian Partners to do more to ensure the quick reparation back to Myanmar. It is an issue solved between Myanmar and its people. Myanmar created this problem and solution also lies with them. Bangladesh wants their safe secure and dignified return of the Myanmar displaced people known as Rohingya.

Excellencies,

Protected understood ecosystems and wild diversity can help mitigate climate change and provide increased resilience in the facing mounting human pressures and natural disasters. Healthy ecosystems produce multiple benefits for communities that rely on

them. The SDGs focus on preserving and sustainably using the ancestral spices and ecosystems. Achieving SGDs critically depend on the availability of resources about the money and technology. To achieve sustainable development goals by 2030 we need to strengthen our commitment to work collectively in partnership, in collaboration, in mobilizing resources both financial and technology and utilizing available knowledge information for mutual betterment. I personally see a vast area of possible cooperation under the – of SACEP. Our active collaboration and cooperation will be recruital for successful implementation of the SDGs as well as the Paris climate agreement.

I hope this meeting of SACEP will identify the possible areas of cooperation and bring the SACEP member states closer to each other for the further cooperation and collaboration and conservation and management of natural resources of the region. I wish the meeting a great success.

Joy Bangla
Joy Bangabandhu

Address by Chairperson

Mr. Abdullah Al Mohsin Chowdhury
Secretary
Ministry of Environment, Forest and Climate Change
Government of the People's Republic of Bangladesh

at the Inaugural Session of the

15th Meeting of the Governing Council of
South Asia Co-operative Environment Programme (SACEP)
&
6th Intergovernmental Meeting of Ministers of
South Asian Seas Programme

held in Dhaka, Bangladesh

6th November 2019

Hon' Chief Guest, Dr. A.K. Abdul Momen, MP. Hon' Minister for Foreign Affairs, Bangladesh
Hon' Special Guest Mr. Md. Shahab Uddin, MP. Minister for Environment, Forest and Climate Change of Bangladesh
Hon' Special Guest Mr. Prakash Keshav Javadekar, Minister for Environment, Forest and Climate Change for India
Hon' Mr. Ahamed Mujthaba, Minister of State for Environment, Republic of Maldives
Hon' Deputy Minister, Ms. Habibun Nahar, MP. Ministry of Environment, Forest and Climate Change of Bangladesh.
Distinguished Delegates from Member Countries
Director General of SACEP
Distinguished participants from various ministries and divisions, International Organizations
Distinguished Diplomats from member countries
Ladies and Gentlemen

Assalamu alaikum and very good morning!

On behalf of the Government of Bangladesh and my behalf I warmly welcome you all in this historic meeting. I'm honored and delighted to be here and to utter a few words in front of you.

Ladies and Gentlemen,
We are happy to know that South Asia Cooperative Environment Programme is working on diverse issues like promoting, supporting, protection, management and assessment of the environment of the region. SACEP is committed to support the member countries to combat air pollution and marine pollution. SACEP is working on waste management, biodiversity protection and other important issues. SACEP and South Asian Seas Programme is also working on sustainable blue economy activities in this region. We already know that SACEP is established South Asia Nitrogen Hub which is contributing to protect from marine pollution, air pollution and climate change from land waste sources in this South Asia region. You already know from our Hon' Ministers' speech that the constitution of Bangladesh the Supreme Law of the country has been amended in 2011 to

include protection and improvement of environment and biodiversity under Article 18 this constitution. This is now our constitutional obligation to improve the environment of Bangladesh.

Ladies and Gentlemen,
Bangladesh is already enacted a number of legislations which addresses the issues like waste management, combating air pollution, marine pollution, protecting biodiversity and improving climate changes. Some of the related acts, rules, policies are Bangladesh Environmental Conservation Act, Bangladesh Environmental Conservation Rule, Medical Waste Management, National Environment Policy, Hazardous Material and Ship Breaking Waste Management Rule, National 3R Strategy for Waste Management etc.

We are also formulated Bangladesh climate change strategy and action plan in 2009 to combat with climate change. With direct initiative Hon' Prime Minister Sheik Hasina Bangladesh established Dedicated Trust Fund to combat the climate change issues in Bangladesh which is called Bangladesh Climate Change Trust Fund. And we are implementing immediate few emergency projects to make the peoples' resilience and adapted with the adverse impacts of climate change. Bangladesh is also now working to prepare a linear act and to formulate saluted management policy. We are also working to introduce extended procedural responsibility.

I highly appreciate the SACEP for preparing a draft regional marine litter action plan for South Asia Seas region. Presently South Asia Seas Programme is collaborating with UN Environmental Programme to access member states for developing national marine litter action plan. SACEP and SASP is working to facilitate and coordinate management of coral reef and associated ecosystems at the national level and to promote collaborate action at the regional level. SACEP and South Asia Seas Programme have prepared a draft regional marine and coastal biodiversity strategy for the South Asia Seas region to address the issue attending the marine biodiversity reflecting in this 2030 target in marine and coastal habitats. It is a matter of satisfaction that SACEP has prepared a draft SACEP strategy 2020 to 2030.

I appreciate the able leader of all the Environmental Ministers and Heads of Delegates in providing necessary guidance and thank you for being here today with your commitment.

We appreciate SACEP for providing the excellent support and cooperation in the arena of the environment in South Asia countries. We do believe this meeting will bring the SACEP

member states close to each other for finding new and promising magnitude to all the efforts and contributions.

We wish you a good health, peace and success.

Thank you

Vote of Thanks Delivered by

Dr. A. K. M. Rafique Ahammed
Director General
Department of Environment
Government of the People's Republic of Bangladesh

at the Inaugural Session of the

15th Meeting of the Governing Council of
South Asia Co-operative Environment Programme (SACEP)
&
6th Intergovernmental Meeting of Ministers of
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Hon' Chief Guest H.E Mr. Abdul Momen, MP
Hon' Minister, Ministry of Foreign Affairs
Hon' Special Guest H.E Mr. Md. Shahab Uddin, MP.
Hon' Minister, Ministry of Environment, Forestry and Climate Change
H.E Mr. Prakash Keshav Javadekar Hon' Minister for Environment, Forestry and Climate Change, India
H.E Mr. Ahmed Mujthaba, Minister of States of Environment of Maldives
H.E Ms. Habibun Nahar, Deputy Minister, Ministry of Environment, Forestry and Climate Change
Hon' Chair Mr. Abdullah Al Mohsin Chowdhury, Secretary, Ministry of Environment, Forestry and Climate Change.
Heads of Delegations of SACEP countries,
Hon Director General of SACEP Mr. Abas Basir,
Distinguished National Focal Points from member countries,
Delegations from UN and other International Organizations,
Senior Officials from Ministry of Environment, Forestry and Climate Change and other Organizations,
Representatives from various media,
My Colleagues, Excellences, Distinguished Guests, Ladies and Gentlemen,

Good morning to you all!

It is indeed my great pleasure to offer vote of thanks on the behalf of the Ministry Environment, Forestry and Climate Change, Bangladesh at the 15th meeting of the Governing Council of South Asia Cooperative Environment Programme and 6th Inter Governmental Meeting of Ministers of South Asian Seas Programme.

We are honored by the gracious presence of you all at this inaugural session. I would like to extend my heartfelt thanks to the speakers, guests and the participants of the session. Particularly, I'd like to offer our sincere thanks and gratitude to the Chief Guest and Special Guest of the inauguration for their gracious presence at the event despite their very busy schedule. We are highly inspired by your sightful and motivational words. We are thankful to the Chair of today's session for his able leadership, continues vision and guidance in organizing the event.

The inspiring remarks of you all have said will encourage the deliberations of the Ministerial Meeting. The vision for stronger SACEP will surely guide the discussions towards the successful outcome. We are truly intended to all of you for this. It is our obligation and responsibility to carry forward the message of environmentally sustainable South Asia for the benefit of our future generations. We believe that with the collaborative efforts of our Governments and development partners we will be able to tackle the environmental challenges we are facing in our region today.

We are exceedingly glad having Hon' Ministers and members of Delegation from SACEP member countries as well as our development partners in the meeting.

I would like to express my sincere thanks and the gratitude to the ministers and the delegates for the available contributions to the meeting. This is for the 2nd time the Government of Bangladesh is hosting the meeting of the Governing Council of SACEP. We hope that we will have the fruitful discussions during the meetings of national focal points of SACEP and the meeting of national focal points of SASP.

I would like to offer my thankful appreciations to the Director General of SACEP and his team for their tireless efforts and hard work while organizing this meeting.

I would also like to thank my colleagues for their excellent support and whole hearted cooperation to make this event a success.

Excellencies,
The Bangladesh is at its best at this moment. The winter festivities are able to begin. Dhaka will also meet you shopping and sightseeing dates. We would urge up you to take sometime off and enjoy our beautiful capital city.

Finally, we would once again extend our sincere gratitude and grateful thanks to all of you and whish our what its get very peace and enjoyable stay at Dhaka.

I thank you.

Annex 13
6IMM.SASP

SOUTH ASIAN SEAS PROGRAMME

6TH INTER-GOVERNMENTAL MEETING OF THE MINISTERS

Dhaka, Bangladesh

6th November 2019

DRAFT PROVISIONAL AGENDA

1. Opening of the Meeting
2. Election of Office Bearers & Country Statements
3. Adoption of Agenda and Organisation of Work
4. Statements by United Nations Agencies, International / Regional Organisations and Aid Consortia
5. Presentation of Report of the Preparatory Meeting of National Focal Points by the Rapporteur
6. Endorsement of Recommendations Agreed Upon at The Preparatory Meeting of National Focal Points
   a) Institutional
   b) Projects & Programmes
   c) Financial
7. Approval of the Annual Audited Reports of Accounts for years 2011 to 2017
8. Any Other Business
9. Adoption of the Meeting Report
10. Closure of Meeting

Annex 13
6IMM.SASP

SOUTH ASIAN SEAS PROGRAMME

6TH INTER-GOVERNMENTAL MEETING OF THE MINISTERS

Dhaka, Bangladesh
6TH NOVEMBER 2019

ANNOTATED AGENDA

1. OPENING OF THE MEETING

It is expected that a High Ranking Dignitary from the Government of Pakistan will inaugurate the Meeting.

2. ELECTION OF OFFICE BEARERS & COUNTRY STATEMENTS

As agreed at the Meeting of Plenipotentiaries of the South Asian Seas Programme in March 1995 and as laid down in the South Asian Seas Action Plan, the Rules of Procedure of the Governing Council of SACEP will be applied mutatis mutandis for the conduct of the Inter-governmental Meeting of the Ministers (IMM) of SAS. Accordingly, a new Chairman will be elected in a manner consistent with the Articles of Association of SACEP. One or more Vice Chairman, a Rapporteur and other officials may also be appointed by the IMM. The Director General of SACEP shall function as the Secretary of the IMM during its sessions. The Heads of Member of Country Delegations will then be expected to present their Country Statements.

3. ADOPTION OF AGENDA AND ORGANISATION OF WORK

The Meeting will consider the Provisional Agenda for adoption. Any matter regarding the Organisation of Work and the Sessions may also be considered.

4. STATEMENTS BY UNITED NATIONS AGENCIES, INTERNATIONAL / REGIONAL ORGANISATIONS AND AID CONSORTIA

Under this Agenda Item, the representatives of United Nations Agencies, International / Regional Organisations and Aid Consortia may wish to make Statements on matters relating to the activities of their respective Organisations which may be of interest to the Intergovernmental Meeting of Ministers regarding the Programme activities of interest to South Asian Seas Region, inputs to the activities and programmes of South Asian Seas Programme in terms of collaboration and programme support, and such matters which they may wish to bring to the notice of the Intergovernmental Meeting of Ministers

5. PRESENTATION OF REPORT OF THE PREPARATORY MEETING OF NATIONAL FOCAL POINTS BY THE RAPPORTEUR

The Rapporteur would present to the meeting the report of the Preparatory Meeting of National Focal Points

6. ENDORSEMENT OF RECOMMENDATIONS AGREED UPON AT THE PREPARATORY MEETING OF NATIONAL FOCAL POINTS

The Preparatory Meeting of National Focal Points in its deliberations came up with the set of recommendations under the following broad areas

a) Institutional

b) Projects & Programmes

c) Financial

This Meeting is requested to consider these recommendations and endorse the recommendations.

7. APPROVAL OF THE ANNUAL AUDITED REPORTS OF ACCOUNTS FOR YEARS 2011 and 2017

Under this agenda item, based on the recommendations of the Preparatory Meeting of National Focal Points, the meeting is requested to approve the Annual Audited Reports of Accounts for the years 2011 and 2017.

8. ANY OTHER BUSINESS

Under this Agenda Item, The Sixth Intergovernmental Meeting of Ministers may wish to discuss any other relevant matters that may be raised by the representatives participating at the Meeting or by the Secretariat.

9. ADOPTION OF THE MEETING REPORT

The Rapporteur will present the Draft Meeting Report of the Intergovernmental Meeting of Ministers for its consideration and adoption.

10. CLOSURE OF MEETING

Any representative participating in the Meeting may wish to make concluding statements regarding the deliberations at the Meeting and its achievements. The Chairman will finally declare the Meeting closed.

Country Statement by

Cdr. P. K. Srivastava
Scientist-F
Ministry of Earth Sciences
Republic of India

at the

6th Inter-governmental Meeting of Ministers of South Asian Seas Programme (SASP)

held in Dhaka, Bangladesh

6th November 2019

Thank you Chair,

On behalf of India I would like to make the country statement.

Hon' Ministers, Excellencies and distinguished Delegates to the 6th Inter Governmental meeting of South Asian Seas Programme, Representatives,

It is my privilege to address this august gathering. We understand that the coastal and marine diversity of South Asia is unique and fragile. It ranges from the thick mangroves of Sundarbans to the coral reefs of the Maldives group of Islands to the highly vulnerable eco systems of the estuaries of the Indu- Pakistan Gangetic belt. The Government of India very much conscious about the need of preservation and conservation of marine environment and has been taking several steps towards this. Government of India is delighted that the South Asian Seas Programme and important component of SACEP has done some plenary work towards protection of marine environment like development of a Regional Marine Litter Action Plan and the strategy for regional implementation. We understand that this significant work has gone in a long way for preparing a new programme which has been approved in principle by the World Bank with a proposed grant of approximately US 40 million and the project is called "Plastic free rivers and seas for South Asia." The successful implementation of this World Bank supported project would provide the much needed visibility and stature to South Asia Seas Programme as an important regional organization that can produce quality work for the benefit of the population of South Asia.

India also understands that the regional oil and chemical spill contingency plan which has been endorsed by all the member states of South Asian Seas Programme have been due to the efforts taking by the SASP Secretariat and urges the SASP to conduct regional plan meeting in this regard at an early date. The national implementing agencies for the ballast water management strategies which were proposed by Maldives for the region and the activities related to the marine coastal biodiversity strategy areas are also very important and India is happy to support and participate in these activities.

India has already signed the "clean seas" campaign of UNEA and has been undertaking coastal cleanup programmes not only for cleaning our beaches but also to sensitized the

local community, the importance of maintaining a clean coast which leads to not only boosting tourism but also local livelihood opportunities. This is one of the reveler programmes of SASP and India would continue to support it in future also.

I would like to also take this opportunity to inform the member states that India has developed a coastal water quality index for the waters of India and provided the national indicator framework for SDG 14, the life below water.

South Asian Seas programme and member countries are welcome to adopt the same for the region. We understand that the continued support of the development partners specially, UNEP and IMO have gone a long way in helping SASP developing capacity in the thematic areas in the region and work towards those targets which have priority resilience with the population of South Asian countries. We hope that the support will continue in future also towards the South Asian Seas programme specially, on coral reef monitoring and adaptation racialization and also sustainable blue economy initiatives.

In conclusion, on behalf of Government of India I wish to congratulate and thank DG SACEP and SASP staff, SACEP staff for their endeavors and providing excellent support during the meetings and last but not the least I would like to congratulate Bangladesh for assuming chairmanship of SASP and for hosting us for last few days in an excellent manner.

Thank you so much.

Marine and Coastal Biodiversity Strategy for the South Asian Seas Region:

Living in Harmony with our Oceans and Coasts

DISCLAIMER

The contents of this Regional Marine and Coastal biodiversity Strategy document do not necessarily reflect the views of SACEP or contributory organizations. The designations employed and the presentations do not imply the expression of any option whatsoever on the part of a SACEP or contributory organizations concerning the legal status of any country, territory, city or area its authority or concerning the delimitations of its frontiers or boundaries.

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Preface

South Asia's marine and coastal ecosystems are of paramount importance for the social and economic wellbeing of the region, with activities such as fishing, shrimp farming, tourism and shipping contributing to income, food security and the livelihoods of millions of people, many of which are poor. Yet, despite their immense importance, these ecosystems are being rapidly degraded, due to unsustainable development, overpopulation of coastal areas, overexploitation of resources, land-based pollution and habitat modification and destruction. Climate change is exacerbating these negative impacts. An urgent regional response is needed to restore and maintain healthy coastal and marine habitats and species, ensuring coastal protection and the provision of ecosystem services. Of all the initiatives that have been launched at national at international levels with the aim of addressing these issues, the most relevant for our region is the South Asian Seas Action Plan (SASAP), which was developed under the umbrella of the UNEP Regional Seas Programme and adopted in 1995 by the five South Asian maritime countries, Bangladesh, India, Maldives, Pakistan and Sri Lanka. The objective of SASAP is to protect and manage the marine environment and related coastal ecosystems of the South Asian Seas (SAS) region, through the promotion of sustainable development. The SASAP emphasizes the need for establishing a regional cooperative network of activities concerning concrete subjects of mutual interest for the whole region.

It is within this spirit of cooperation and commitment to sustainable development that this document, the **Regional Marine and Coastal Biodiversity Strategy (MCBS) for the South Asian Seas Region**, has been framed. The aim of the MCBS is to address the issues threatening marine biodiversity, by supporting the achievement of the Aichi Biodiversity, also reflected in SDG'S 2030 targets in marine and coastal habitats through strengthening implementation of and coherence of actions under National Biodiversity Strategies and Action Plans (NBSAP) for 2011-2030 period.

The development of the MCBS was approved by the South Asian Sea's (SAS) Inter-ministerial Meeting in 2013. This **First Order Draft (FOD) of the Regional Marine and Coastal Biodiversity Strategy** provides initial identification of **Regional Targets and Action Plans** for the SAS region, prepared based on thematic desk review studies conducted during 2013/2014 and regional technical workshop held in Colombo in July 2014. This document was then shared amongst the workshop participants for comments. The amended FOD was again circulated for further enhancement of the document amended with comments received from member states participants of SASP based on the findings of Review Reports and vetted finally with minor modification during the Consultative Workshop in Maldives, Maldives, from 12-13 September 2018. The Final strategy document will be presented to the Sixth Inter-governmental Meeting of Ministers, of the South Asian Seas Programme (SASP) for necessary endorsement as well as adoption by the SAS member countries.

The document is divided in three main sections:

Part I, A Common Vision for the Marine and Coastal Biodiversity of the SAS Region, introduces the SAS region, presenting the Vision and Mission of the Strategy, and the Rationale for the Regional Strategy.

Part II, Marine and Coastal Biodiversity in South Asian Seas; Status, Trends and Threats provides background information on each of the six thematic areas of the Strategy, including key conclusions and recommendations related to the Aichi Targets that are relevant to marine and coastal biodiversity.

Part III, The Way Forward, provides the Framework for Action of the Strategy, including the main Regional, Aichi Targets reflected in SDGs 2030, Action Plan, Communication and Monitoring and Evaluation Strategies, Financing and Partnership possibilities.

Dr. Abas Basir
Director General
South Asian Co-operative Programme

Acknowledgment:

On behalf of the South Asia Cooperative Environment Programme (SACEP), I would like to appreciate the support extended by the member countries of the South Asian Seas Programme (SASP) and information sharing for drafting the regional marine litter action plan for South Asian Seas (SAS) Region. The financial support for this Project provided by UNEP and by BOBLME Project towards the Colombo and Maldives workshop are highly acknowledged.

The contributions made by the participants and presenters at the Colombo workshop July 2014 and regional consultative workshop at Maldives held on September 2018 are gratefully acknowledged. In particular, we are thankful for the active participation by the representatives of SACEP maritime member countries: Bangladesh, India, Maldives, Pakistan and Sri Lanka. We thank Dr. Indumathie Hewawasam, Marine Policy Specialist, who was fundamental in facilitating the workshop and preparing the first version of the First Order Draft of the Strategy. We also thank representatives of regional organizations, including Wenxi Zhu, Head, Regional Office for the Western Pacific (WESTPAC), UNESCO, Dr. Y.S. Yadava, Bay of Bengal Program, Inter-governmental Organization, Mr. Arjan Rajasuriya, Project Manager, Marine & Coastal Thematic Area, IUCN, Sri Lanka, Ms. Cristi Marie Nazawa, Regional Director, BirdLife International (Asia), Mr. Douglas Hykle, Coordinator /Senior CMS Advisor, IOSEA Marine Turtle MoU Secretariat, , Dr. SOMBOON Siriraksophon, Policy and Progam Coordinator, SEAFDEC Secretariat, Bangkok, Thailand, Dr. Somkiat Khokiattiwong, (BOBLME NSC), Thailand, CBD and CITES Secretariats, Ibrahim Naeem, Director/SAARC CZMC, Ms. Ramya Rajagopalan, International Collective in Support of Fishworkers, Dr. Sevvandi Jayakody, Department of Aquaculture & Fisheries Wayamba University of Sri Lanka and Ms Anouk Illangakoon, Researcher on Marine Mammals .

SACEP also wishes to acknowledge the tremendous constructive inputs by Jerker Tamelander, Head, UNEP Coral Reef Unit, Bangkok, Thailand for enriching the strategic document at Consultative Regional Workshop, September 2018, Maldives and Dr. Sivaji Patra, Senior Programme Officer of the South Asian Seas Programme in the preparation of the Regional Marine and Coastal Biodiversity Strategy report for the SACEP/SAS Regional Seas Programme.

I am also thankful to the support staff of SACEP for their hard work in putting the threads together and providing facilitation during the process of the report writing. I hope and wish this Regional Marine and Coastal Biodiversity strategy report will go a long way in protecting as well as resorting the marine and coastal environment of the SAS region harmonically.

Dr. Abas Basir
Director General, SACEP

Acronyms

APFIC	Asia-Pacific Fishery Commission
BOBLME	Bay of Bengal Large Marine Ecosystem
CBD	Convention on Biodiversity
CCRF	FAO Code of Conduct for Responsible Fisheries
CEPF	Critical Ecosystem Partnership Fund
CFA	Conservation Finance Alliance
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CTF	Conservation Trust Fund
DIF	Draft Implementation Framework
EAF	Ecosystem approach to Fisheries
ECA	Ecological Critical areas
EEAFM	Ecosystem approach to fisheries management
FAO	Food and Agriculture Organization
FCPF	Forest Carbon Partnership Facility
FOD	First Order Draft
GCRMN	Global Coral Reef Monitoring Network
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GOI	Government of India
IAS	Invasive Alien Species
IBA	Important Bird Area
ICCA	Indigenous and Community Conserved Areas
ICM	Integrated Coastal Management
IGO	Intergovernmental Organization
IOSEA	Indian Ocean and South East Asia
ITFPA	International Trust Fund for Protected Areas
IUCN	International Union for Conservation of Nature
IUU	Illegal, Unreported, and Unregulated fishing
KBA	Key Biodiversity Areas
MAR	MesoAmerican Reef Fund
MCPA	Marine and Coastal Protected Area
MCS	Monitoring, Control and Surveillance
MEE	Management Effectiveness Evaluation
METT	Management Effectiveness Tracking Tool
MMAP	Global Plan of Action for the Conservation, Management and Utilization of Marine Mammals
MOEFCC	Ministry of Environment, Forest and Climate Change
MOU	Memorandum of Understanding
MPA	Marine Protected Area
M&E	Monitoring and Evaluation
NBSAP	National Biodiversity Strategies and Action Plan
NGO	Non-governmental Organization
RAMSAR	The Convention on Wetlands of International Importance, called the Ramsar Convention
REDD	Reducing Emissions from Deforestation and Forest Degradation

CBD	Convention on Biological Diversity
ECA	Ecologically Critical Area
NBSAP	National Biodiversity Strategy and Action Plan
SACRTF	South Asia Coral Reef Task Force
SAP	Strategic Action Plan
SAS	South Asian Seas
SASAP	South Asian Seas Action Plan
SIDS	Small Island Developing states
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
WDCS	Whales and Dolphins Conservation Society
WESTPAC	Western Pacific
WWF	Worldwide Fund for Nature

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Executive Summary

The South Asian Seas (SAS) region's 12,000 km long coastline and the large marine area harbors some of the most extensive and diverse tropical marine ecosystems in the world. The five maritime countries in the SAS region, Bangladesh, India, Maldives, Pakistan and Sri Lanka, host rich biodiversity in coastal and marine ecosystems, including mangroves, coastal wetlands, seagrass meadows, coral reefs and sand dunes. However, these ecosystems are facing serious threats, due to marine pollution, coastal development, unsustainable use of ecosystem services, among other issues including climate change. While there are a number of national, regional and international instruments for addressing these challenges, the underlying drivers (e.g. increasing coastal population density and urbanization, increasing per capita consumption, lack of awareness across all levels of society, low per capita GDP, widespread poverty, etc.), pose serious obstacles towards achieving desirable results sustaining coastal and marine ecosystems and their biodiversity. In order to effectively address the magnitude of these issues, a regional approach to coordinate national interventions is urgently required.

In response to this need, the South Asia Co-operative Environment Programme (SACEP), which acts as the Secretariat for the South Asian Seas Programme, in collaboration with the United Nations Environment Programme (UNEP), the five SAS countries and other partners, are developing a Regional Marine and Coastal Biodiversity Strategy (MCBS) for the South Asian Seas Region. The development of the MCBS was approved by the 5th Inter-Ministerial Meeting of the South Asian Seas Programme held in Islamabad, Pakistan, on 5th December 2013, and is in line with the Strategic Action Plan for Biodiversity adopted in October 2010 by the Conference of the Parties to the Convention on Biological Diversity (CBD). **Part I** of this document, **A Common Vision for the Marine and Coastal Biodiversity of the South Asian Seas Region**, provides background information and the Rational for the MCBS.

The aim of the MCBS is to provide a framework for coordination and collaboration between countries' National Biodiversity Strategic Action Plans (NBSAPs), enhancing national and regional interventions for the achievement of the Aichi Biodiversity targets, particularly those addressing coastal and marine issues relevant to the region.

The initial step in the process was the development of thematic studies based on desk reviews to identify issues, gaps and needs, and other relevant ongoing national and regional processes. These thematic studies were carried out focusing on clusters of relevant Aichi targets as well as SDG-14 vision for 2030:

- Ensuring Ecosystem Services and Wellbeing (Aichi Target 1,2, 5,10,14, and 15)
- Prevention of Species Extinction (Aichi Target 12);
- Control of Alien Invasive Species (Aichi Target 9)
- Sustainable Fisheries and Aquaculture (Aichi Target 6 and 7)
- Prevention of Marine Pollution (Aichi Target 10 and 11)
- Effective and Equitable Governance of Marine and Coastal Protected Areas (Aichi Target 11).

The findings of these studies provided the basis for a Zero Draft of the Regional MCBS, and are presented as **Part II** of this document, **Marine and Coastal Biodiversity in South Asian Seas; Status, Trends and Threats**. The conclusions of these studies were presented for discussion at the consultative workshop held in Colombo during July 2014 and in Maldives during September 2018. The workshop, which involved a wide range of regional and national stakeholders, identified preliminary regional targets, goals and visions for the region, with recommendations for specific actions constituting the core of the strategy.

Part III of this document, **The Way Forward**, provides a summary of the findings and agreements reached during the Colombo Workshop. The Vision of the MCBS agreed during the workshop was *"South Asian Seas countries share healthy marine and coastal ecosystems rich in biodiversity that will continue to provide ecosystem services for the wellbeing of the people, and social and economic development of the region"*. It was agreed that the Regional MCBS should draw on and promote application of an Ecosystem Approach for the design and implementation of the MCBS initiatives in the region. Other guiding principles underpinning the strategy include: Maintaining Healthy and Resilient Ecosystems, Government commitment at every level, Maintaining Healthy and Resilient Ecosystems, Recognition of the economic, social and cultural values of marine and coastal ecosystems, Adaptive management and learning by doing, Precautionary approach and risk analysis, Participatory and Inclusive, Commitment to Human Rights and Gender Equality and Building and Strengthening Partnerships.

The MCBS has been developed around **six Regional Targets** (one for each thematic study), which are based on **Six main Goals** for the conservation of biodiversity and sustainable use of marine and coastal ecosystems in the SAS region. A set of **Regional Actions** are being proposed for each sub-target, along with **Performance Indicators** to measure progress, in addition to **potential Partnerships** that will support the implementation of the MCBS.

PART I: A Common Vision for the Marine and Coastal Biodiversity of the South Asian Seas Region

Introduction to the South Asian Seas Region

The South Asian Seas (SAS) Region is comprised of the Northern Indian Ocean and incorporates the marine and coastal environments, including the Exclusive Economic Zones (EEZ), of Bangladesh, India, Maldives, Pakistan and Sri Lanka. The marine environment is physically divided by the Indian subcontinent into three distinctive areas: two large marine ecosystems - the Arabian Sea in the west and the Bay of Bengal in the east; and a large area of the open Indian Ocean to the south of India and Sri Lanka (Fig 1). The estimated land cover of the five countries is around 4.3 million km^2, of which India constitutes about 75 percent (being the seventh largest country in the world). The combined Exclusive Economic Zone (EEZ) of the five countries accounts for 3.7 million km^2, and the declaration of 200 nautical miles EEZ have led to 300-fold increase in the jurisdictional area of Maldives, while Sri Lanka's EEZ is more than seven times larger than its terrestrial area (Table 1.1).

The oceanic conditions of the region are dominated by the monsoons, evaporation and high runoff from the rivers entering the coastal areas. Shallow accreting coastlines, with deltas and coastal lagoons, dominate in Bangladesh, parts of India, Pakistan and Sri Lanka, while the Maldives and the island chains belonging to India (Lakshwadweep, Andamans and Nicobars) are archipelagic. The coastline of Bangladesh is particularly low-lying, and is unique in the region in that the influence of the sea is felt for a long distance inland. The Maldives and Laccadives are composed entirely of atolls, with reefs and sandy islands, and form the Laccadive-Chagos chain that extends southward from India to the central Indian Ocean (Brown, 1997, Wells *et al*, 1995 and Pernetta 1993).

Figure 1: The South Asian Seas Region

The SAS coastline, together with an extensive system of river deltas, estuaries and open ocean waters, supports some of the richest concentrations of biodiversity in the world, with coastal and marine ecosystems such as mangroves, coastal wetlands, seagrass meadows, coral reefs and sand dunes. These ecosystems support the livelihoods and food security of millions of people and protect the scarce land resources from being depleted by storm surges, tsunamis and cyclones. Further economically valuable non-living resources like petroleum, natural gases and minerals are found within the EEZs of the countries and presently only few of these resources are being commercially exploited. These waters are also habitat of healthy remaining populations of many globally threatened species such as whales and sea turtles.

However, the five maritime countries of South Asia also share problems of increasing population pressures and resultant increasing demands on the coastal and marine resources, at a level which is almost unprecedented elsewhere in the world. The limited land area holds a population of over 1.6 billion people of which around 30% lives in poverty (Table 1.1), and alongside these coastal resources are some of the most densely populated cities in the world (Karachi, Bombay, Madras, Calcutta and Dhaka).

The main drivers of environmental damage have been identified to be: land-based sources of pollution, including those derived from agriculture and urban activities, sea-based pollution, especially from oil and chemical spills, overfishing and unsustainable fishing, physical alteration and destruction of coastal habitats, infrastructure development, climate change and associated sea level rise and disasters (UNEP, 2010, BOBLME, 2014). A recently published report by the Asian Development Bank (ADB) stated that the changes in climatic events have significant impacts on coastal and marine resources in South Asia region through the alteration of ocean circulation, coral reef ecosystems, ocean and estuarine salinity, fisheries, and recreation and tourism activities. The effects also include dryland and wetland losses, which impose both physical and economic risks on coastal communities (Ahmed and Suphachalasai , 2014). The region needs to tackle all of these above issues, and it is in urgent need of Ecosystem Approaches that promote economic development while maintaining healthy marine and coastal environments, in a context of uncertainty due to climate change. Urgent actions are now required to restore fisheries that have collapsed, avoid continued fishing stocks which are already fully utilized, and to minimize the biological loss of other coastal and marine habitats. Managing and mitigating the threats to these resources cannot be adequately addressed unless governments and stakeholders collaborate and coordinate. In addition, most of these issues, like shared fish stocks and trans-boundary pollution, require regional decision-making for adequate planning of interventions, and so do the protection of shared ecosystems and migratory species.

Table 1.1: The South Asian Seas Region in numbers

	Bangladesh	India	Maldives	Pakistan	Sri Lanka	Total
[1]Surface Land Area (000 km^2)	143.998	3,287.3	0.30	796.1	65.61	**4,293.3**
[2]Claimed Exclusive Economic Zone Area (000 km^2)	39.9	2,103.4	870.6	201.5	500.7	**3,716.2**
[3]Length of Coastline (km)	714	7,517	644	1,046	1,620	**11,541**
[4]Total population 2013(millions) Total population 2030 (millions)	 156.6 185.1	1,252.1 1,476.1	0.3 0.4	182.1 231.7	21.3 23.3	**1,612.4** **1.916.6**
[2]Percentage of Population within 100 km from the coast	54.8	26.3	100	9.1	100	**27**
[4]UNDP Human Development Index Rank 2013	142	135	103	146	73	
[4]Population below U$ 1.25 per day (%) (2002 -12)	43.25	32.68	1.48	21.04	-	

Sources : [1] CIA, 2014 ; [2]Burke et al, 2001 ; [3] CBD National Reports ; [4]UNDP, 2014;

Rationale for a Regional Strategy

As seen above, the SAS region faces many environmental challenges resulting from inadequate management and other human induced impacts. As the region expands economically to cater for an increasing population, the limited resource base in SAS countries are being increasingly pressurized and some habitats and species are already threatened with total destruction or disappearance. In order to address this, the SAS governments are developing their policy, legislative and institutional capabilities, moving towards a more sustainable utilization of their coastal and marine resources.

One of the most relevant instruments at the sub-regional level is the South Asian Seas Action Plan (SASAP), developed under the umbrella of UNEP – Regional Seas Programme. Adopted in 1995 by the five maritime countries, the objective of the SASAP is to protect and manage the marine environment and related coastal ecosystems of the region through the promotion of sustainable use of the resources. This objective is achieved by:

- Establishing and enhancing consultations and technical co-operation among region States
- Emphasizing the economic and social importance of the resources of the marine and coastal environment; and
- Establishing a regional co-operative network of activities concerning concrete subjects/projects of mutual interest for the whole region

The Action Plan identified four priority areas where activities need to be developed and implemented: Integrated Coastal Zone Management; Development and Implementation of National and Regional Oil and Chemical Spill Contingency Planning; Human Resources Development through Strengthening Regional Centers of Excellence; and Protection of the Marine Environment from Land-based Activities (SACEP, 1995). Although not yet *per se* a Regional Convention, SASAP follows existing global environmental and maritime international instruments, and considers the Law of the Sea as its umbrella convention.

Other relevant strategic instruments which provide the rationale for the Regional Marine and Coastal Biodiversity Strategy for SAS region include:

- **the Convention on Biological Diversity (CBD)** to which all SAS nations are party to, urges regional organizations to consider the development or updating of regional biodiversity strategies, as appropriate, including agreeing on regional targets, as a means of complementing and supporting national actions and of contributing to the implementation of the Strategic Plan for Biodiversity 2011-2030":
    - In decision X/2, the tenth meeting of the Conference of the Parties to the Convention on Biological Diversity (CBD), held in October 2010 at Nagoya adopted a revised and updated Strategic Plan for Biodiversity, including reflected Aichi Biodiversity Targets[1], [2]Sustainable Development Goals SDG's and targets of the 2030 agenda, and agreed to translate this overarching international framework into national biodiversity strategies and action plans. It was also recommended that Parties and other Governments, with the support of intergovernmental and other organizations, as appropriate, shall implement the Strategic Plan and promote the generation and use of scientific information, develop methodologies and initiatives to monitor status and trends of biodiversity and ecosystem services, share data, develop indicators and measures, and undertake regular and timely assessments. In this regard National and or regional Biodiversity Strategies and Action Plans (NBSAPs) can be considered the principal instruments for implementing the CBD.

    - Further under decision X/29, the 10th COP urged Parties and other Governments to achieve long-term conservation, management and sustainable use of marine resources and coastal habitats, and to effectively manage marine protected areas, in accordance with international law, including the United Nations Convention on the Law of the Sea, in order to safeguard marine and coastal biodiversity and marine ecosystem services, and sustainable livelihoods, and to adapt to climate change, through appropriate application of the precautionary approach and ecosystem approaches, including the use of available tools such as integrated river basin and integrated coastal zone management, marine spatial planning, and impact assessments.

    - At the recently concluded COP 11, yet again SAS Government affirmed the importance of implementing the Strategic Plan for Biodiversity achieving the appropriate Aichi Biodiversity Targets and SGD's 2030 targets and agendas. Further they recognized the potential for enhanced cooperation at the regional and sub-regional levels among developing countries (South-South cooperation) and between developed and developing countries (North-South and triangular cooperation), consistent with the Convention, and, it was noted the potential role of national, regional and international organizations and the private sector in facilitating technical and scientific cooperation.

- **UNEP's Regional Seas Program (RSP),** to which the South Asia Programme is a partner, urges members, through the Regional Seas Strategic Directions (2013-2016) to effectively apply an

[1] The Aichi Biodiversity Targets are 20 goals that were incorporated in the Convention on Biological Diversity (CBD) - Strategic Plan for Biodiversity 2011–2020, for providing a framework for action by all stakeholders to preserve biodiversity and enhance its benefits for the people. Find more here: http://www.cbd.int/sp/targets/ .[2] The 2030 Agenda for Sustainable Development, agreed by the 193 States Members of the United Nations, sets out an ambitious framework of universal and indivisible goals and targets to address a range of global societal challenges. Biodiversity and ecosystems feature prominently across many of the Sustainable Development Goals (SDGs) and associated targets. Find more here: https://www.cbd.int/development/doc/biodiversity-2030-agenda-technical-note-en.pdf.

Ecosystem Approach in the management of the marine and coastal environment, contribute to the implementation of the Manila Declaration of the Global Programme of Action for the Protection of the Marine Environment from land Based Activities (GPA), in particular the partnerships on wastewater management, nutrients and marine litter, strengthen capacities at the regional and national levels on marine and coastal governance, support the provision of tools to decouple economic growth from environmental pressures in the marine and coastal environment by promoting resource efficiency and productivity, strengthen coordination and build capacity to improve global knowledge and trends on the status of the marine environment, and strengthen collaboration mechanisms with relevant Multilateral Environmental Agreements, UN Agencies and International Financial Institutions.

- **UNEP Marine and Coastal Strategy (2009)** emphasized four guiding objectives: land-ocean connections; ecosystems for humanity; reconciling use and conservation; and vulnerable people and places.
- **The Bay of Bengal Large Marine Ecosystem (BOBLME) Strategic Action Plan (SAP)** (2014) emphasizes the importance of healthy ecosystems for food security and economic development, and identified areas for regional action to address the pressure on marine resources. The SAP will provide a coordination mechanism for engagement of the member countries, underpinning sustainable economic development, and showing commitment to action by meeting global expectations, realizing that doing nothing is not an option. All of the SAS nations, except Pakistan, are members of the BOBLME project, and both processes should work in cooperation to achieve their expected outcomes, avoiding replication, and building synergies.
- The outcome document of **the RIO+20 titled "The Future we want"** recognizes that oceans, seas and coastal areas form an integrated and essential component of the Earth's ecosystem and are critical to sustaining it. Further, it stated commitment to protect and restore the health, productivity and resilience of oceans and marine ecosystems, and to maintain their biodiversity, enabling their conservation and sustainable use for present and future generations, and to effectively apply an ecosystem approach and the precautionary approach for the management, in accordance with international law, of activities having an impact on the marine environment, to deliver on all three dimensions of sustainable development.

Background and Process for Developing the Strategy

In line with the Strategic Plan for Biodiversity of the CBD, SACEP and UNEP jointly initiated a process in 2013 to develop a Regional Marine and Coastal Biodiversity Strategy for the South Asian Seas Region, with the objective of supporting South Asian countries in achieving Aichi Biodiversity targets and SDG's for the 2011-2030 period. Acknowledging that all of the linkages between SDGs and Aichi Biodiversity Targets (see above) are relevant for the success of the Regional Marine and Coastal Biodiversity Strategy, the focus of the Strategy is to bring a regional perspective to the targets which are more relevant to marine and coastal biodiversity. These are Targets 1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 14, 15, 17 and 19.

The **Marine and Coastal Biodiversity Strategy (MCBS) for South Asia Seas region** is being formulated as a part and parcel of the ongoing process of preparing National Biodiversity Strategies and Action Plans (NBSAPs) as well as other regional and global initiatives targeting the five maritime countries of South Asia: Bangladesh, India, Maldives, Pakistan and Sri Lanka. This process received support through the endorsement by the SAS countries at the 5th Inter-Ministerial Meeting of the South Asian Seas Programme (5 IMM-SASP) held in Islamabad, Pakistan on 5th December 2013.

As a first step in the Strategy development process, a desk review was undertaken to prepare a knowledge base, identify gaps and needs, document relevant national and regional processes and identify how the proposed strategy can complement the NBSAPs process with respect to achieving the Aichi targets relevant to marine and coastal biodiversity conservation. For the desk review purpose, the Aichi targets were grouped in to six distinctive thematic areas as indicated in Table 3.1. A summary of the findings of the Background Documents are presented in Part II of this document.

Table 3.1: Thematic areas of the Marine and Costal Biodiversity Strategy

Thematic Area	Aichi Biodiversity Targets	Main Issues Addressed
1. Ensuring Ecosystem Services and Wellbeing		Extent and distribution of major habitats, ecosystem servicers provided by them and their importance to human wellbeing; them major causes of habitat destruction and ongoing national, regional and global process addressing these issues
2. Prevention of Species Extinction		List of currently threatened species and their distribution; major threats faced and the conservation action taken to safeguard them;
3. Control of Alien Invasive Species		The existing alien invasive species, their pathways of introduction and the harm they do; the existing programmes to address the issue
4. Sustainable Fisheries and Aquaculture		Types and extent of fishery, invertebrates and aquatic plants harvested and the techniques used to harvest them; Opportunities and constrains for mitigating overexploitation of the resources
5. Prevention of Marine Pollution		What are the main type pollution and how they affect coastal and marine systems; the actions that are in place to address the problem
6. Effective and Equitable Governance of Marine and Coastal Protected Areas		The current extent of Marine and coastal protected areas and how effective they are in protecting species and habitats; The areas of importance for biodiversity and ecosystem services that are not currently protected and the opportunities and constraints to expanding protected areas

Additionally, there are two Aichi targets that are considered cross-cutting and necessary for the implementation of the Strategy are also covered within the Framework for regional action. These are Target 3 and Target 20:

- **Target 3:** By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, considering national socio-economic conditions.

- **Target 20:** By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Marine and Coastal Biodiversity will increase to a level 30% higher than the current level. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.

With regards to the SDG 14, Classification of SDG Indicators and Custodian Agencies. UN Environment has been identified by the IAEG-SDGs as custodian agency for 26 SDG indicators, of which three (14.1.1, 14.2.1, and 14.5.1) are related to SDG 14 (UN ECOSOC, 2017c).

Based on the findings of the desk reviews on each thematic area, a Zero Draft of the MCBS was prepared by a leading consultant. A three-day regional workshop was then held from 8-10th July 2014, where 52 representatives from the South Asian Seas' countries and partner organizations working on marine and coastal biodiversity issues. Participants agreed on practical targets for the region based on current status, threats and policy and institutional measures already in place and the potential to implement within a reasonable time frame, suggested indicators to monitor the targets; and regional actions to be included in the Regional Marine and Coastal Biodiversity Strategy. The workshop findings enabled the preparation of a First Order Draft of the MCBS; including Regional Targets, Implementation and Monitoring Framework, in addition to potential partnerships, coordination and communication mechanisms among the partners, legislative or institutional reforms required and financial mechanisms to support implementation. These outputs will be finalized pursuant to a consultation period, and will then be concluded at a second regional workshop held on 12-13th September ,2018 and will be presented for endorsement at the 6th Inter-ministerial meeting. The Strategy will ultimately promote an Ecosystem Approach for protecting marine and coastal biodiversity and safeguarding ecosystem services, promoting inter-sectoral coordination and exploring impacts of economically important activities (e.g. fisheries and tourism) on the region's marine and coastal habitats and resources. The Strategy should be used as a framework for coordination and collaboration of the different initiatives taking place in the SAS region, avoiding duplication of efforts and wherever possible, focusing on amplifying the positive effects of ongoing interventions.

Expected timeline:

- First Order Draft - Open for comments: 30 January 2015
- Second Workshop for discussion: September 2018
- Final Version of the Strategy: October 2018
- Presented for Endorsement: IMM 2019
- Entry into force: 2019

Part II: Marine and Coastal Biodiversity in South Asian Seas; Status, Trends and Threats

According to the Convention on Biological Diversity (CBD), *biodiversity* is the variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part. This includes diversity within species, between species and of ecosystems. The Convention also notes:

> ***"Oceans cover 70% of the planet's surface area, and marine and coastal environments contain diverse habitats that support an abundance of marine life. Life in our seas produces a third of the oxygen that we breathe, offers a valuable***

source of protein and moderates global climatic change. (CBD XI Conference of Parties, 2012)

Bangladesh has achieved its sovereign rights over 1,18,813 square kilometer maritime area after resolution of the dispute settled by ITLOS with the neighboring countries of Myanmar and India in 2012 and in 2014 respectively. Being directed by the Honorable Prime Minister of Bangladesh relevant ministries have formulated a Blue Economy Action Plan which are being implemented, to harness economic development ensuring sustainable use of marine resources.

Unlike other organizations, Department of Environment has formulated blue economy action plan which are being implemented to conserve marine ecosystem, control sea pollution, ensure environment friendly management and harvesting of marine resources, mainstreaming marine and coastal biodiversity conservation and management activities. Department of Environment has been working with other relevant organizations to implement the action plan in an integrated manner.

The action plan comprises some important activities with a view to develop climate resilient and biodiversity rich sustainable coastal and marine ecosystem. These are:

1. Mainstreaming marine biodiversity conservation and management activities
2. Capacity development of Department of Environment officials for management of coastal and marine resources
3. Preparation of a combined database of coastal and marine biodiversity takes care of climate change
4. Assessment of strategic environmental impacts of coastal and marine resource extraction and its management
5. Ensuring biodiversity conservation and management of coastal and marine ecosystem
6. Controlling marine pollution and conserve its habitat by implementing relevant international convention and protocols
7. Strengthening regulatory system to control marine pollution
8. Monitoring impacts of various point sources for marine pollution.
9. Monitoring impact of climate change on marine habitat

Now, the following projects are prepared to implement some of the above activities of Blue Economy Action Plan for Department of Environment under Ministry of Environment, Forest and Climate Change:

a. Assessment of Coastal and Marine Biodiversity Resources and Ecosystems to Implement the Blue Economy Action Plan and
b. Monitoring of Marine Water Pollution: Estuaries and Offshore Areas of the Bay of Bengal

This tremendous wealth of biodiversity and ecosystem services provided by coastal and marine systems are not infinite. According to the Millennium Ecosystem Assessment, the world's oceans and coasts are highly threatened and subject to rapid environmental change. Human activities are greatly threatening

the seas and coasts through overfishing, destructive fishing practices, pollution and waste disposal, agricultural runoff, invasive alien species, and habitat destruction due to uncontrolled development. Global climate change will exacerbate these problems. Sea levels will rise, water temperature will increase, oceans will acidify, and there will be more storms and natural disasters.

Major root causes underlying these issues include population growth and changing demographics, increased production to meet increasing demand for exports, a growing and diversifying industrial sector, undervaluing environmental "goods and services" provided by the coastal and near-shore marine ecosystems, weak and/or inappropriate policies and strategies, lack of capacity and incentives to enforce regulatory frameworks, inadequate education and awareness of the values of marine and coastal resources, insufficient budgetary commitments, lack of community stakeholder consultation and empowerment and widespread poverty in coastal areas in many countries in the region (BOBLME, 2012).

While countries recognize these issues and their negative impacts on the livelihoods of its people, they are challenged to address the underlying causal factors, even though they have demonstrated significant levels of commitment to address many of the aforementioned problems, both in terms of national actions as well as through their participation in a number of international conventions that address these issues. Annex 1 outlines the international obligations of the SAS countries, and Annex 2 describes the main organizations working on the conservation of coastal and marine ecosystems. Countries also require regional action to support national interventions, especially for resources that, due to their trans-boundary nature, need to be managed regionally.

The following sections provide an account on above issues from the findings of desk reviews undertaken on the six main thematic areas of the Coastal and Marine Biodiversity Strategy.

1. Ensuring Ecosystem Services and Human Wellbeing

Box 1: Global Importance of Coastal and Marine Ecosystems in SAS

- 6.8% of the global mangrove forests
- 6% of the global coral reefs
- Two of the world largest estuaries (the Ganges and the Indus)
- Six of the Global 200 Ecosystems (Sudarbans, Indus delta, Rann of Kutch Flooded Grasslands, Maldives, Chagos, Lakshadweep Atolls, Arabian sea and the Andaman sea)

Marine and coastal ecosystems provide supporting services in the form of a wide range of habitats. Estuaries, mangroves, lagoons, and seagrasses, serve as nurseries for both inshore and offshore fish and other species, many of which are commercially significant. Other habitats such as beaches, dunes, saltmarshes, estuaries, and mudflats are important during the life cycles of fish, shellfish, and migratory birds. Marine and coastal ecosystems also play important roles due to photosynthesis and productivity through primary production by phytoplankton, and mixing nutrients from upstream and tidal sources, with estuaries being one of the most fertile coastal environments (UNEP, 2006). In the aftermath of the devastation caused by the Indian Ocean tsunami in 2004, awareness that there is an inextricable link between the status of coastal ecosystems and the vulnerability of coastal inhabitants to natural disasters was brought forcefully to the forefront,

bringing to light the direct correlation between the health of coastal ecosystems and the degree of shoreline protection provided (Kallesøe *et al*, 2008).

The following section provides baseline information on the status of the marine and coastal habitats and strategies that are being adopted by South Asian countries through national and regional processes to address the Aichi targets reflected in SDG,2030 targets.

1.1. Overview of the Current Status of marine and coastal ecosystems and their importance to human well-being in South Asia

The major marine and coastal habitats in the region are mangroves, coral reefs, seagrass meadows, coastal wetlands including estuaries and lagoons, sandy beaches and sand dunes (Refer Box 1). The distribution of these habitats varies throughout South Asia with the largest contiguous mangroves in the world between India and Bangladesh, while Maldives Archipelago accounts for the seventh largest coral reef area in the world.

Mangroves

Mangrove ecosystems are rich in biodiversity and harbor a number of species that are globally threatened, such as the Bengal Tiger, the Estuarine Crocodile and the Genetic Dolphin, among others. The services provided by mangroves are far reaching and include: economic benefits from the contribution to fisheries, being nursery grounds for many species of finfish and shell fish; ecological benefits through the release of large amounts of nutrients that support the productivity in coastal lagoons and nearshore waters, protection of shorelines from storm surges and trapping sediment and increasing land area; provision of timber, fuel wood, mangrove poles for constructing fish traps, construction of fishing huts, building of boats and fence posts and fodder for livestock, non-timber forest products including traditional medicines; and producing honey and wax from bees. Mangrove forests are considered globally rare, despite being present in 123 tropical and sub-tropical nations and territories, because they only cover an area of only around 152,000 km^2; this is less than 1% of all tropical forests worldwide, and less than 0.4% of the total global forest (*Van Lavieren et al, 2012*). South Asia is home to 6.8% of the global mangroves, with 10, 344 ha, which are distributed discontinuously. Through Pakistan and north-west India the mangrove trees are stunted and the diversity is low due to harsh arid conditions. The Indus River delta is also ranked fifth largest semi-arid mangrove area in the world (*Farooqui, 2014*). Further south, conditions become more humid and there is more reliable riverine inputs, although mangroves remain mostly restricted to protected lagoons. Deltaic mangroves become important along India's east coast and Bangladesh, where the Sundarbans form one of the world's largest contiguous mangrove forest, covering an area of 6,500 km^2 and extending 85 km inland South Asia, together with South East Asia, is considered a global mangrove biodiversity hotspot, due to the elevated number species in comparison with other parts of the world. Overall, 38 mangrove species have been recorded in the region, with diversity increasing towards the east. The northern Bay of Bengal and Sundarbans form an important part of the Indo–Andaman biogeographic province, with several regional endemic species (*ITTO Tropical Forest Update, 2012; Spalding et al, 2010*).

The original area occupied by mangroves in South Asia has declined markedly over the past decades with estimated reductions of 85% for India, 78% from Pakistan and 73% reduction in the Bangladesh (*Values of 1996, in Macintosh and Ashton 2002*). In Sri Lanka, there has been about a 50 percent reduction of the mangrove cover between 1986 and 2002 (*Joseph, 2003*).

Main threats to mangroves in South Asia

In SAS countries, except Maldives, threats to mangroves include the rapid expansion of the shrimp aquaculture industry (such as the destruction of Chakoria mangroves of Bangladesh), reduced fresh water and sediment inputs due to upstream activities and especially damming of major rivers and irrigation for agriculture. Damage from storms, cyclones and sea level rise are likely to increase with climate change. Climate change related alterations of ocean circulation patterns could affect mangrove tree distribution and the genetic structure of mangrove populations. The impact on the community structure of the mangrove population may have further impact on biodiversity, with economic implications in view of the importance of mangrove forests to commercial fisheries in certain coastal areas (*Ahmed and Suphachalasai, 2014*). A study conducted in the Indus delta of Pakistan showed that rapidly escalating mangrove loss has seriously jeopardized the livelihoods of more than 135,000 people who rely on mangrove resources for their livelihood (*Ifthikhar, 2002*). Even small areas of mangroves need to be conserved and managed as these habitats are critically important as nursery grounds for fish and other marine organisms and many livelihood and commercial fishery activities are dependent on the productivity of these habitats.

Series of conservation measures have been initiated by the countries. For example, Bangladesh has the world's largest areas of new mangrove plantations, and significant areas have also been planted in Pakistan and India. Many remaining mangrove areas are in protected areas. In India, mangroves have been listed as 'ecologically sensitive areas' under the Coastal Regulation Zone notifications of India Annex 3.

Coral Reefs

Found only in tropical ocean waters, warm water coral reefs cover less than 0.2 percent of the ocean floor. Over six percent of the world's coral reef area is found in South Asia, which includes some of the most diverse, extensive and least disturbed reef areas in the Indian Ocean. Distribution of coral reefs is a mirror image of that of mangroves; while the major mangrove areas are recorded from the north, the most extensive and diverse reefs are found in the south (*Wells et al, 1995*). A study conducted by Roberts *et al* (2002), identified the Northern Indian Ocean, as one of the ten centers of coral biodiversity hotspots with high endemism. The atolls of the Maldive ridge (including Laskahdweep and Chagos) are the most extensive coral reef system (8, 929 km^2) in the Indian Ocean and the largest atoll system in the world. This atoll system together with Sri Lanka has been collectively identified as one of the ten global priority areas for coral reef conservation. The South Asian Seas coral reefs also provide a critical link between the Southeast Asian and the western Indian Ocean coral reefs species. All three major reef types (atoll, fringing and barrier) are represented in the region to varying degrees (*Spalding et al, 2001*).

There are extensive reefs around the Andaman and Nicobar Islands as well as in the Gulf of Mannar between India and Sri Lanka. Coral reef growth is inhibited in the North-east coast of India, the entire coastline of Bangladesh and Pakistan due to freshwater and sediment inputs from larger rivers such as Ganga, Indus, Krishna and Godavari. There are four major coral reef areas in India in the Gulf of Mannar, Gulf of Kachchh, in the Malvan coastal waters between Mumbai and Goa, Lakshadweep and Andaman and Nicobar Islands (5,790 km^2). Sri Lanka has many fringing coral reefs and several offshore coral reefs in the Gulf of Mannar. In Pakistan, sparse coral growth can be found around Astola Island and in the coastal waters of the Jiwani coast. Bangladesh has coral reefs only around St. Martin's island (*Spalding et al., 2001; Wilkinson, 2008; Rajasuriya et al, 2004; Rajasuriya et al, 1998*).

More than 250 reef building coral species have been recorded from the region (See Table 2.1), with the most common coral genera being Acropora, Montipora and Porites (*Spalding et al, 2001*). A study conducted in Andaman and Nicorbar islands of India indicated that the coral reef diversity in the region might increase up to 400 species (*Venkataraman, 2003*). Among the deep water (Ahermatypic) corals, 227 species belonging to 71 genera and 12 families have been reported from the Indian Ocean region. Although 44 species of deep-water corals have been identified from India, so far very little attention have been paid to address the knowledge gap in deep-water corals of the region (MoEFCC/GoI, 2005).

Table 2.1: Status of Coral reef of South-Asia

	Reef Area (km^2) [1]	**No of hard coral sps**	**No. of reef fish species**	**Reefs at risk (%)[1]**	**% of Reefs now dead[3]**
Bangladesh	<50	52 (25 living)[2]	86[2]	100	50
India	5,790	262[3]	1,087[3]	61	25
Maldives	8,920	250[3]	1,200[3]	11	55
Pakistan	< 50	na	na	na	na
Sri Lanka	680	190[3]	350	86	35

Sources: Spalding et al, 2001[1]; Uddin, 2004[2]; Rajasuriya et al, 2004[3]

Reef resources provide the base for tourism and fishery, which are important economic sectors of the countries. In Maldives, the number of annual tourist arrivals in certain months exceeds the total local population, and tourism continues to be the largest economic activity and the main source of foreign exchange earnings contributing 28% of the countries' GDP (MoTAC/GoM, 2013). Intact coral reefs and sand-stone reefs in Sri Lanka also have contributed to reduce the force and energy of the Tsunami waves, since a severe damage to inland areas is visible in areas such as Oruwella, where the near-shore coral reefs has been severely destroyed by mining and bottom-set netting over the past decade (IUCN, 2005).

Table 2.2: Globally recognized coral reef areas of the region

Coral Reef system	Global Significance	Biodiversity value
▪ Gulf of Mannar, India	UNESCO- MAB & WHS area	Ninety-four seleractinian coral species belonging to 37 genera.
• Maldives, Chagos and Lakshadweep Atolls, and Sri Lanka	WWF Global 200 Ecosystems UNESCO MAB (Baa Atoll)	Over 250 coral reef species, act as a stepping stone for coral larvae transport from eastern to western Indian Ocean
• Andaman Sea (including Andaman & Nicorbar islands of India)	WWF Global 200 Ecosystem UNESCO – MAB (Great Nicorbar)	Extensive fringing reefs exist here, as well as a 320 kilometers-long barrier reef on the west coast. Much of the wildlife on these islands is endemic.

Threats to Coral reefs in South Asia

Coral reefs are threatened by a number of factors including: climate change related coral bleaching; sedimentation; diseases; overharvesting of resources including fish for food and ornamental fish; use of destructive fishing methods such as trawling and dynamiting, pollution and coastal development. Coral reefs in the Indian Ocean were seriously damaged due to the unprecedented bleaching event in 1998 from which many reefs have not recovered to their pre-bleaching status. South Asian reefs also suffered damage from the 2004 tsunami in the Indian Ocean, including from … and …. Andaman & Nicobar Islands lost some fringing reefs due to upliftment or subsidence (*Keating and Helsley, 2005, Obura et al., 2008; Wilkinson et al., 2006 and Wilkinson 2008*).

Sea grass beds and seaweeds

Extensive seagrass beds are found in southern India and in the many estuaries of Sri Lanka. They cover an area greater than that of mangroves and coral reefs combined, making the largest contribution to primary productivity in coastal waters. In India the major areas are in the Gulf of Mannar, Lakshadweep group of islands, Andaman and Nicobar group of islands and along the West Coast. Distribution is up to a depth of 15 m. The highest species diversity is found in the shallow sandy marine areas (Green and Short, 2003). India is bestowed with 15 species of seagrasses belonging to six genera (MoFE/GoI, 2014). About 120 species of seaweeds have been recorded from India (Venkataraman, 2003). Information on seagrass meadows in Bangladesh is scanty. They are found mainly in the eastern coast of Bangladesh and five species of seagrasses have been recorded from the Bakkhali River Estuary area (Abu Hena and Khan, 2009). Five species of seagrasses as well as 285 species marine algae have been recorded from Maldives (MoHE-GoM, 2010). There is little information on the extent and diversity of seagrasses and seaweeds in Pakistan, although there are records of the presence of Green Turtles, which feed on seagrasses. In Sri Lanka, the sea grass beds from Puttalam lagoon to Jaffna lagoon are extensive and are important feeding grounds for dugongs as well as commercially important species of fish, crab, prawns and polycheate worms (CCD, 2006).

Threats to seagrasses vary in each country. The most extensive damage is caused by trawling for shrimps and bottom dwelling fishes. Extensive trawling in the Gulf of Mannar region is causing large scale damage to seagrass meadows and also threatens the survival of the Dugong dugon both in India and in Sri Lanka.

Illegal trawling by Indian fishermen in Sri Lankan waters in the Gulf of Mannar, Palk Bay and Palk Strait are causing much damage to seagrass meadows. Seagrasses are also damaged due to pollution, and high sedimentation especially in Bangladesh where high sedimentation and coastal pollution are major problems. Similar problems are found in the Gulf of Kachchh. Further damage is caused by cutting access channels through seagrass meadows and by boat propellers.

Seagrasses in the lower inter-tidal areas and around a number of islands in the Gulf of Kachchh have declined. *Halophila decipiens*, which has been a common species in the west coast until recently, has disappeared (Green and Short, 2003). Overexploitation of fauna such as sea cucumber, shrimp and sea urchins alter the balance of the seagrass ecosystem. In many areas these species have declined due to heavy exploitation. A study conducted in Sri Lanka revealed that all the high value sea cucumbers have been totally overexploited (Long *et al.,* 2010).

Deltas Estuaries and Lagoons

Almost all of Bangladesh lies in the active delta of three of the world's major rivers: Ganga, Brahmaputra and Meghna (GBM system). The major part of the Gangetic floodplain is located in India. The high sediment load carried by the rivers has led to the continuous formation of new islands off the coast of Bangladesh, which the government is reclaiming by planting mangroves. Other major rivers with deltas on the eastern Indian coast include those formed by the Mahanadi, Godaveri-Krishna, Kaveri and Tambraparani rivers. The Indus flows through most of Pakistan and fall into the Arabian Sea. The Mahaveli is the largest river in Sri Lanka. The Maldives does not have any rivers (Rajagopalan & Lakshmi, 2003). There are 17 major lagoons within the coastline of India, while the Pulicat and Chilika are noteworthy estuaries rich in biodiversity (Venkataraman, 2003). In Sri Lanka the total area of estuaries and lagoons has been estimated at 158,017 ha and there are 45 estuaries belonging to two types: basin estuaries where river discharges into relatively shallow basins, which in turn open into the sea (Puttalam, Negambo and Jaffna); and riverine estuaries, where river discharge into the sea by way of relatively narrow channels (Kaluganga, Kelani Ganga estuaries). Around 40 true coastal lagoons are recorded mainly from southern, southeastern and eastern coasts. Sand barrier formations has transformed some basin estuaries into lagoons (Koggala Lagoon) and in some cases (Batticaloa, Kokkilai Lagoons) seasonally formed sand barriers result in temporary lagoons with restricted connection to the open sea (CCD, 2006).

The health and the biological diversity of the estuarine and lagoon ecosystems are deteriorating dayly due anthropogenic interventions including dumping of solid waste and the release of untreated sewage and industrial effluents (Venkatraman, 2003). In countries such as Sri Lanka sand mining in major rivers, especially closer to river mouths has reduced the amount of sand, which would otherwise be available to replenish sand lost during storm events. This has resulted in large-scale coastal erosion in the south and west coasts of the country. As described above, the mangrove forests of the Indus delta in Pakistan show a dramatic decline and it has reduced from 2,600 square kilometers in the late 1970s to 1,300 square kilometers in the mid-1990s, mainly due to water diversion in the upstream of the river. About three-quarters of the water entering the Indus basin is now diverted and only a quarter reaches the delta and the Arabian Sea (Iftikhar, 2002).

Beaches, Sand-dunes and cliffs

Bangladesh is notable for its 145 km stretch of beach from Cox Bazar to the tip of Teknaf Peninsula (Pernetta 1993b), and in Maldives there are numerous sandy beaches on the islands of the atoll chains. Sri Lanka has about 11,800 ha of beaches and spits extending over 300 km of coast, and sand dunes covering an area of 7, 606 ha (Pernetta 1993c). Various forms of rocky shores dominate both the east and west coast of India. Coastal cliffs are the most observed characteristic geomorphic feature along the Indian coastline. Sand dunes in India support diverse flora are categorized as ecologically sensitive areas under the Coastal Regulation Zone notification of 1991. There are around 148 species of sand dune vegetation reported from the east and west coasts of India. The dominant species are, *Spinifix littoreaus, Hydrophylax meristima, Ipomea pescaprae*, and *Asparagus dumosus* (Apate, 2013; and Untawale, *et al*, 2000).

In Pakistan, the most important beach is situated southwest of Karachi, which stretches for 20kms. The mainland coast of India has beaches along 55 percent of its length while in Sri Lanka beaches are found along 75-90 percent of the coast, where majority are sandy barrier beaches backed by lagoons and wetlands . Dunes are also an important feature in Sri Lanka with extensive dune system on the west and south east coasts. Mature and intact sand dunes (i.e., old and broad dunes covered with scrubland vegetation) occurring in the Rakewa, Usangoda and Kalamatiya area have functioned as an effective barrier against the December 2004 Tsunami waves, thereby protecting inland ecosystems and human settlements (IUCN, 2005). The atoll islands of Maldives and Laccadives are bordered by sandy beaches derived from the coral reef surrounding them. Island beaches are highly dynamic and sand migrates around the island in response to the reversing monsoonal influence (Brown, 1997).

After the December 2004 tsunami that hit the southeast coast of India, there has been recognition among the coastal communities living adjacent to coastal sand dunes about the value of sand dunes in not only protecting the hinterland and coastal hamlets, but also their role in preventing saltwater intrusion as a result of inundation by large waves. There is also better recognition of their cultural, social and ecological significance. Further sandy beaches and sand dunes are important turtle nesting grounds. In spite of all this, sand dunes have not enjoyed the kind of attention or popularity that is given to other coastal ecosystems like mangroves (Namboothri *et al*, 2007). Human settlement is increasing on lands near sandy shores. Issues such as flattening of sand dunes and sand mining have severe consequences on shore erosion. Sandy shores are widely used for recreational purposes. The threat to sandy shores is further aggravated because they are relatively poorly understood. In 2004, an extent of 1,214 km of the 5,422 km Indian coastline was reported to be affected by sea erosion (Apte, 2013).

1.2. Ongoing Initiatives for the Protection of Marine and Coastal Ecosystems

Protection of Biodiversity has a long tradition in the history of South Asia, as natural resources are closely linked to many religious beliefs and cultural traditions. The 'modern' conservation in the region stems mainly from the establishment of forest reserves in the 19th and early 20th centuries to safeguard timber, soil and water resources (IUCN, 1992). At National level there are numerous government agencies and other stakeholders including NGOs, and community itself who are responsible for protecting the habitats and the ecosystem services they provide (Annexes 2 and 3).

These legislations mainly protect the ecosystems through establishing Protected Areas, and this aspect will be discussed in length on Section 2.5, which will address Aichi Target 11 on Protected Areas.

The regional and international initiatives for major coastal habitats protection are given in Annex 1. Few are ongoing projects that will depend on continuous donor funding for long-term survival (e.g. Mangroves for the Future, BoB LME project etc). Some are intergovernmental processes that depend on member governments for funding and policy directives. Conventions such as Ramsar, UNESCO- MAB and UNESCO –WH assist in protecting and obtaining international attention through increased donor funding and technical assistance. Further Global Environmental Facility (GEF) and other bilateral donors such as the Government of Netherlands have been assisting the countries to safeguard and sustainably utilize the resources in these important ecosystems.

1.3. Conclusions and Recommendations

Sensitive marine and coastal habitats are widespread in South Asia. The most extensive mangrove areas are found in India, Bangladesh and Pakistan mainly around the large rivers and coastal Lagoons. The main coral reefs are in the Maldives Archipelago, in four locations in India (Lakshadweep, Gulf of Mannar, Gulf of Kachchh and Andaman and Nicobar group of Islands) and Sri Lanka. The major seagrass areas are in the Gulf of Mannar and Palk Bay, Bangladesh, Gulf of Kachchh and Indus Delta area and Andaman and Nicobar Islands. Although conservation efforts have been carried out by respective governments and non-governmental organizations with the support of international organizations, most of these habitats continue to degrade due to various reasons listed in this report. Several common problems impede proper conservation and management efforts. The main issues are:

- Overlapping responsibilities within government departments: often different departments are responsible for the same resource/ecosystem, creating another layer of difficulty in decision-making and confusion
- Slow or ineffective implementation of plans and regulations: Laws and plans for protection of certain habitats are existing, but they are not being implemented due to lack of resources and lack of enforcement and monitoring
- Ineffective laws: not responding to the specific needs of the people and the protection of coastal and marine ecosystem
- Lack of political will: even when the laws are adequate, they may not be implemented due to slow processes and absence of “champions” or leaders.
- Corruption: hindering the implementation of well-intended initiatives.
- Lack of skills and/or resources (human, technological and financial): which also limits the implementation of plans and other interventions
- Poverty among coastal communities: when people are struggling with day to day survival, it is more difficult to discuss topics related to environmental conservation
- Lack of awareness: coastal communities, private and public sector often lack awareness on the services that ecosystem provide
- Lack of ownership and open access regimes: conflicts can arise when it is not clear who has access and ownership of resources, and who is in charge of protection of coastal and marine ecosystems

Every country in South Asia has developed several policies and conservation plans for the protection and sustainable use of marine and coastal resources. However, some legislations, laws and regulations, remain inadequate, or poorly implemented, often due to political interference. Despite these policies and management plans the habitats continue to degrade and their resources are being overexploited. There is also little control over shared stocks of fish and other marine organisms (see section 4, Sustainable Fisheries and Aquaculture for SAS).

To address these issues, it is recommended that SAS region focuses on:

- Improve legislations and their implementation
- Harmonize policies on environmental management among neighboring countries
- Establish quotas for harvesting living resources, especially on migratory and highly threatened species
- Establish marine protected areas, fish *refugia* and form networks with corridors among neighboring habitats
- Develop capacity in governance
- Address issues such as land-based pollution including agricultural runoff, sewage discharge and industrial waste.
- Improve and use existing instruments such as Environmental Impact Assessment Process, Environmental Protection license process to mitigate the impact of the industry
- Create awareness among governments, private sector and coastal communities on the use of agrochemicals and other pollutants and their effect on marine and coastal ecosystems
- Reactivate regional bodies such as the South Asia Coral Reef Task Force (SACRTF) to improve conservation and management of sensitive habitats.
- Incentives and restructuring subsidy systems.
- Broadening collaboration with and responsibility of the private sector

2. Preventing Species Extinction – Dimming the Red Light

Aichi Biodiversity Target 12 recommends that by 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained by undertaking following actions:

- **Preventing extinction** – Preventing further extinction entails that those species which are currently threatened do not move into the extinct category.
- **Improving the conservation status of threatened species** - An improvement in conservation status would entail a species increasing in population to a point where it moves into a lower threat status. Using the IUCN criteria a species would no longer be considered as threatened once it moved into the near threatened category.

Box 2: Globally Threatened Species in SAS region

- SAS region is critical to the recovery of the endangered north Indian Ocean blue whales
- Considerable number Irrawaddy Dolphins are found in the estuarine waters of Bangladesh and the Chilika Lagoon of India
- One of the largest remaining population of Bengal Tigers are found in Sundarbans mangroves, spanning between Bangladesh and India
- Almost half of the world's threatened sea turtle populations are found in the northern Indian Ocean and the largest rookery of olive ridley turtles are found in Orissa, India
- Migratory Waders including Spoon bill Sand pipers feed in the coastal wetlands, especially in Sonadia Island of Bangladesh
- 3 Protected Areas in Andaman and Nicorbar islands have been identified under Alliance for Zero Extinction, for the protection of endemic shrews and the Narcodam Hornbill

2.1. Species of Conservation Concern and the major threats for their survival

Within the Northern Indian Ocean, no systematic assessment of the Coastal and Marine Biodiversity has been carried out so far and there is considerable data and information gap both in spatial and temporal coverage. Reports of major regional/national programmes contain only group/taxa details and not the species details. On a regional scale, there is lack of clarity on the coastal and marine biodiversity as the formats adopted by various groups/authors, the number of species reported under each taxonomic group and the total number of species reported show considerable variation and inconsistency (MES/GOI, 2014).

Yet the available information indicates that South Asian Seas region is rich in species diversity. For example, more than 15,000 marine species have been recorded from India alone (MoE/GOI, 2014). Published literature indicates that the region is important for the survival of around 100 globally threaded species (i.e. species included in the IUCN Red List of threatened species- critically endangered, endangered and vulnerable, the CITIES and CMS Appendices). Table 2.3 provides a summary of globally threatened species found in coastal and marine habitats of South Asia, while Annex 4 gives a comprehensive list of species.

Table 2.3: A summary of Species of global concern, recorded from Coastal and marine habits of South Asia

	Total No of species	No. of Species of Conservation concern		
		IUCN Red List (Thretned Categories-CR, EN, VU)	CITES Appendices	CMS Appendices
Mammals - Cetaceans - Sirenia - Other	31 01	09 01 07	26 01 04	10 01 01
Waders & Sea birds		32	17	
Reptiles - Marine turtles - Sea snakes - Salt water Crocodiles - Other	05	05 02	05 02	05
Fishes		26	18	03
Invertebrates - Coral - Mollusks - Other		78 07	88 04	
Plants - Mangroves		02		

Mammals

Most marine mammals in the region, such as whales, dolphins, porpoises and dugongs, are trans-boundary species. Terrestrial species such as the endangered Bengal tiger, the Leopard and Asiatic elephant are also encountered from forested areas within the coastal zone.

Cetaceans (Whales, Porpoises and Dolphins) - The SAS region is rich in Cetacean diversity with 31 species, accounting for one thirds of the recorded cetaceans worldwide. Of these, nine species are globally threatened (Refer Annex 4) and most are listed as Data while national species assessments have not been done for the majority of species. The Cetaceans vary in size from the largest blue whale to the very small finless porpoise.

Box 3 - Irrawaddy Dolphin population in Bangladesh

As recently as in 2009, nearly 6,000 Irrawaddy Dolphins were found living in freshwater regions of Sundarbans mangrove forest and the adjacent waters of the Bay of Bengal. This discovery gives a great hope for the survival of this threatened species and conservation of this habitat needs to be prioritized, as previously, the largest known populations of the dolphin had numbered in the low hundreds. However, the newly discovered population is already threatened by climate change and fishing nets.

The Government of Bangladesh declared three new Wildlife Sanctuaries to help protect this species as well as the threatened Ganges River Dolphin. These Sanctuaries safeguard 19.4 miles of channels with a total area of 4.1 square miles.

Source: MOEFCC/GOB, 2010 and http://www.wcs.org/news-and-features-main/helping-dolphins-stay-afloat.aspx

The region is critical to the recovery of the endangered north Indian Ocean blue whales, as a migratory as well as resident population's occurs in Sri Lanka, India and Maldives. The Irrawaddy dolphin, which is endemic to the North-eastern Indian Ocean, has distinct estuarine and coastal populations in Bangladesh (See Box 3) and in the Chilka lake of India where 138 individuals were recorded recently. Additionally, two freshwater dolphin species, the Ganges and the Indus dolphins inhabits the largest river systems of South Asia including their estuarine zones (Anderson *et al,* 2012, Hyot, 2011; Mohanty and Otta, 2008; de Boer et al, 2003; Ballance, 2001).

Sirenia (Dugongs) - The dugong (*Dugong dugon*) is listed as vulnerable to extinction at a global scale. The species is listed in CITES Appendix I and CMS Appendix II. The dugong has a large range that spans some 48 countries and territories including India and Sri Lanka (Marsh, 2008). Most sightings of dugongs in Bangladesh were reported as accidental capture or anecdotes from fishermen (Shah-e-Alam, 2011). Dugongs are believed to be extinct in the Maldives, but are reportedly sighted in the Gulf of Mannar and Palk Bay, followed by the Andaman and Nicobar Islands (*Sivakumar & Nair, 2013*).

The main **threats** to cetaceans and dugongs include: Stranding due to shipping, naval exercises etc. (especially the larger species), water pollution (mainly affect estuarine and near shore species) and marine debris and discarded or lost and floating fishing gear, noise pollution from military and seismic sonar, damming of rivers, haphazardly developed tourism (especially in whale and dolphin watching) and global climate change. Small cetaceans are primarily threatened due to fisheries related mortality with large numbers being taken as accidental by-catch throughout the region.

Tigers - The Sundarbans mangrove forest is the home of some 100 endangered Bengal tiger (*Panthera tigris*), possibly one of the biggest remaining tiger populations on the globe (*Neumann-Denzau and Denzau H, 2010*).

Waders and Sea birds

The coastal wetlands in South Asia form an important feeding, nesting and wintering grounds for large number of waders. Sandy beaches, intertidal mud flats, and rocky outcrops are important as foraging sites, while the mangroves serve as breeding ground for species such as egrets, herons, storks, warblers and raptors. South Asia belongs to the Central Asian-Indian flyway of the Asia Pacific region covering large

intra-continental territories of Eurasia between the Arctic and the Indian Ocean. This flyway is important for migratory waders, with arctic-breeding species travelling from northern and central Siberia to winter in South Asia, principally along the coast of Bangladesh, east coast of India (e.g. Great Knot- Refer Annex 4), Sri Lanka. A significant population for the Spoonbilled sandpiper, one of the, if not the most, threatened migratory waterbird in the world, winters in the huge inter-tidal areas of the coast of Bangladesh.

Annex 5 and 7 outlines important bird areas (IBAs) in the region, where high concentrations of species of global significance are encountered. According to the Bird life International Red Data Book, the following three coastal habitats occupy some of the largest wader concentrations in the region: Indus delta and Run of Kutch; South India and Sri Lanka (Pulicat and Chilika Lakes and Point Calimere of India; Bundala and Yala National Parks of Sri Lanka); and Bay of Bengal coast, mainly the Sundarbans). The intertidal mud and sand flats of the Ganges-Brahmaputra-Meghna delta IBA support the largest known concentrations of Spotted Greenshank, Spoon-billed Sandpiper and Indian Skimmer in the world.

The seabirds of the region are poorly known and do not appear to be abundant in the region, yet considerable populations are found in the following locations:

- The Sundarbans are an important staging and wintering area for gulls and terns,
- the islets of Adam's Bridge, off Sri Lanka have some seabird colonies .
- Pitti islands of Lakshadweep, three pelagic species are of significance; Sooty tern , Noddy Tern and Large crested Tern
- Haa Alifu Atoll of Maldives, supports a large seasonal concentration of Lesser Noddy

Most of the water birds inhabiting the coastal wetlands of South Asia are decking, although information on status and trends is generally poor. In most countries there has been little previous investment in conservation and low involvement of local stakeholders in the sustainable management of wetlands. For example, along India's east coast, many important wader habitats have been severely degraded by a range of threats including the depletion of groundwater, saltwater intrusion, intensive species, illegal hunting and the extension of salt-based industries. At the Point Calimere Wildlife Sanctuary, ringing and census data show that there has been a dramatic decline in many species of waders since the 1980s. Populations of the two most common sandpipers, the Little Stint and Curlew Sandpiper, have decreased by over 70%, and once numerous species such as Pied Avocets and Black-winged Stilts are now scarce. For Sea birds the main reason for mortality is due to long-line fisheries and gill-nets (BirdLife International, 2005 and Chan *et al,* 2004).

Reptiles

The reptilian population that the coastal and marine habitat of South Asia harbours around 26 species of sea snakes (MoEFCC/GOI, 2014), five species of sea turtles and several globally threatened terrestrial turtles and terrapins (MoEFCC/GOB, 2010; CCD/GOP, 2014).

Marine Turtles - Out of the seven species of marine turtles recorded worldwide, five species are found from the coastal waters of South Asia and at least four of them have significant nesting grounds within

the regions beaches (Refer Annex 6). On a global scale these turtles are listed in the IUCN Red list of Threatened Species (*IUCN Red List, 2014*) as Critically Endangered (Hawksbill), Endangered (Loggerhead and Green turtle), and Vulnerable (Olive ridley and Leatherback). Green turtle nesting sites are the most widely distributed within the region, while the only reported recent loggerhead nesting sites are from Sri Lanka (*Shankar, 2004*). In the late 1970's and up to early 1980's, there were several reports of Loggerheads nesting on the Andaman and Nicorbar islands. However there is absolutely no evidence of this species nesting in the Islands now (*Andrews, 2000*).

The single largest breeding ground of olive ridley is found in Orissa on the east coast of India, where mass breeding occurs in three nesting beaches; Gahirmatha, Deviriver mouth and Rushikulya. The nesting at Gahirmata at the mouth of the river Maipura near Dhamra, is the largest sea turtle rockery in the world with 100,000 to 500,000 turtles nesting there each year (MoEFCC/GoI, 2005).

According to a study conducted in 2011, almost half (45%) of the world's threatened sea turtle populations are found in the northern Indian Ocean. Threatened populations of Loggerheads and Olive Ridley Turtles are found in waters and on nesting beaches within EEZs of countries such as India, Sri Lanka and Bangladesh (*Wallace et al, 2011*). All sea turtles have declined in recent times, and until 1980s the major threats for turtle conservation were trade, and egg and meat consumption by humans. Presently, the threats to their survival are more indirect, such as development activities along the coast, pollution of coastal waters, and incidental capture in fishing nets (Table 2.4).

Table 2.4: Major threats to the survival of marine turtles in South Asia

Country	Major Threats
Bangladesh	Obstruction by fishing trawlers and fishing nets, poaching of eggs and loss of nesting beaches due to erosion and construction, man-made barriers
India	Heavy trawling related mortality, Incidental catching during fishing, Sand mining at Kerala and Andaman-Nicorbar islands, Loss of habitat due to tourism development, Predation by tigers and dogs, Meet consumption and egg poaching by humans; natural disasters (Tsunami, cyclones)
Maldives	Trade of turtle shells and eggs, infrastructure development for tourism.
Pakistan	Oil spills, Shrimp trawling, predation by wild-animals
Sri Lanka	Improper hatchery practices, Coastal developments; Exploitation by humans for eggs and meat, and Incidental by-catch.

Fish species

The fish population in the Indian Ocean is extremely diverse with 2,546 species of fish belonging to 969 genera, 254 families and 40 orders. Over 1,200 species of fish have been recorded from the reefs and surrounding ocean of the Maldives alone (Wells *et al,* 1995). Around 1,000 species of marine fish have been recorded in Pakistan's coastal waters; however, no analysis of their population status and distributional range is available (Climate Change Division/GoP, 2014)). Around 475 fish species have been recorded from the marine waters of Bangladesh (MEF/GoB, 2010). 2,546 marine fish species have been recorded from India (MoFE/GoI, 2014).

As indicated in Annex 4, a considerable number of marine fish species recorded from the South Asian Seas are globally threatened. Given below are two examples, where the fish are threatened either as a by-catch in commercial tuna fishery (Sharks) or due to direct exploitation (Humphead Wrasse).

Sharks - Most sharks are long-living species that grow slowly, mature late, and have low reproduction rates. These biological factors make sharks particularly vulnerable to overfishing. Globally around 17% of sharks and their relatives are threatened, an additional 13% are considered Near Threatened, and a high proportion (47%) are Data Deficient. In the South Asian Seas region some of the globally threatened species encountered are Whale sharks**,** Great Oceanic white tip, Scalloped hammerhead and Great hammerhead shark. However, India, Pakistan and Sri Lanka are within the 15 top shark-fishing nations.

Humphead Wrasse is widely distributed in coral reefs and inshore habitats throughout the tropical Indo-Pacific. It is particularly heavily exploited at the centre of its range in South-eastern Asia, due to the live reef fish trade. Fishery-dependent and trade-related data suggests overall declines of at least 50% over the last 30 years, which has qualified this fish for an Endangered listing (Red list, 2014).

The impact of fishery on marine biodiversity will be further discussed in Section 4 (Sustainable Fisheries and Aquaculture for the SAS region).

Invertebrates

Reef Building Corals - Over one-quarter (27%) of the world's 845 species of reef-building corals have been listed as threatened, an additional 20% are considered Near Threatened, and 17% are Data Deficient (IUCN Red List of Marine Species, 2008) (see Section 1.1. for more details).

Plant species

Mangroves – As indicated by Polidoro et al, 2010, eleven of the 70 mangrove species (16%) are at elevated threat of extinction. Particular areas of geographical concern include the Atlantic and Pacific coasts of Central America, where as many as 40% of mangroves species are threatened with extinction. *Sonneratia griffithii*, which is critically endangered is found in India, Bangladesh and Southeast Asia, where 80 percent of all mangrove area has been lost over the past 60 years (see Section 1.1 for more details)

2.2. Opportunities and constraints in preventing species extinction

At National levels, marine species have varying degree of legal protection in all five countries but enforcement of these legal provisions are not as effective as they should ideally be for various reasons. Listing Species in Appendices of fishery and wildlife legislation as well as declaration of protected areas are two main actions undertaken by national governments.

Yet a major drawback to national conservation efforts in all countries of the region is a lack of knowledge and scientific data upon which conservation strategies and measures can be designed effectively. Studies being conducted are either opportunistic or mostly small research initiatives lead by individual researchers, NGO's or Universities, under externally funded projects, which are sporadic and do not yield the kind of long-term data that can inform conservation or management. As a result of the lack of research

in the region there are large gaps in knowledge and for most species: population estimates or trends, distribution and movement patterns, and human-marine mammal interactions are not monitored.

At the regional and international levels there are several initiatives for the protection of the species as described below:

- The waters of all SASP countries are within the ***Indian Ocean Whale Sanctuary***, declared by the International Whaling Commission in 1979. However the provisions of this Sanctuary only apply to large whale stocks that were once commercially exploited and small cetaceans are not taken into consideration.
- Under the auspicious of the **Convention on Migratory Species** there are 3 Memorandums of Understanding (MoUs) targeting marine species: Marine Turtles, Dugong, and Marine Sharks (Refer Annex 1).
- **CITES listing**– for example 18 shark and ray species have been listed in Appendix 11 and from September 2014 there will be trade regulations for importing and re-exporting the species – many of them are found in the SASP region (Refer Annex 4).
- **BirdLife International** initiatives such as Important Bird Areas (IBAs) programme
- Listing wetlands important for wader population under **Ramsar Convention.**
- Numerous resolutions adopted by **FAO, IOTC and BOB-IGO** with regard to safeguard the commercially important fish species

2.3. Conclusions and Recommendations

The most important cetaceans that need priority conservation measures within the region are: Blue whales, Pacific humpbacked dolphins, Irrawaddy dolphin, and the Dugong. Collaboration between countries in relation to conservation and research is important because:

- The habitat and range of many species is not confined to the waters of a single country.
- For certain shared populations standardization of conservation activities through co-operation and collaboration between countries is crucial if the population is to be viable in the long term (MoU Dugong).
- Collaboration can facilitate maximization of scarce resources for marine mammal research which is costly and difficult for individual developing countries to carry out on their own.

Policy statements of most countries in the region recognize cross-cutting issues between different uses of coastal and marine ecosystems, such as the fisheries sector, marine transport, coastal tourism, municipal development and offshore minerals exploitation. All South Asian nations have expressed their commitment to sustainable harvesting of marine and coastal resources and to conserving biodiversity. However, the implementation of these policies is varied and differ in effectiveness. The reasons include overlapping jurisdictions, conflicting mandates, inadequate coordination, socio-economic and poverty issues and capacity constraints.

The specific recommendations for the region include:

- Improve knowledge base through joint research, collaborative assessments and long-term monitoring
- Strengthen taxonomic capacity and formulate standard format for data collection and analysis;

- Identify migratory routes of species as well as resident and transboundary stocks
- Assess upwellings and salinity changes, and impact of climate change
- Coordinate research
- Harmonize legislation protecting marine species at national and regional level;
- Train enforcement staff of different agencies;
- Develop MPAs to cover Migratory routes
- Promote collaboration between different stakeholders
- Regularly update IUCN Red List assessments at national level, or develop a regional level Red list
- Introduce eco-labelling and certification systems for sustainable fishery
- Secure funding

3. Combating Marine and Coastal Invasive Alien Species

The Aichi Target 9 establishes that by 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated and measures are in place to manage pathways to prevent their introduction and establishment.

3.1. Main Entry Pathways of Marine and Coastal Invasive Species (IAS) in SAS

Invasive Alien Species (IAS) are those introduced (accidentally or intentionally) species, which out-compete native species and cause economic and ecological damage by spreading in natural ecosystems (IUCN, 2009). Main transmission pathways for IAS in coastal and marine ecosystems are due to ship ballast water, aquaculture, aquarium and ornamental trade, and other land based IAS that reach the coast and marine environments.

Ship ballast water is the largest vector of transfer of IAS. It is estimated that at any given moment worldwide, between 7 000 and 10 000 different species are being transported between bio-geographic regions in ballast tanks alone (*Bax et al, 2003, IUCN, 2009*). The increase in transoceanic trade through SAS region's ports is an area of concern. For example, in India, nearly five thousand ships call annually at Mumbai Port, collectively discharging approximately two million tons of ballast water (Puthucherril, 2008). Ballast water is capable for transporting viral and bacterial pathogens (e.g. cholera), as well as resistant cysts of toxic dinoflagelates that could lead to harmful algal blooms and shellfish poisoning (*Bax et al, 2003*). Another important transfer of IAS in ships is through hull fouling, which is the attachment to the hull of ship certain organisms, such as mussels, sponges, algae, etc., and there is a risk that these alien organisms will spread and establishing themselves in new ports and bioregions. The recent use of metal hulls and anti-fouling paints and faster ship speeds have contributed to less hull fouling, although shipping has increased and therefore the problem of hull fouling remains relevant.

Aquaculture is a main economic activity in the region and the introduction of alien species through this industry is also an area of concern. In the Asian context, around 50 species of finfish that are alien to one nation or the other are being cultured (de Silva et al. 2006), including species that are farmed in accordance with national laws and regulations as well as those that are illegally introduced. India, the second largest aquaculture producer in the world (FAO, 2012), has a thriving industry focusing on various cyprinids, freshwater prawn and marine shrimp. 40% of the national production it is achieved through the culture of alien cyprinids, notably the common carp and different species of Chinese carps (de Silva et al. 2006). Unregulated introduction and illegal farming of several new exotic species also occurs in the region,

with several of these species being listed as potential pests, and capable of negatively impacting the native aquatic biodiversity (see Box 4).

A related sector, the **aquarium and ornamental industry**, is another area of concern, as IAS traded are usually healthy adults, which make them a bigger threat of invasion if released to the wild (Padilla & Williams, 2004).

Box 4 - Introduction of American White Shrimp – Lessons Learned

The white leg shrimp (*Litopenaeus vannamei*), formerly known as *Penaeus vannamei* has spread from Taiwan in 1995 to almost all Asian shrimp farming countries. In India, it was introduced clandestinely during 2001 in the states of Tamil Nadu and Andhra Pradesh under the believe that it out performs *P. monodon* on all aspects of aquaculture. The rapid growth in the farms of this species has had its set-back. Despite the rapid expansion of farming of *L. vannamei*, farmers have suffered significant economic losses due to various viral diseases. It is suspected that the Taura Syndrum virus and infectious Hypordermal and Hepatopoietic Necreosis virus, exotic viral pathogens invaded the Indian shrimp farms through *L. vannamei.* Various possible problems include its impact on the wild and indigenous stocks, potential to act as carries of diseases, biodiversity issues, etc., remains to be studied. The consequences of introduction of *L. vannamei* point to the importance of precautionary approach that should be taken before introductions are allowed.

Source: Ministry of Environment and Forest /Government of India (2010): Achieving 2010 Biodiversity Target: India's Contributions.

Further numerous **land invasive** are affecting the coastal and nearshore ecosystems of the region. Species such as Prickly Pear (*Opuntia dillenii*) and Mesquite (*Prosopis junif*lora) are spreading in sand dunes and beaches and destroying natural vegetation. In southern Sri Lanka, *O dillenii* has spread in sand dunes and beaches after the tsunami preventing the regeneration of natural vegetation such as Spinifex (Bambaradeniya *et al.,* 2006).

The Bangladesh portion of the Sundarban mangrove is also threaded by spread of invasive plant species such as *Derris trifoliata*, *Eichhornia crassipes* and *Eupetorium odoratum. D. trifoliata,* a climber, poses a threat to many regenerating tree seedlings owing to its aggressive twining and strangulating habit. This species is widely distributed throughout the mangrove forest irrespective of local ecological and environmental conditions. The dense populations of *Derris* trifoliata form a cover over the seedlings and saplings of *Heritiera fomes, Excoecaria agallocha, Sonneratia apetala,* among others (Biswas, 2007).

IAS can lead to the loss of native biodiversity due to: preying upon native species, competition for habitat, transmission of parasites and diseases, genetic dilution due to hybridization, changes to ecosystem function and nutrient cycles and decreased water quality. Many of these impacts would have economic impacts, by interfering with biological resources that support fishing and mariculture, disrupt tourism; damage infrastructure, and other costs related to clean up, control, treatment and quarantine measures.

3.2. Current Status and Recommended Actions for Mitigate the Threats of IAS

The present IAS status and recommendations to mitigate the threats posed by them are provided in the Annex 8. In general, countries have inadequate legislations or policies to deal with IAS, quarantine

measures are also weak, and there are insufficient scientific information to address prevention and control of IAS.

Regional actions

The Regional South Asian Seas Programme, through SACEP coordination, is currently working for the creation of a Ballast Water task force and a Regional Strategy for Ballast Water Management Strategy.

Other relevant international instruments that support the management of IAS in coastal and marine environments include:

- For **Aquaculture**, the Convention on Biological Diversity and the Food and Agriculture Organisation (FAO) Code of Conduct for Responsible Fisheries (CCRF), discourages the use of invasive alien species in aquaculture (including mariculture) and calls for accurate assessments of the risks of using alien species. The International Council for the Exploration of the Sea's Code of Practice on the Introduction and Transfer of Marine Organisms is one of the most comprehensive instruments to help in the responsible use of introduced species but is only voluntary (IUCN, 2009).
- For **Ballast water**, the International Convention for the Control and Management of Ships Ballast Water and Sediments (BWC) was adopted by the International Maritime Organization (IMO) in 2004, but has only been ratified by Maldives from the SAS countries. The Convention will enter into force 12 months after it has been ratified by 30 states representing 35 percent of the world's merchant shipping tonnage. In addition, the IMO has also developed several Ballast Water management guidelines[2] to support the implementation of the IMO Convention. Additionally, hull fouling is often treated with harmful substances, such as anti-fouling paints to prevent marine life to attach itself to the hull of ships. In order to reduce these impacts, the IMO adopted the International Convention on the Control of Harmful Anti-fouling Systems on Ships in 2001, which entered into force in 2008, and which sets the standard of what type of substances are banned for use for hull anti-fouling.
- The Global Ballast Water Management Program is an effort of the IMO, the United Nations Development Program (UNDP), and the shipping industry to assist less industrialized countries to tackle the ballast water problem.

While ballast water and aquaculture are encouragingly starting to being addressed, it is necessary to understand what are the other vectors and transmission pathways responsible for distributing invasive alien marine species in the South Asia region, and more needs to be done at national, regional and global levels to understand and address these issues.

3.3. Conclusions and Recommendations

While prevention is cheaper and safer option, it requires full commitment of countries. The management of threats is only possible if taken care at the global and regional levels, not only because of the global nature of the IAS problem, but because the development of national initiatives without international consensus will also complicate international trade (Bax *et al*, 2003).

Measures to address control and eradication needs on Invasive Species include:

[2] http://globallast.imo.org/index.asp?page=resolution.htm&menu=true

- Create an Early Warning of International Outbreak of Marine Invasive Species, with a regional framework to manage the risks and the responses (Bax et al, 2003).
- Develop an IAS Expert Working Group to address the scope of the IAS problem on marine and coastal biodiversity in SAS, identifying the specific pathways and risks in the region.
- Carry out a capacity building assessment needs in SAS countries, and develop a capacity building plan for the SAS region.
- Urge all SAS countries to ratify the IMO - Convention for the Control and Management of Ships Ballast Water and Sediments.
- Support countries to establish national and regional standards and procedures for the management and control of ships' ballast water and sediments
- Promote a shift in from developing organizations to direct their investment in the use of native species for aquaculture purposes, either as primary species for human consumption, or as food products for aquaculture species growth (Hewitt, Campbell, & Gollasch, 2006)
- Evaluate the short-term benefits to society against the consequences of short and long-term impacts, through a clear, transparent and participatory decision-making process, based on scientific evidence and a precautionary approach.
- Conduct risk assessments previous to the introduction of new aquaculture species and aquarium species
- Collaborate with the aquarium trade industry, for the certification of stocks, and preventing species being released.

4. Sustainable Fisheries and Aquaculture for the SAS region

The Aichi Target 6 aims for fisheries to be managed sustainably, legally and applying ecosystem based approaches, avoiding overfishing and ensuring that recovery plans are in place by 2020. Additionally, the Aichi Target 7 aims for aquaculture to be managed sustainably and ensuring the conservation of Biodiversity by 2020.

4.1. Main fisheries and aquaculture impacts on marine and coastal biodiversity

Fisheries

The SAS region is rich in both marine and inlaid fishery, and for Bangladesh and India inland fishery production is higher than marine fishery production (FAO, 2008). Marine fisheries make a modest contribution to the GDP of the bordering countries, with the exception of the Maldives, where this sector contributes 11% to GDP and 74% of the country's export commodities. Primary export commodities are shrimp and tuna, which make a significant contribution to national foreign exchange earnings. For example, in Bangladesh, fisheries account for more than 11% of annual export earnings Rapid development of aquaculture, mainly of shrimp, in the extensive coastal and brackish-water areas has made a significant contribution to the growth of national export earnings (FAO 2005). However, as fisheries production increases, the sector represents one of the biggest threats to marine biodiversity, and to its own existence, as fisheries require of healthy ecosystems to thrive. The growing demand of fish in local markets, due largely to the growing awareness on the nutritive value of fish, has been coupled with improvements in fisheries technology, bigger and better vessels, better fish finding and geo-position equipment, communication systems and storage facilities, aspects that are having an important impact in marine fisheries production (Aswathy, 2011; Dineshbabu, 2013).

Marine fishery catch trends have been oscillating within SAS countries, with increases in production in some countries, such as Bangladesh, India, and Sri Lanka (due to the end of fishing restrictions imposed during the civil war from the north and east of the country) and decreases in others, such as Pakistan and the tuna fisheries in Maldives. According to FAO analysis, the Southern Bluefin Tuna stocks are depleted, while species such as Croakers and drums Ponyfish and Giant Prawn are being over-exploited in the region. The below table (Table 2.5) provides an overview of the trends in catch assessment[3] by countries.

Country/ area	Time period	Large demersal	Small demersal	Large pelagic	Small pelagic	Anchovy/sardine	Trash fish/l Low-value fish	Surimi species	Shark/ rays	Squids/cuttlefish	Crustaceans
Bangladesh	1999 to 2009	+	+	o	+	nd	-	o	-	+	+
India	1995 to 2009	+	o	+	o	+	+	+	+	-	-
Maldives	2004 to 2010	+	+	-	+	nd	nd	nd	-	nd	nd
Sri Lanka	2000 to 2009	+		+		o		nd	-	nd	+

Table 1.5 - Trends in catch composition in the SAS countries (based on APFIC, 2012, excludes Pakistan). Notes: different groupings were assessed in terms of their relative occurrence in the catch (percent): increased (+); decrease (-) or were stable (o) over a specific time period, nd denotes no data available

The Trans-boundary Diagnostic Analysis carried out by the Bay of Bengal Large Marine Ecosystem (BOBLME) project during 2012, identified the main trans-boundary issues relevant to the overexploitation of marine living resource in the Bay of Bengal to be[4]:

- Decline in overall availability of fish resources
- Changes in species composition of catches.
- High proportion of juvenile fish in the catch
- Changes in marine biodiversity, especially through loss of vulnerable and endangered species.

[3] Adapted from APFIC 2012. No information available for Pakistan (Arabian Sea).

[4] The analysis includes Bay of Bengal area, which are SACEP maritime countries (except Pakistan)

These issues are mainly due to **overfishing** (including by-catch and discards), **unsustainable and destructive fishing practices** that modify or destruct habitats, and **illegal, unreported and unregulated (IUU) fishing** that seriously undermines the sustainability of fisheries management efforts (FAO & UNEP, 2010).

The impacts of **overfishing** on marine biodiversity include: the modification of community structure (e.g. trophic structure), the reduction in species richness or other taxonomic diversity indices, and risk of the impacted species populations becoming threatened, endangered, or even locally extinct. The impact of overfishing on the ecosystem may be direct or indirect, but it becomes more acute with the increase of fishing pressure, unreported by-catch and discards and IUU fishing.

Box 5 – Increase in Fleet Size

India, which contributes to 63,7 % to the fisheries production in SAS countries, has seen an increases in fleet size, with the consequent increases in yield, employment and exports, but also leading to excessive fishing pressure. The target of juvenile species is seen as a clear indication of overfishing in the region (Dineshbabu, 2013).

Other issues and processes occurring in the region that are (or will in the near future) promoting unsustainable practices include:

- **Trawl fishing** remains a cause of great concern for the conservation of marine biodiversity, due to the lack of selectivity and elevated by-catch (incidental capture of non-target species that is retained), the destruction of vulnerable ecosystems such as coral reefs and other disturbances of the seafloor and benthic communities (Hiddink et al, 2006, Biju Kumar & Deepthi, 2006). The trawl fishery is multispecies, although their main target is shrimp and other high-value species. Large portion of the by-catch is brought back to landing centers to be later used for fishmeal and animal feed. The percentage of discards may be around 3 % Up to 800 species are taken by the trawls, indicating an urgent need to regulate trawl fisheries (Vivekenandan, 2013).

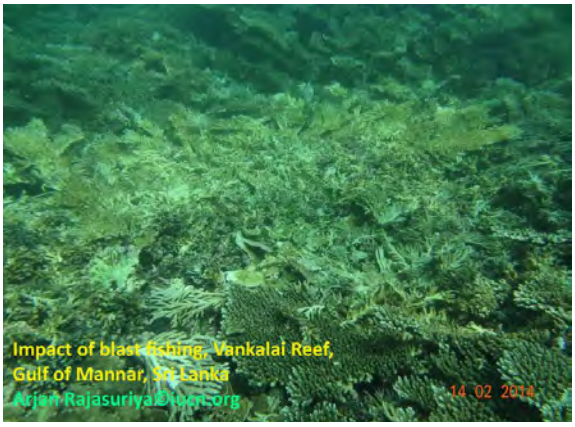


Figure 2 – Impact of blast fishing

- **Dynamite/blast fishing** is an example of "destructive fishing". Explosives are used to kill fish for easy collection, with tremendous negative effects on marine ecosystems such as coral reefs, as well as other vulnerable species linked to that ecosystem. Although not reported in South Asia, there is evidence that it exists (Arjan Rajasuriya, personal observation,). Another very harmful practice is the use of cyanide fishing, which is used to stun the fish and capture it alive, but with very negative impacts to the habitat and other marine vulnerable species in the surrounding area.
- **Unaccounted Mortality** is one of the main issues that undermine fisheries management due to: misreporting, discarding (if the related deaths are not accounted for), escaping (e.g. encountering the gear but not being retained by it), dropping out during hauling, and ghost fishing.
- **IUU Fishing** compromises existing efforts to improve fisheries management, adding to the uncertainty in decision making regarding the sustainable level of exploitation of fish stocks. IUU

fishing is likely to ignore any specific regulations implemented to protect vulnerable species or habitats, or any type of measures to protect biodiversity, it may also be focused on high value species that are also highly vulnerable to fishing, and where risk of extinction may be of greatest concern, and could compromises measures for biodiversity conservation in legal, reported and regulated fisheries (FAO & UNEP, 2010).

- **Fisheries subsidies** role maintaining or promoting the over-exploitation of fisheries resources needs to be better understood, specifically by looking at how they shape unsustainable practices in the marine capture fisheries sector.
- **Increased market demand for low value/trash-fish**, specially directed for fishmeal, particularly for those countries were the demand of fishmeal for aquaculture is increasing.
- **Increased production of surimi in the region,** which requires high amounts of raw material that comes from demersal species.

The negative impacts of these issues are expected to worsen due to climate change. Further the loss of spawning and nursery areas of some commercial species due to the degradation of coastal habitats such as mangroves, or the loss or destruction of migratory paths are also affecting the fishery resources of SAS. For example, anadromous species such as Hilsa shad, which lives in the sea most of its life but migrates inland through rivers for spawning, are vulnerable to river basin changes, such as barrage development. The closure of the Kumar River under the Ganges-Kobadak Project, cut off the Hilsa migration route and, as a consequence, the Hilsa fishery in Bangladesh and India was severely affected (Ara-Mome, 2007).

Aquaculture

South Asia's total aquaculture production amounted to 6,138,043 tonnes, equating to just under 8 percent of the total world aquaculture production. The growth rate was 9 percent/year in terms of volume and 13 percent/year in terms of value between 2000 and 2010 (APFIC, 2012). The sector contributes to food security for millions of people, ensuring fish provision against a backdrop of declining wild fish stocks. In Bangladesh alone, more than 0.70 million people are employed in the farmed shrimp sector.

The mainstay of the South Asia subregion has been production of freshwater fish, especially the omnivorous and herbivorous Indian carps. This increase is probably not heavily dependent on marine sources of feed, which may represent a real contribution in terms of food security (APFIC, 2012). Other relevant species produced include lower value species, such as aquatic plants and mollusks, and other high value species such as marine finfish, and crustaceans. Aquatic plants had the strongest increase, of 43 percent/year between 2001 and 2010 although the production remained low at just 18 018 tonnes (FAO, 2010). The culture of mollusks also increased rapidly by 28 percent/year between 2000 and 2010 with a production of 4 242 tonnes. Most mollusk production in the region is of green mussel (*Perna viridis*) and Indian backwater oyster (*Crassostrea madrasensis*), and are both mainly produced in India. Marine finfish increased at a 14 percent/year between 2000 and 2010, however, production again remained small, at just 102 245 tonnes in 2010. The main group cultured in the region is crustaceans, with a slower growth rate of just 2 percent/year between 2000 and 2010, and a production of 226 727 tonnes in 2010. Main crustacean species produced are the giant tiger prawn (*Penaeus monodon*), mostly from India and Bangladesh.

Some of the negative impacts of the aquaculture sector include:

- the loss of large amounts of wild larvae
- physical degradation of coastal habitats, such as the conversion of mangrove forest and the destruction of wetlands, land subsidence and the salinization of ground and surface water
- discharge of suspended solids and enrichment of nutrients accompanying the aquaculture operations
- changes in benthic communities and the eutrophication of coastal wetlands
- risk of transmission of diseases from aquaculture species to wild stocks
- introduction of non-native species into the natural ecosystem that can lead to displacement or competition with indigenous species (see section on Alien Invasive Species)

These negative impacts could be minimized by applying sustainable practices that do not add pressure over wild stocks or over coastal and marine biodiversity.

4.2. Existing Strategic Actions - Policy, Legislative and Institutional Responses to Issues in the Fisheries and Aquaculture Sector in the South Asian Seas (SAS)

Fisheries

There is a considerable verbal and written support by countries towards sustainable fisheries management, with increased reference to "good" fisheries management initiatives, such as the Declaration of Fisheries Management Areas (Sri Lanka), Fleet Reduction targets in line with capacity limits (India), Marine and freshwater protected areas/no take-zones (Bangladesh), and Gear Restrictions (India). Additionally, National Action Plans on Sharks are being developed, with ongoing discussions of developing a regional plan for Bay of Bengal region. Despite the good intentions, however, many of the plans are not fully adopted by national authorities, and implementation is still weak in the SAS countries. Annex 1 outlines existing policy and management measures for the SAS region.

A policy analysis carried out by BOBLME (2012), which looked into capture fisheries, the marine environment and integrated coastal management, concluded that the majority of countries are determined to increase marine capture fisheries despite doubts over the availability of fish. All countries emphasized the need to expand their national fleets offshore, mainly due to fully exploited inshore fisheries (as a way to reducing conflict), but also towards supporting the national fishery industry to generate employment, ancillary industries and providing food security (Huntington, Tim & Graeme Macfadyeb, 2012).

The analysis also identified:

- the need for greater emphasis of catch certification and traceability for capture fisheries as well as aquaculture, both for domestic as well as regional and international markets
- reduction of tariff barriers requires much greater policy attention
- the need for balancing increase in exports with food security and environmental needs
- capacity development needs
- insufficient budget for MCS as major issues for successful policy implementation
- challenges to incorporate elements of the FAO Code of Conduct for Responsible Fishing (CCRF)
- increasing mention of EAF, but little implementation
- a need for greater regional cooperation in adopting EAF and updating policies.

International Agreements to promote Sustainable Fisheries and Regional Responses

A number of international instruments have been formulated to address the issues of responsible fishing and sustainable management of fish stocks (see Annex 1 for more details).

At the global level, two important instruments are the **Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels** (the 1993 FAO Compliance Agreement) which none of the SAS countries are party to, and the **Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 1982** (UNCLOS), which has been ratified by all five SAS members.

Relating to the **Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks** (the 1995 UN Fish Stocks Agreement), which have been ratified by Maldives and Sri Lanka. India has acceded this international agreement while Bangladesh and Pakistan are signatory (Refer Annex 1).

The **Convention on Biological Diversity (CBD**) entered into force on 29 December 1993, and is a strong commitment of the international community to sustainable development and the conservation of biodiversity, which has been ratified by all five SAS members.

The UN Food and Agriculture Organization Code of Conduct for Responsible Fisheries (CCRF) came to force in 1995, to ensure the benefits of fisheries for future generations by encouraging responsible fishing practices.

The **FAO 2009 Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated** (IUU) fishing, which lays out in detail the commitments and obligations that port states have relating to the use of their ports by fishing vessels and the vessels which service the fishery, has not yet entered into force but has been open for signing since 2009 and five countries in the region have already signed or acceded to the agreement (only Sri Lanka from South Asian Seas countries, APFIC 2012).

With the exception of Pakistan, which is located in the Arabian seas, the other four SAS countries were also Party to the agreement making the **Bay of Bengal Programme Intergovernmental Organization** (BOBPIGO, 2010).

India, Maldives, Pakistan and Sri Lanka are also members to the **Indian Ocean Tuna Commission (IOTC)**, which aim is to promote the conservation and optimum utilization of tuna stocks in the Indian Ocean. In 1979, the International Whaling Commission declared the **Indian Ocean a Whale Sanctuary**, prohibiting commercial whaling in the whole of the Indian Ocean.

All South Asian Seas countries are also signatories to the **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)**, with the recent inclusion of Maldives. The Convention has included 18 species of sharks and Mantra rays in Appendix II to ensure sustainability in their stocks.

Improving Fisheries Management through an Ecosystem Approach

The Ecosystem Approach to Fisheries (EAF) strives to balance diverse societal objectives, by taking into account the knowledge and uncertainties about biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries (FAO 2003). EAF aims to implement sustainable development concepts into fisheries management by addressing human and ecological well-being. The Bay of Bengal Large Marine Ecosystem Project Regional Fisheries Management Advisory Committee has provided an excellent example of advice on the major issues facing the regional fisheries for hilsa shad and Indian mackerel using the EAF. In Annex 9 there is an overview of the findings of the working group that could be used as example for other stocks. The EAF explicitly encourages the participation of all the relevant stakeholders in order to translate high level policy goals into day-to-day management activities.

Voluntary certification schemes for capture fisheries

Due to greater consumer awareness, voluntary certification schemes are on the rise. Despite their focus on sustainability, which has the potential to improve fishery management, the development and use of these types of schemes has certain challenges, such as UNEP has identified (UNEP, 2013):

- the need of reliable data availability
- risk of distortions to local markets and livelihoods due to an increase on exports
- high certification related costs, which may hinder the capacity of small enterprisers to achieve certification.

The only example of certification in the SAS countries is the Marine Stewardship Council (MSC) Certification to Maldives pole-and-line skipjack tuna, which obtained certification in 2012.

By-catch management

Improving fisheries management would also require scientific studies of the ecosystem to which the by-catch species belongs, contributing to the knowledge of the state of non-target populations species linked to the fishery, whether they are increasing, decreasing, remaining stable or whether they are in danger of extinction. It is recommended that by-catch management plans should be developed for each fishery, with the use of more selective fishing gear, and changes in fishing areas and seasons, including conservation management measures to protect most vulnerable and threatened species.

Aquaculture

Some SAS countries have specific regulations to manage aquaculture specifically in coastal areas, promoting sustainable aquaculture without causing damage to coastal ecosystems (e.g. Coastal Aquaculture Authority Act, 2005, Government of India). Due to greater consumer awareness on the impacts of aquaculture, there has been a rise of voluntary schemes for sustainable aquaculture development. The 2011 FAO Technical Guidelines on Aquaculture Certification set the minimum criteria for developing aquaculture certification standards, and should be followed by SAS countries to improve the sustainability of their aquaculture operations.

4.3. Conclusions and Recommendations

Interventions should be designed and implemented with a holistic approach, taking into consideration not only fisheries concerns but also habitat and biodiversity concerns, as well as socioeconomic impacts. Some of the areas that require attention in the South Asian Seas region include:

- Improving cooperation in areas of fisheries and aquaculture, particularly in the management of trans-boundary stocks,
- Support South Asian countries in the implementation of the Code of Conduct for Responsible Fisheries (CCRF),
- Improve fisheries and aquaculture management, incorporating EAF and EAA principles and guidelines,
- Combat IUU fishing, with clear measures on how to address the issue at the regional and national levels, and an effective Monitoring, Surveillance and Control (MSC) system
- Identify and protect vulnerable habitats and species, including spawning and nursery grounds,
- Prevent habitat degradation, by prohibiting destructive fishing methods in ecologically sensitive habitats, etc.,
- Ensure the maintenance of genetic diversity and the integrity of aquatic communities, through responsible and sustainable aquaculture,
- Improve stakeholder involvement, through co-management mechanisms,
- Implement measures that minimize by-catch, waste and discard,
- Control the impact from fishing gear on habitats.
- Improve aquaculture systems, increasing the sustainable use of natural resources (land, water, wild fry, etc.) and reducing unsustainable fishmeal production,
- Introduce risk analysis and risk management measures when introducing species for aquaculture, to reduce environmental impacts, and the spread of diseases and pathogens.

5. Clean and productive waters: Prevention of Marine Pollution, especially through Excessive Nutrients

Rapid economic development and population growth, much of it along the world's coasts, plus increasing agriculture and livestock production and processing, have placed huge environmental pressures on coastal ecosystems from direct resource use and the rising influx of nutrients and other pollutants from the land and atmosphere. Nutrients, such as Nitrogen (N), are a key part of delivering food security and sustainable development. But excess use and inefficient practices lead to nutrient over-enrichment of water, sediment and soil causing eutrophication, algal blooms, species composition changes and ultimate habitat change in coastal areas. In addition changes in chemical properties like PH, and ion exchange in soil contribute to soil acidification, groundwater pollution in affected areas. These directly impact the marine and coastal ecosystem services and livelihoods they support. To mitigate these above issues, the Aichi Target 8 recommends that "by 2020, pollution, including from excess nutrients, should be brought to levels that are not detrimental to ecosystem function and biodiversity". Presently this chapter only discusses pollution due to excess nutrient loading, yet the possibility of adding oil spills and marine debris to this section is under consideration.

5.1. Main Sources of Nutrient loading and their negative effects

Box 6 – Main Facts on Marine Pollution in SAS

- The world's largest natural hypoxic zone develops seasonally over the Western Indian continental shelf which appears to have intensified in recent years most likely because of enhanced nitrogen loading
- South Asia is the second largest fertilizer consuming region in the world with consequent pollution especially related to fertilizer overuse.
- Large urban centers within the coast line are without adequate sewage treatment facilities, and in many instances raw sewage are directly disposed to the marine environment

The majority of the anthropogenic activities are conducted in the coastal zones or within the river catchments that releases to coastal zones. The consequence of these activities (agriculture or industrial activity, transport and commerce, power generation or urban developments) results in an inevitable release of pollutants (Fig. 5.1). Over the last 20 years, considerable data and expertise in understanding and addressing the various sectoral drivers, pressures, sources, impacts and response to nutrient enrichment and consequential eutrophication have been gathered. Model studies indicate that globally, roughly equal amounts of reactive Nitrogen reaches the oceans from fertilizer, manure and atmospheric deposition with smaller fractions from sewage (Setzinger *et al*., 2010). For the countries of the south Asian Seas region, fertilizer input is the most important contributor to nutrient pollution, although marginal differences may be observed in the context of a specific country. For example, in the case of Maldives, where agriculture plays a minor role in the economy, sewage is the major contributor (SACEP, 2014).

Signs of degradation of aquatic, estuarine, coastal and marine ecosystems due to nutrient loading are evident at various locations in South Asia, with several reports on eutrophic zones due to excessive growth of algae and fish kills due to hypoxia. Estuarine and coastal systems in South Asia are N-limited and N loading through upwelling, sediment transport and sediment release can trigger algal blooms and eutrophication (SACEP, 2014). For example, Nitrogen limitation has been reported from Mandovi-Zuari and Cochin estuaries on the west coast and Godavari and Hoogly estuaries on the east coast of India. Martin *et al*, (2011) report that anthropogenic nutrient loading (a six-fold increase in nutrient and chlorophyll levels during the last few decades) have caused a change in the benthic diversity of the Cochin estuary followed by an invasion of opportunistic polychaetes. In the Kodungallur-Azhikode estuary (Kerala, west coast), the major source of nutrients was associated with river discharge during the south-west monsoon (*Jayachandran et al., 2012*).

A few of these issues are also trans-boundary issues, like discharge of untreated/partially treated sewage, and sewage and organic discharges from the Ganges-Brahmaputra-Meghna River (BOBLME-TDA, 2012). Moreover, high nutrient discharges from rivers could intensify large-scale hypoxia, and a few hypoxic zones are already identified in the South Asian Seas. The world's largest natural hypoxic zone develops seasonally over the Western Indian continental shelf which appears to have intensified in recent years most likely because of enhanced nitrogen loading through runoff and atmospheric deposition (*Naqvi et. al., 2000, 2009*). Increasing reports on the number and frequency of algal blooms along the coast and

concerns of development of hypoxic zones makes it imperative for efficient nutrient management in South Asian Seas countries, especially because more than 90 per cent of fisheries depend in one way or another on estuarine and near-shore habitats which are increasingly being impacted by nutrient over-enrichment of coastal waters.

While nutrients are chemicals essential for the growth of organisms, nutrient pollution refers to the contamination by excess inputs of nitrogen and phosphorus into aquatic systems. This nutrient enrichment, eutrophication, initially stimulate growth of phytoplankton, microalgae and macroalgae, which in turn can lead to other impacts such as:

- Loss of subaquatic vegetation as excessive phytoplankton, microalgae, and macroalgae growth reduce light penetration.
- Change in species composition and biomass of the benthic (bottom-dwelling) aquatic community, eventually leading to reduced species diversity and the dominance of gelatinous organisms such as jellyfish.
- Coral reef damage as increased nutrient levels favor algae growth over coral larvae. Coral growth is inhibited because the algae outcompetes coral larvae for available surfaces to grow.
- A shift in phytoplankton species composition, creating favorable conditions for the development of nuisance, toxic, or otherwise harmful algal blooms.
- Low dissolved oxygen and formation of hypoxic or "dead" zones (oxygen-depleted waters), which in turn can lead to ecosystem collapse due to mass fish kills.

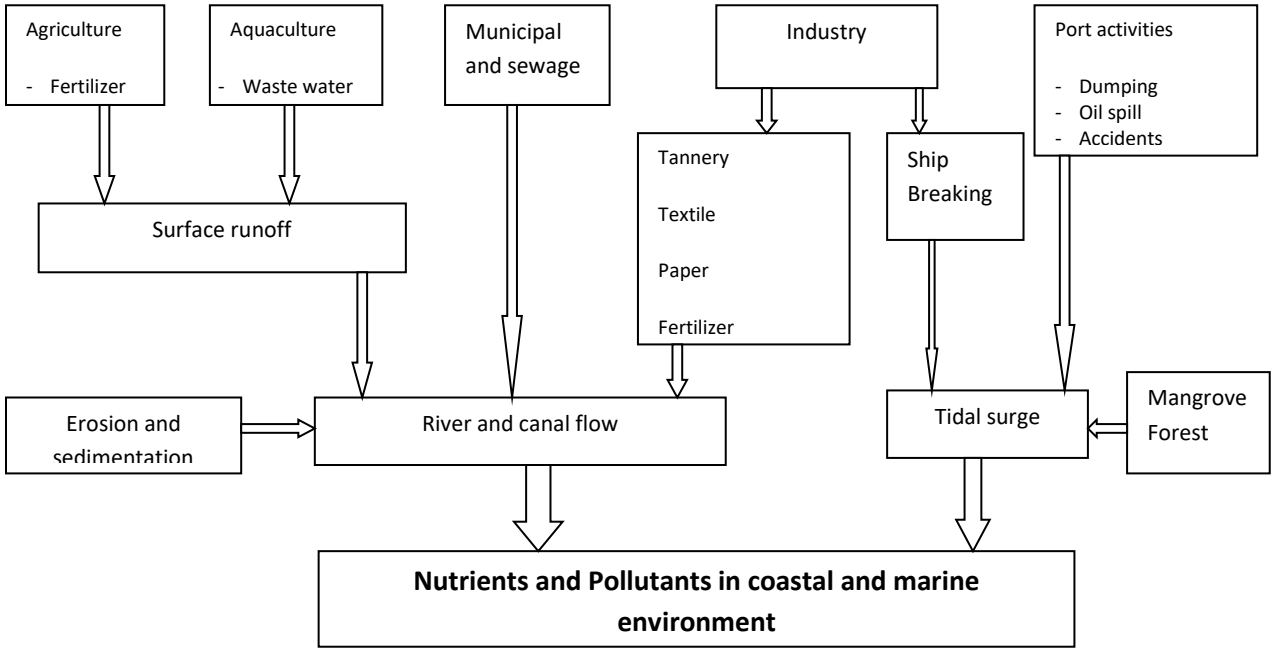


Figure 3 - Pathways of entering nutrients and pollutants in coastal and marine environment

The following section provides a summary of the main pollution pathways to coastal and marine ecosystems.

Agriculture

Agriculture remains the major livelihood in SAS nations. However, fertilizer input continues to be the most important contributor to nutrient pollution, although marginal differences may be observed in the specific context of each country. While the world demand for total fertilizer nutrients is estimated to grow at 2.0 per cent per annum from 2011 to 2015, Asia is the largest consumer of fertilizer in the world. Total fertilizer nutrient consumption in Asia is 60 per cent of the world total, and South Asia is the second largest fertilizer consuming region in the world (FAO, 2011) with consequent pollution especially related to fertilizer overuse.

Aquaculture

Fisheries and aquaculture are practiced to a great extent in south Asian countries and the produce serves as one of the major source of protein to ensure food security as well as income through export, and a source of livelihoods. However, it also comes at a cost. For example, shrimp aquaculture demands the use of a variety of chemicals apart from artificial feed to achieve higher production. Chemicals used in shrimp culture include disinfectants, water and soil treatment compounds, algaecides and pesticides, plankton growth inducers (fertilizers and minerals) and feed additives. Highly polluted effluents from shrimp farms that are discharged into the coastal waters leads to eutrophication of the receiving waters. BOBLME (2013) revealed that much of the coastal pollution in the Northwestern Province of Sri Lanka has been attributed to ad hoc development of aquaculture leading to the discharge of high amounts of effluents from shrimp ponds. This has already caused considerable pollution in the Dutch Canal (in the west) and the surrounding coastal areas.

Domestic sewage

Domestic sewage includes household waste liquid from kitchen, washing, bathing and toilets. Untreated sewage contains water, nutrients (nitrogen and phosphorus), solids, pathogens, chemicals including detergents, oils and greases and heavy metals, among other constituents. In most countries, except for the large cities and towns, wastewater generated from homes is usually let untreated into the nearest water body. In Bangladesh, only a third of Dhaka city has wastewater collection and treatment facility while another third uses septic tanks. Most of the untreated or inadequately treated wastewater directly or indirectly reaches the river systems and finally reaches the bay through different canals, drains and estuaries (DFID, 2005). Similarly the mega coastal cities in India such as Chennai and Mumabai generate large amounts of wastewater, of which about half is not treated before discharge. The wastewater from metros cities located on the coast is mostly disposed into creeks, canals or backwaters. It is estimated that 0.6 million tonnes of nitrogen and 0.1 million tonnes of phosphorus reach the coastal waters annually (CPCB, 2009).

Disposal of untreated sewage and food waste are believed to be major contributors to the nutrient influx to the marine environment in Maldives. This is evident from the growth of seagrass beds in the vicinity of islands following inhabitation or increased population in the islands. There are neither existing guidelines nor a framework for monitoring and assessment of nutrient levels in the marine environment (BOBLME, 2010). In Pakistan, it is estimated that approximately 362 million gallons per day (MGD) of sewage is generated in Karachi and adjacent areas from domestic and industrial sources. Approximately, 60 % are industrial effluents and 40% domestic discharges. The industrial waste-water and sewage are discharged

into the two seasonal rivers: the Lyari River and the Malir River of Karachi. These rivers act as main open sewers for liquid waste disposal from the city. The Lyari and Malir Rivers are thus contributing about 59% and 25% of the total pollution load of Karachi City respectively, while 15% of the pollution load is directly discharged into the adjacent open seacoast or discharged via Gizri, Korangi and Gharo Creek (Amjad and Rizvi, 2000).

Colombo is one of the few cities in Sri Lanka with an installed sewerage system, yet its capacity is inadequate to cater for the entire Colombo city as it is about 100 years old, and needs frequent repair. Another problem is the illegal sewage connections to sewerage lines and unauthorized connections to storm water drainage systems and combined sewers, leading to pollution of coastal water bodies such as the Beira Lake. Tourism expansion in southwest and southern areas of Sri Lanka has led to water quality degradation as well as visual pollution on beaches and near shore waters. The development of squatter settlements connected with tourism development is another cause for concern as it contributes to fecal pollution, being not only a health issue, but also poses a severe threat to recreational activities such as contact sports in coastal waters (CZMP, 2006). The high BOD and COD levels found during the one-year study conducted by the University of Moratuwa in the coastal waters coincided with areas where tourism is predominant – Marawila, Mount Lavinia, Wadduwa and Beruwala showed high levels during the northeast monsoon as tourist season falls in the months of December and January (Jayaweera, 2003).

Industrial actions

Several industrial operations release effluents into the coastal areas There are more than 8,542 industrials establishments along the coastal zone of Bangladesh that deals with jute, paper and pulp, textiles, fertilizers, rubber and plastic, tannery, food and beverages, sugar, pharmaceuticals, tobacco, distilleries, cement clinker, ship breaking etc. The textile industries discharge waste water of 40,000 m3/day and pollution load of these industries is 26,000 kg/day. A rough estimation of Polychlorinated Biphenyls (PCBs) released from Ship breaking yards at Sitakunda, Chittagong at 22.5 tons per year (Islam, 2004).

Approximately 95% India's trade by volume and 70% by value is moved through maritime transport. There are eight major ports on the Bay of Bengal coast and fifty three minor ports of particular concern is the potential for serious damage to livelihoods dependent on marine and coastal livelihoods in the event of major marine accidents such as oil or chemical spills from tankers (GoI, 2009). Major industries and mining activities situated within the coastal areas of India include textile industries, tanneries, paper and pulp mills, breweries, chemical factories, cement factories, sugar refineries, food processing industries (e.g. fish factories and slaughterhouses), fertilizer factories, oil refineries, and oil and gas exploration (an emerging activity). These contribute to transboundary marine pollution problems through inappropriate disposal of liquid wastewater, solid waste or atmospheric emissions.

In Pakistan, Karachi is not only has the largest port in the country but it is also the industrial hub of the and the main source of pollution in the coastal waters of Sindh. There are currently over 6000 big and small registered industrial units operating in Karachi. These industrial units are located in Sindh Industrial Trading Estate (SITE), Landhi, Korangi, Malir and the Port Qasim Authority area).

Industries that contribute most toward coastal water pollution in Sri Lanka are those dealing with textiles, paper, tanning, metal finishing and engineering, paints, chemicals, cement, food and beverages and distilleries. Small Industries that deal with coconut fiber retting also have highly localized impacts on water pollution. Most industries are not yet equipped with the basic infrastructure for waste treatment, while others are constrained in the use of available waste treatment facilities due to the high costs involved (CZMP. 2006).

5.2. Existing strategic actions (national and regional levels)

At national level, all SAS countries have enacted numerous legislation and policy on agriculture, waste management, aquaculture, fertilizer and agrochemicals to address this issue, yet the implementation is week as well as the nutrient loading issue is not address holistically, but on piece meal level. The countries are also party to various international treaties and are in agreement on implementing the international standards of coastal water management:

- GPA, adopted in 1995, is a voluntary, action-oriented, intergovernmental programme led by UNEP, to prevent the degradation of the marine environment from land-based activities
- The Global Partnership on Nutrient Management (GPNM) -a multi stakeholders global partnership for strategic advocacy and co-operation at the global and regional levels to build consensus in promoting nutrient use efficiency and work with stakeholders to develop guidance, strategies or policies on sustainable use of nutrients
- Land Ocean Interactions in the Coastal Zone (South Asia node)
- BOBLME project
- SACEP/SASP activities
- SARRC Coastal Zone Management Center

5. 3 Conclusion and Recommendations

There are clear overall indications of the effects of nutrient pollution throughout South Asia and a few of them are transboundary nature. Signs of degradation of aquatic, estuarine, coastal and marine ecosystems due to nutrient loading are evident at various locations in South Asia, as seen on eutrophic zones due to excessive growth of algae and fish kills due to hypoxia. Estuarine and coastal systems in the region are Nitrogen limited and Nitrogen loading can trigger algal blooms and eutrophication. Some of the estuaries, especially along the Indian east coast, are Phosphorus limited and are adversely affected by Phosphorus loading. The Western side of the Indian peninsula is already prone to seasonal development of natural hypoxic zones, whereas the East coast is relatively less prone to hypoxia. However, the most crucial factors of governance that contribute to nutrient pollution across the region are inadequate emphasis on nutrient use efficiencies and environmental standards in agriculture, poor sewage management and inadequate understanding that nutrients which are essential for food production, can be cause of pollution when released to the natural environment. The situation merits strong national and regional interventions, with a thorough assessment to understand the extent and scale of the problem, as well as to define remedial actions that could be pursued at various levels.

The available information on nutrient losses from various human activities and their accumulation in the coastal zones of South Asia is very limited. This calls for detailed studies with actual long term

measurements and simulation of nutrient pollution from source to sink (land to sea) for informed decision-making. Some of the recommendations identified for the region are:

- Systematic studies should be initiated to quantify the sources, flows, fate and extent of current industrial, agricultural and municipal effluents and the nutrients they contribute to water bodies and their impacts on aquatic life, fishing as well as human health.
- Methodologies and mechanisms should be developed for collection and sharing of data on the nutrient pollution status in different coastal regions of South Asia.
- Sustained efforts are needed for increasing nutrient use efficiency, land and water productivity to improve agricultural productivity, sanitation and reduce pollution.
- Land-based pollution should be minimized through integrated land use planning and land zoning for recycling of waste materials.
- The nutrient load in the estuarine and brackish water fisheries and its impacts on fish catch, landing, species composition and seasonality, ecosystem productivity and human health need to be assessed to limit adverse impacts.
- Pollution from ships and other transport systems as well as ship breaking industry should be tightly regulated through rigorous environmental impact assessment
- Innovative new policies to combine the social benefits of eradicating open defecation with technologies (such as composting toilets or treatment plants) for recycling human wastes as fertilizers, along with awareness programmes to highlight the health hazards of untreated use of human excreta (or sewage contaminated with them) for crop production
- There is a strong need for a South Asian level intergovernmental working group/task force for coordinated sustainable nutrient management and protection of the region's coastal and marine environment, with governmental and civil society representatives from the above national bodies. This may work within, or coordinate with the existing intergovernmental processes, including the UNEP-GPA, SAARC, SACEP the BOBLME project, etc. and build on them for stronger regional cooperation on nutrient management.
- Revisiting the existing regulations for nutrient pollution management in S. Asia and updating the national policies, regulation and action plans to accommodate the new challenges. Concurrent infrastructure development for rapid analysis of data and data sharing.

6. Ecologically representative and Effectively Managed MCP Network - Protecting biodiversity today for our future wellbeing

Aichi Target 11 requests countries that by 2020, at least 17 per cent of terrestrial and inland water areas and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effective and equitable management, are ecologically representative and there are well-connected systems of protected areas and other effective area-based conservation measures, integrated into the wider landscape and seascape.

Protected Area (PA) within the coastal and marine environment can have many definitions and can take many different forms around the world. For the purpose of the Regional Marine and Coastal Biodiversity Strategy (MCBS), the CBD definition is used, which describes a Marine and Coastal Protected Area (MCPA) as "an area within or adjacent to the marine environment, together with its overlying waters and associated flora, fauna and historical and cultural features, which has been reserved by legislation or other effective means, including customs, with the effect that its marine and/or coastal biodiversity enjoys a high level of protection than its surroundings"[5]. In the context of the Regional MCBS , it is also necessary to include "indigenous and community conserved areas," or ICCAs, which are defined as "natural and/or modified ecosystems containing significant biodiversity values , ecological services and cultural values, voluntarily conserved by Indigenous peoples and local communities, both sedentary and mobile, through customary laws or other effective means" (ICCA Forum, 2012).

Box 7 - Prominent Categories of MPAs

- Fully Protected no take zones
- Multiple use (balance between biodiversity conservation and human utilization of resources)
- Areas protected under Multilateral initiatives – UNESCO MAB, World Heritage, Ramsar
- Shared MPAs - between two or more nations
    - Trans-boundary (within the jurisdiction of two or more countries)
    - High seas PAs (areas beyond national jurisdictions)

6.1 Main MPA areas in SAS, Levels of protection and Challenges in Enforcement

The overall legal framework for biodiversity protection and PA establishment in Bangladesh, India, Maldives and Sri Lanka is centered on a main national legislation, while Pakistan has enacted several state laws (Annex 10). Yet, owing to the sectoral nature of the administrative systems for biodiversity conservation on coastal and marine ecosystems, several other laws also supplement the main legislation in identification and establishment of MCPAs. These sectorial legislations vary in the degree to which their provisions support the conservation of species and habitats depending on the primary objectives of each sector. Of relevance to PA in SAS countries:

- A total of 21 PAs (7 national parks, 12 wildlife sanctuaries, 1 marine PA and 1 special biodiversity conservation area) have been declared as Protected Area (PA) by the Government of Bangladesh since 2010 after the submission of the Fourth National Report on the CBD. The total area of newly added forest PA is 33,915,31 hectares. All 38 of forest PAs now cover about 10.55% of total forest area which is 1.8% of the total area of the country. Besides, two Marine Protected Areas (MPAs) of Swatch of No-ground in the Bay of Bengal, declared under Bangladesh Wildlife (Conservation and Security) Act, 2012, and Middle and South Patches of the Bay of Bengal, declared under the Marine Fisheries Ordinances 1983, together comprise 241,600 hectares (2936 sq km) constituting 2.05% of the total marine area of 11,881,300 hectares (1,18,813 sq km) of Bangladesh. Bangladesh has also declared 13 wetland areas of biodiversity importance as ECAs under Bangladesh Environment Conservation Act, 1995. The total area of ECAs managed by Department of Environment is 3,84,529 hector or about 2.60% of the total country. Among them, the four

[5] http://www.wcmc.io/areas/46

biodiversity important areas in coastal region are Cox's Bazar-Teknaf Peninsula ECA (20,373 hectares), ECA the Sundarban (10 km wide landward strip of land outside the Sundarban PA) ECA(2,92,926 hectares), St. Martins Island ECA (1,214 hectare), and Sonadia Island ECA (10,298 hector) (Source: Biodiversity National Assessment 2015).

- In **India**, presently there are 690 PAs covering 1, 66,851 km or 5.07% of the country's geographical area under the Wildlife Protection Act 1972. The 23 MPAs of peninsula India covers about 6158 km^2, which is 3.85% of the total PA coverage. Further there are 105 PAs in the Andaman and Nicobar Islands, about 100 include marine areas. These MPAs cover more than 30% of the terrestrial area of the islands and protect more than 40% of the coastal habitat. In the Lakshadweep group of islands, Pitti Island (0.01 km^2) is the only island having the status of an MPA. Additionally, coastal Regulation Zone Notification, 1991 declares coastal stretches of sea bays, estuaries, creeks, rivers and back waters which are influenced by tidal action up to 500 m from high tide line and intertidal zone, as the Coastal Regulation Zone (MoEFCC/GOI, 2014)

- The **Maldives** does not have any specific legislation for biodiversity conservation per se, but the existing Environment Protection and Preservation Act (Law No 4/93) incorporates provisions for PAs. Present PA system includes a network of 27 dive sites, in which only diving and bait fishing are allowed; 3 Protected Mangrove areas; and 4 protected islands. Maldives has pledged to become the first nation where the entire country and its Exclusive Economic Zone will be a UNESCO Biosphere Reserve by 2017. The entirety of Baa Atoll was declared a UNESCO World Biosphere Reserve in June 2011 (MEE/GoM, 2012).

- In **Pakistan** the PA system covers an area of 109,969 km2 or 13.65 % of the area of Pakistan. 114 PAs cover 12% of the area of the country. No exclusive Marine PAs have been established. Hingol NP and three Wildlife Sanctuaries contain coastal elements such as mangroves, estuarine environment and salt marshes. There is neither a national biodiversity policy nor legal framework for mainstreaming biodiversity in the planning and development process. At least nine sites have been identified as potential MPAs including the Indus delta, Astola Island and Miani Hor (Sonmjani Bay) (CCD/GOP, 2014 and 2012).

Box 8 – Main facts on MPAs in SAS

- SAS is lagging behind in protecting Marine environment and presently less than 0.5% of the EEZ is protected
- Most MCPAs are contained in near-shore habitats such as mangroves or coral reefs
- Other than the Indian Ocean whale Sanctuary, there are no shared MPAs in the region to protect trans-boundary species or habitats
- Cooperation and coordination between biodiversity and fishery sectors in PA establishment is limited, despite being recognized by legislation

- In **Sri Lanka**, the total Protected Area coverage at 2010 is around 1.84 million ha representing about 28% of the total land area of the country. Wildlife and the Forest Departments manage the majority of these. Additionally, 8 Environmental Protection Areas (EPAs) have been gazette by the

CEA under the National Environmental Act of 1980. The majority of these PAs are terrestrial, while 7 National Parks, 25 sanctuaries and 1 SNR contain costal and marine elements. Further 15 mangrove areas are designated as Conservation Forests. The Coast conservation Act (CCA) amendment No 49 of 2011 also paves the way for more positive coastal zone management. It has provisions to declare: affected areas where no development, dumping of waste or damaging activity can be carried out, beach parks for preservation of scenic beauty and biodiversity, and conservation areas for the protection of the coastal and aquatic eco-systems, where no development activity will be permitted. Several near shore areas (mainly lagoons and estuaries) have also been gazette as Fishery Management Areas under the Fisheries and Aquatic Resources Act (MoERE/GoSL, 2014).

6.2 Regional and Global Initiatives

A number of regional and global initiatives are taking/will take place of relevance to marine and coastal protected areas, such as:

- The South Asian Seas Action Plan (SASP) emphasizes the importance of co-operation between the member states for the establishment and management of national protected coastal and marine habitats, and aims the establishment of a regional network of protected areas, through joint activities to protect coastal ecosystems and wildlife and through the training of technical and managerial personnel for the conservation of wildlife and habitats.
- As part of the CBD work on Protected Areas and Ecologically or Biologically Significant Areas, for the marine environment, a workshop for the Bay of Bengal region will be held in March 2015.
- The CMS Indian Ocean – South-East Asia Marine Turtle Memorandum of Understanding (IOSEA) Marine Turtle Site Network is awaiting the nomination of sites by the SAS countries.
- No sites have been designated by the IMO as Particularly Sensitive Sea Area (PSSA). A **PSSA**[6] is an area that needs special protection through action by IMO because of its significance for recognized ecological or socio-economic or scientific reasons and which may be vulnerable to damage by international maritime activities.
- The BOBLME project has taken action for collaborative critical habitat management (e.g. Gulf of Mannar between India and Sri Lanka).
- The SAS region falls within the Indian Ocean Whale Sanctuary established by Indian Whaling Commission.
- There are 19 Ramsar sites with coastal and marine elements within the region. Annex 1 provides biologically significant ecosystems designated under international process such as Conventions.

[6] http://www.imo.org/OurWork/Environment/PollutionPrevention/PSSAs/Pages/Default.aspx

6.3 Conclusions and Recommendations

The number of MCPAs has increased over the years to provide protection for coastal and marine ecosystems, especially near-shore habitats such as coral reefs, mangroves, estuaries, lagoons and beaches. Many are part of terrestrial PAs, but the protection of open waters remains comparatively very low. A more detailed analysis is necessary to determine whether the existing MCPAs are effectively conserving a representative range of habitats and ecosystem types, as well as species that need urgent conservation (e.g. turtles, sharks, etc.).

Despite this increase on the numbers of MCPAs in the region, there are some existing issues regarding their management:

- Lack of coordination: Different categories of PAs established under same law or several laws can be found within larger continuous habitats - e.g. Indian Sundarbans contain a NP, three wildlife sanctuaries and a Tiger Reserve coming under same legislation and agency Negambo estuary in Sri Lanka 4 categories of PAs declared under four legal enactments coming under different agencies

- Most of the MCPAs are small in extent, and as such, may not sufficiently protect species with wide habitat ranges or those reliant upon dispersal reproductive strategies

- Conservation in the region has been focused on terrestrial issues and there is comparatively much less expertise in marine resource management, especially in protecting fishery resources and migratory species. Although Legislation specifically for establishing protected areas in the marine environment is somewhat developed, but not being utilized.

- Majority of South Asia's PAs pay insufficient attention to ecological criteria and the requirements of communities - mobilization of local communities as well as private sector including dive and tour operators and hoteliers is a must

Therefore, the development of effective national MPA (and other special conservation systems set seasonal or other type of restrictions) would require: (a) clarity in institutional mandates within agencies which have responsibilities for MCPAs; (b) development of strong coordination mechanisms within agencies with responsibilities relevant to the marine environment; (c) coordination between fishery and biodiversity sectors; (d) greater attention to ecological criteria and the requirements of communities; (e) mobilization of local communities as well as private sector including dive and tour operators and hoteliers; (f) PAs be re-categorized on the basis of ecosystem services they provide; and (g) PA valuation studies be carried out.

Further collaboration between national, regional (BOB-IGO, SEAFDEC, SAARC CZMC, etc.) and Global partners such as UNEP, CBD (EBSA) and FAO in identifying, establishing and monitoring PAs within the Open Oceans and high seas - especially with regard to protecting migratory species.

Some regional interventions for consideration could include:

- Look beyond national jurisdictions and adopt regional approaches for managing shared resources – Transboundary and High Seas MPAs (e.g. The Chagos – Maldivian and Lakshadweep archipelago; Seasonal marshes, mudflats and brackish water lagoons of Runn of Kutch Gulf of Mannar and Palk Bay: Sundarban mangroves)
- Update the existing protected area database of UNEP-WCMC and develop a mirror site for the SACEP website as well as linking with the existing national websites
- Development of a regional capacity development programme to assist national partners that will include site networking and lessons sharing facilities.

PART III: The Way Forward - Framework for Action in addressing the Aichi targets and SDGs within the context of the South Asian Seas Region

Vision, Regional Targets and the Implementation Framework for the Marine and Coastal Biodiversity Strategy for SAS region

SAS Vision Statement up to 2030

***"South Asian Seas countries share healthy marine and coastal ecosystems rich in biodiversity that will continue to provide ecosystem services for the wellbeing of the people, and the social and economic development of the* region"** (Colombo Workshop Outcome, 2014 and Maldives Workshop outcome,2018).

To this end the purpose of the Marine and Coastal Biodiversity Strategy (MCBS) is to provide a framework for cooperation and collaboration amongst the five maritime countries of South Asia and other stakeholders, for the application of Ecosystem Approaches in managing coastal and marine resources, that will ensure the conservation of biodiversity and safeguard ecosystem services for the wellbeing and poverty reduction of the people of South Asia.

This strategy is underpinned by the following guiding principles:

- The use of the Ecosystem Approach
- Government commitment at every level
- Maintaining Healthy and Resilient Ecosystems
- Recognition of the economic, social and cultural values of marine and coastal ecosystems
- Adaptive management and learning by doing
- Precautionary approach and risk analysis
- Participatory and Inclusive
- Commitment to Human Rights and Gender Equality
- Building and Strengthening Partnerships (not reinventing the wheel but collaborate and cooperate with existing initiatives and programmes)

Regional Targets

1. Ensuring Ecosystem Services and Wellbeing

GOAL 1: Ensure the provision of ecosystem services of the coastal and marine habitats for the wellbeing of coastal communities in SAS region (Aichi Targets 5, 10, 14 & 15).

Desired Outcome: The health of ecosystems and livelihoods of coastal communities has improved as a result of protection, restoration and sustainable use of marine and coastal ecosystems services.

Target 1: By 2030, at least 10 % of coastal habitats have been restored to pre-degraded status: **mangroves** loss halted by 2020 and mangrove area increasing by 2030, there is no net of **coral reef or seagrass** by 2030, through a reduction of the key anthropogenic pressures that erode the resilience of coral reefs, seagrass and mangroves.

Actions under Target 1

1.1. Plan and implement scientifically sound restoration programs for degraded coastal and marine ecosystems (mangroves, coral reefs, seagrasses, lagoons and estuaries)

1.2. Increase equitable participation of coastal communities in managing the resource base through formal co-management mechanisms.

1.3. Build capacity among stakeholders for co-management, the ecosystem approach, natural resource governance, participatory management and monitoring, etc.

1.4. Develop and implement models for Benefit Sharing in marine management based on Ecosystem Service assessment and valuation, and build related capacity.

1.5. Establish a mechanism for enhanced regional collaboration in shared natural marine and coastal biodiversity management under SACEP.

1.6. Revitalize the South Asia Coral Reef Task Force and National Task Forces.

1.7. Create a regional database with updated information (national, regional and global level) of the status and trends of coastal and marine ecosystems.

1.8. Identify the main drivers causing mangroves, coral and seagrass loss, and develop specific actions to address them.

1.9. Enhance the capacity of SAS countries to develop and implement marine spatial planning and integrated coastal management.

2. Prevention of Species Extinction

GOAL 2: Globally threatened Marine and Coastal species (such as turtles, marine mammals, sharks, migratory shorebirds, seabirds, coral, sponges, mollusks, mangroves and seagrasses species) are protected and without risk of extinction within the SAS Region (Aichi Target reflected in SDG's 2030)

Desired Outcome: No extinctions of and reduced extinction risk among endangered marine and coastal species within the SAS region.

Target 2: By 2030, all critically endangered and endangered species and the ecosystems they inhabit have been identified, including extent and status and there is improvement in or no further deterioration of their conservation status as a result of measures for their protection.

Actions under Target 2

2.1. Conduct surveys of critically endangered and endangered species, their distribution and threats to identify conservation measures needed.
2.2. Develop comprehensive recovery or management plans for priority species and Implement main conservation measures identified in the management/recovery plans.
2.3. Form national and regional committees to promote inter-agency dialogue for specific species as needed.
2.4. Establish principles and standards for tourism and other economic activities that use or affect endangered species.
2.5. Establish collaborative long-term monitoring programmes for transboundary species.
2.6. Build capacity on taxonomy, endangered species legislation, eco-tourism development etc.

3. Control of Alien Invasive Species

GOAL 3: Marine Invasive Alien Species do not pose a threat to the native biota of the SAS Region
Desired Outcome: The risk of introduction of marine and coastal IAS to South Asia is mitigated through management measures and safeguards, and alien species already introduced are controlled so as to prevent invasion.

Target 3: By 2030, Marine and coastal IAS risks in SAS are identified, knowledge on control of transmission pathways is improved and countries adopt regionally coherent policies and practices for marine IAS prevention and control

Actions under Target 3

3.1. Ensure access to information on IAS, including establishment of regional data and information sharing mechanism and where possible drawing on and further developing existing databases such as GISD
3.2. Regional IAS risk assessment including identification of pathways for introduction and spread in the region.
3.3. Establish of a Regional collaborative mechanism on IAS, such as an Expert Task Force established under SACEP and in collaboration with relevant agencies such as IMO
3.4. Establish regionally coherent approaches/guidelines for e.g. risk screening for commercial use of non-native species (in aquaculture) and reducing risk of spread through marine species trade and tourism.
3.5. Raise awareness about IAS among the general public as well as policy makers
3.6. Ratification of the Ballast Water Convention by SAS countries and implementation of its provisions

4. Sustainable Fisheries and Aquaculture

GOAL 4: Sustainable Fisheries and Aquaculture in SAS region underpin food security and economic development

Desired Outcome: Fisheries and aquaculture in the South Asian Region are managed so as to support livelihoods and food security of coastal people as well as economic development, without compromising ecological integrity and inter-generational equity**.**

Target 4: By 2030, all fisheries and aquaculture activities are developed and managed using an ecosystem approach and guided by a management plan, and by 2020 there are specific measures in place in each fishery to avoid by-catch, particularly of endangered and vulnerable species and plans are in place for recovery of depleted species.

Actions under target 4

4.1. Improve catch reporting and fisheries statistics, as well as environmental assessment of the effects of fishing.

4.2. Combat illegal unreported and unregulated (IUU) fishing, with clear measures on how to address this issue at the regional and national levels.

4.3. Implement measures that minimize by-catch, waste and discard.

4.4. Control/Minimize the impact of fishing gear on habitats, especially critical habitats, and endangered.

4.5. Develop regional protocols on Monitoring Control and Surveillance (MCS).

4.6. Prepare recovery plans for all depleted species (with special focus on trans-boundary species).

4.7. Promote and build capacity for application of an ecosystem approach in fishery resource management.

4.8. Drawing on global efforts where possible, develop regional guidelines on use of an ecosystem approach in aquaculture (including waste management and fish feed).

4.9. Drawing on global efforts where possible, develop regional standards for sustainability certification of fishery and aquaculture products.

4.10. Identify specific needs and develop and implement specific measures to limit by-catch of endangered and vulnerable species

5. Prevention of Marine Pollution

GOAL 5: Marine Pollution, especially nutrient loading, is brought to sustainable levels in the SAS region

Desired Outcome: Pollution loading from land and sea, and in particular nutrient loading, is brought to a level that does not degrade coastal ecosystems, threaten biodiversity, contribute to anoxia, or otherwise exacerbate ecosystem vulnerability to climate change and ocean acidification.

Target 5: By 2030, nutrient use efficiency in agriculture is increased by 20%, and marine pollution from municipal wastewater and vessels is reduced to an appropriate level

Actions under target 5:

5.1. Update National Plans of Actions under GPA

5.2. Enhance the nutrient efficiency and recovery in agriculture, livestock, poultry and aquaculture sectors:

5.2.1 Improve treatment of sewage including enhancing nutrient recovery, through development of municipal secondary and tertiary treatment as well as other methods appropriate in rural areas.

5.2.2 Promote efficient solid waste management practices.

5.2.3 Develop and implement a marine litter action plan and adequate policy implementations for South Asia Seas region.

5.2.4 Develop and implement marine water quality standards for SA seas.

5.2.5 Improve disposal facilities for oils and other waste in major and minor sea ports/harbors and fish landing sites.

6. Effective and Equitable Governance of Marine and Coastal Protected Areas

GOAL 6: Marine and Coastal Protected Areas in South Asia effectively conserve biodiversity and generate ecosystem service benefits to stakeholders.

Desired Outcome: Marine and Coastal Protected Areas in South Asia form an ecologically connected network of well managed sites with the participation of all stakeholders including indigenous and local communities, and support ecosystem service provision of the marine and coastal environment also beyond protected area sites,

Target 6: By 2030, countries have put in place measures for effective and equitable management of PAs and establish transboundary protected areas, including management plans and periodic assessment of management effectiveness for all protected areas and other area-based conservation measures, and at least 10 % of coastal habitats have been incorporated in newly established protected areas through a participatory approach.

Actions toward target 6

6.1 Establish regional standards/practices for assessing and enhancing management effectiveness of existing MCPAs, drawing on existing international, regional and national tools and measures.

6.2 Identify vulnerable habitats and species (with particular attention to trans-boundary ecosystems) and develop area-based management measures for their protection.

6.3 Establish a regional institutional network mechanism for and the creation of a Regional Network of MPAs and Protection of Trans-boundary and migratory species, based on past regional efforts under SACEP/SAS.

6.4 Promote legislative and institutional reform to secure MCPA effectiveness and impact and guaranteeing equitable benefit sharing among stakeholders.

6.5 Organize exposure and exchange programs to learn from countries within the South Asian region, and also from other regions, to learn about effective management and governance measures.

Regional Cross-cutting Actions

A number of priority actions cut across all Regional Goals and Targets and are critical to their achievement. This includes the following:

Governance and Participation:

- Develop equitable benefit sharing measures, with the local communities and other stakeholders, for benefits arising from conservation and protection measures.

- Ensure full and effective participation of indigenous/local communities, regarding their rights and recognition of their responsibilities, particularly during the management of existing PAs, and the establishment and management of new PAs.
- Ensure recognition of tenure rights of local communities and recognition and inclusion of traditional knowledge.

Incentive Mechanisms

- The use of incentives for each regional target should consider cultural and traditional aspects, avoiding or replacing perverse incentives.
- Promote subsidies that reward and encourage sustainable 'green economy' practices

Capacity Building and Training

- Develop capacity building and training programmes for all relevant decision makers and stakeholders, at regional, national and local levels

Information Exchange and Public Awareness

- Organize exposure and exchange programs to learn from countries within the South Asian region, and also from other regions (e.g. thematic areas of effective management, natural resource governance, financial mechanisms for the protection of biodiversity, etc.)

Enabling the Implementation of the Marine and Coastal Biodiversity Strategy

SACEP's role implementing the Strategy and coordinating regional collaboration

SACEP was created to fulfill a Vision based on the following assumptions:

- Recognition of environmental degradation caused by factors like poverty, over population, over consumption and wasteful production threatening economic development and human survival;
- Integration of environment and development as essential prerequisites to Sustainable Development, and
- Importance of co-operative action in the South Asian region where many ecological and development problems transcend national and administrative boundaries.

The Mission of SACEP is "to promote regional co-operation in South Asia in the field of environment, both natural and human in the context of sustainable development and on issues of economic and social development which also impinge on the environment and vice versa; to support conservation and management of natural resources of the region and to work closely with all national, regional, and international institutions, governmental and non-governmental, as well as experts and groups engaged in such co-operation and conservation efforts".

Based on this and being the Secretariat for the South Asian Seas Programme, SACEP should be the agency to lead and coordinate the implementation and promotion of the Strategy, including cross-cutting interventions, and make it operative. This does not mean that SACEP should be in charge of implementing each one of the actions, but rather, SACEP should be in charge of coordinating and collaborating with regional partners, including government departments, financers, and research institutions with member countries. Leadership for monitoring, reporting, resource mobilization and capacity building can rest with SACEP.

Communicating the strategy

A comprehensive communication strategy should be developed with the following goals:

- to raise the visibility and understanding of priority actions of the Marine and Coastal Biodiversity Strategy;
- to secure high-level political support from national leaders and international partners, to promote appropriate principles and tools that can be incorporated into national management frameworks,
- to build the communications capacity within national partners to conduct effective outreach,
- to establish branding guidelines,
- to establish a protocol for the flow of information to and from the Regional Secretariat, the NBSAP secretariats, Technical Working Groups, Council of Ministers, and other stakeholders.

Communication is a critical component for the success of the implementation of the strategy, and should focus reaching not only the obvious institutions participating in marine and coastal governance, but also other not so evident such as the Ministries of Finance and Economic Planning.

The communication strategy can also assist SACEP in raising its visibility at the regional and national level and among domestic and international partners. Such a strategy is vital to achieving the overarching objectives in the Implementation Framework, and could be a part of an overall communication strategy for SACEP.

Engaging broad partnership/stakeholder outreach and coordination is also essential for successful implementation of the strategy. Efforts need to be made early on, to engage relevant stakeholders to achieve the strategic goals and targets. Similarly increasing public awareness of the national, regional and global importance of the strategy needs to be started early on. Outreach actions should clearly delineate international, regional, national and local economic and social benefits. Specific target audiences both within the SACEP as well as external audiences and partners ranging from local governments and community groups, to international development partners and scientific organizations need to be identified. Given that the strategy needs to reach varied audiences the outreach materials need to be developed accordingly and in the different national languages as well as in English. An initial assessment needs to be carried out to: identify objectives, target audiences, and key messages to be conveyed, identify specific outreach products and tools to be incorporated into a broader communications program, examine the potential to establish the communication strategy as a regional forum, develop a Work Plan and a Staffing and Management Plan for the first year (lessons learned during the first years will help refine and strengthen the plans for the outer years), identify national, regional and international partners to support the delivery of the communication program, identify supportive operationalization and institutionalization structures including the media, radio and TV, and assess how the information flow will be channeled between SACEP membership and outside agencies, Partners, and stakeholders.

Conservation Finance: Options for financing Strategy implementation

The sustainability of the Marine and Coastal Biodiversity Strategy will also be dependent on other additional considerations, such as the availability of funds to implement activities and carry out assessments, and partnerships created, contributing in different ways, for example, changing industry

practices. National governments and other institutions will have to commit funds and incorporate the agreed plans into their national budgets. For other regional activities requiring extra-budgetary support, a number of financial instruments can be considered. Below is a list of possibilities:

- The **Global Environment Facility, GEF**, in its evaluation of conservation trust funds emphasizes four essential conditions: a commitment of at least 10-15 years; active government support for a public-private sector mechanism outside direct government control; a critical mass of people from diverse sectors of society working together to achieve biodiversity conservation and sustainable development; and legal and financial practices and institutions that are supportive and in which people have confidence. Other conditions noted by GEF include: the initial capitalization, together with other resources available on a recurrent basis, should allow a meaningful program, keeping operating costs within a range of 20-25%; a strong Executive Director; strong stakeholder involvement and financial and administrative discipline.

- The **Forest Carbon Partnership Facility (FCPF)** launched the Carbon Fund in 2011. It provides performance-based payments to countries that have made significant progress in their REDD+ (Reducing Emissions from Deforestation and Forest Degradation) endeavors. Mangrove forests are eligible to apply to this Fund. The FCPF is a global partnership of governments, businesses, civil society, and Indigenous Peoples to combat deforestation and forest degradation, promote forest carbon stock conservation, and the sustainable management of forests.

- The **Conservation Finance Alliance (CFA)** discusses a new type of environmental asset targeting the conservation of Protected Areas: Park Bonds which are defined as a fixed income product that offers investors the opportunity to participate in the financing of conservation projects through the capitalization of an International Trust Fund. Interest will be distributed to bond holders and identified beneficiaries. These Bonds could be issued by an International Trust Fund for Protected Areas (ITFPA), either hosted by a Multilateral Development Agency such as the World Bank or the Global Environment Facility.

- The **Conservation Trust Funds (CFT)** are mechanisms for releasing funding on a regular basis that could be used to support the implementation of the Marine and Coastal Biodiversity Strategy. These funds are becoming increasingly popular but their establishment requires technical expertise and institutional commitment. The establishment of CTFs require a group of diverse stakeholders with a common vision, a demand for funds from capable implementing organizations, the existence or possibility of quickly establishing a basic legal and financial framework, government buy-in and take into account the relevant political, legal and governance contexts, and linkage to existing regional or national environmental strategies or PA management plans, a consultative process, the identification of a diverse sources of finance, and ensure the mobilization of sufficient resources and protect against over-reliance on a single source of funding.
- Other potential sources of funds include: **the Asian Development Bank, the World Bank** and other bilateral donors such as **DFID, CIDA, USAID, GIZ and SIDA**.

- Lessons can be learned from other regions, such as the **Mesoamerican Reef Fund**, which was created in 2004 to help support financing of the conservation and sustainable use of the marine and coastal ecosystems of the Mesoamerica Reef, an ecoregion shared by four countries (Mexico, Belize, Guatemala and Honduras).

- Green Climate Fund (GCF), created to support the efforts of developing countries to respond to the challenge of climate change. It seeks to promote a paradigm shift to low-emission and climate-resilient development, considering the needs of nations that are particularly vulnerable to climate change impacts. It aims to deliver equal amounts of funding to mitigation and adaptation, while being guided by the Convention's principles and provisions.

  When the Paris Agreement was reached in 2015, the Green Climate Fund was given an important role in serving the agreement and supporting the goal of keeping climate change well below 2 degrees Celsius. Responding to the climate challenge requires collective action from all countries, including by both public and private sectors. Among these concerted efforts, advanced economies have agreed to jointly mobilize significant financial resources. Coming from a variety of sources, these resources address the pressing mitigation and adaptation needs of developing countries.

Partnerships

Implementing the strategy successfully will require of sound partnerships with collaborating agencies. They may include multilateral and bilateral agencies, MFF, BOBLME, IOTC, SAARC, IGOs, UN agencies, government agencies, private sector agencies, NGOs and community organizations. The Strategy should rely on the work of these other partner organizations (e.g. those named in Annex 1), as they shall be instrumental for implementing the Strategy.

Monitoring and Evaluation (M&E)

An appropriate system for **Monitoring and Evaluation (M&E)** needs to be established, not only to make sure that the interventions towards achieving the targets are on track, but also for capturing and sharing lessons.

In order to efficiently monitor the progress of the Marine and Coastal Biodiversity Strategy for South Asia, a systematic monitoring strategy with useful and measurable indicators need to be developed. The monitoring action plan needs to take into account:

- Changes in the direction towards achieving the regional targets, such as:
  - Changes in population density, including migration patterns
  - Changes in the levels and frequency of threats
  - Improvements in management and effectiveness
  - Improvements in enforcement and compliance of laws and regulations
- Progress towards the defined biodiversity outcomes, including measurement of environmental indicators
- Clearly defined roles and expected deliverables of local, national, regional and international partners
- New models and tools developed
- Creation or strengthening of partnership with civil society organizations, government organizations, private sector and other relevant institutions.

The implementation and monitoring framework will be further developed in detail during the second workshop. The monitoring strategy will have to keep track of the progress of the regional actions, and be reported to member nations, bilateral and multilateral partners and to the CBD Secretariat.

Implementation and Monitoring Framework

Table 3.1 Implementation and Monitoring framework

1. Ensuring Ecosystem Services and Wellbeing				
GOAL 1: Ensure the provision of ecosystem services of the coastal and marine habitats for the wellbeing of coastal communities in SAS region (Aichi Targets 5, 10, 14 & 15). **Desired Outcome:** The health of ecosystems and livelihoods of coastal communities has improved as a result of protection, restoration and sustainable use of marine and coastal ecosystems services. **Target 1:** By 2030, at least 10 % of coastal habitats have been restored to pre-degraded status: **mangroves** loss is halted by 2020 and mangrove area increasing by 2030, there is no net of **coral reef or seagrass** by 2020, and there is a reduction of the key anthropogenic pressures that erode the resilience of coral reefs, seagrass and mangroves.				
Sub-Targets	**Activities**	**Indicator/s**	**Partners**	**Time Frame/Possible funding sources**
1.1 Plan and implement scientifically sound restoration programs for degraded coastal and marine ecosystems (mangroves, coral reefs, seagrasses, lagoons and estuaries)	Extent recovered/replanted	Percentage of Changes in specific ecosystems, No: of initiatives	National (MoE, FD, DW, Research institutions, NGO/CBOs) International (SACE/SASP, SAARC-CZMC, Mangrove for the Future; IUCN, WWF, UNEP, RAMSAR, UNESCO-MAB; UNESCO-WH; Coral Reef Initiative, Global Coral Reef Monitoring Framework)	Monitoring every 3 years Funding sources (to be discussed at the next WS) GEF - Biodiversity
1.2 Increase equitable participation of coastal communities in managing the resource base through formal co-management mechanisms.	No of co-management/ community based mechanisms created and functioning for the sustainable management of coastal and marine resources. Awareness programmes developed on the importance of conservation of coastal and marine resources. Sustainable livelihood options provided.	Governance effectiveness in coastal areas.		Monitoring every 2 years GEF - Biodiversity

1.3. Build capacity among stakeholders for co-management, the ecosystem approach, natural resource governance, participatory management and monitoring, etc.	Capacity assessment programs. Monitoring mechanisms established.	No of training/workshops		Monitoring every 2 years GEF - Biodiversity
1.4. Develop and implement models for Benefit Sharing in marine management based on Ecosystem Service assessment and valuation, and build related capacity.	Implementation of the Nagoya Protocol Development of legal frameworks at national level for Access and Benefit Sharing(ABS) Development of models for appropriate ecosystems Conducting programs and capacity Development on ABS	No: of legal frameworks Established under the Nagoya Protocol Organization of related programmes Percentage of trainees aware on ABS	UNEP – TEEB Nagoya Protocol Implementation Fund	UNEP - TEEB
1.5 Establish a mechanism for enhanced regional collaboration in shared natural marine and coastal biodiversity management under SACEP.	Conducting regular meeting/scientific forum /Joint working group	No of initiatives conducted (e.g. Re-activation of the South Asia Coral Reef Task Force) No: of activities carried out among countries		Monitoring every 2 years GEF - Biodiversity
1.6 Revitalize the South Asia Coral Reef Task Force (SACR) and national Task Forces.	Implementation of Action Plans	No of meetings held by the SACR Task Force and other national task forces a year	Task force members	Monitoring every 2 years

1.7 Create a regional database with updated information of the status and trends of coastal and marine ecosystems (mangroves, coral reefs, seagrasses, lagoons and estuaries).	Database development Regular updating of data base	No of data entry in the database No of users of the database		
1.8 Identify the main drivers causing seagrass loss, and develop specific actions to address them.	Conducting Seagrass studies Developing seagrass management action plan	No of publications on the seagrass of South Asia		Monitoring every 2 years
1.9 Enhance the capacity of SAS countries to develop and implement marine spatial planning (MSP)and integrated coastal zone management (ICZM).	Conducting capacity building activities and trainings on MSP and ICZM Developing national ICZM plans	Number of MSP and ICZM trainings held No of countries with a National ICZM plans	UNEP, Environment and Coastal Departments	Every 5 years
2.Prevention of Species Extinction				
GOAL 2: Globally threatened Marine and Coastal species (such as turtles, marine mammals, sharks, migratory shorebirds, seabirds, coral, sponges, mollusks, mangroves and seagrasses species) are protected and without risk of extinction within the SAS Region (Aichi Target 12) **Desired Outcome:** No extinctions of and reduced extinction risk among endangered marine and coastal species within the SAS region. **Target 2:** By 2030, all critically endangered and endangered species and the ecosystems they inhabit have been identified, including extent and status and there is improvement in [no further deterioration of] their conservation status as a result of measures for their protection.				

Sub-Tragets	Activity	Indicator/s	Partners	Time Frame/Possible funding sources
2.1 Conduct surveys of critically endangered and endangered species, their distribution and threats to identify conservation measures needed.	Conducting national and regional level surveys Establishing measures and legal frameworks for conservation of threatened species established at national level	No of IUCN Redlist species (the status of their vulnerability in the IUCN database) No of scientific articles published about the species of South Asia region	National (MoE, Research Institutions, NGO/CBOs) International (CMS - IOSEA Marine Turtle, MoU on Dugongs and Sharks ; IOTC, BOB-IGO, BirdLife International; IUCN, WWF, CITES)	
2.2. Develop comprehensive recovery or management plans for priority species and Implement main conservation measures identified in the management/recovery plans.	Developing conservation plans and recovery plans Establishing legal framework for management of priority species	No of management/recovery plans developed/ No of legal frameworks established		Monitoring every 3 years GEF Biodiversity/International Waters
2.3. Form national and regional committees to promote inter-agency dialogue for specific species as needed.	Establishing regional committee Conducting the meetings / regional dialogues	No of task force/ or other mechanisms established No of meetings held		Monitoring every 2 years SACEP to implement

2.4. Establish principles and standards for tourism and other economic activities that use or affect endangered species.	Developing national / regional level guidelines on eco-friendly tourism/ agriculture and fisheries Information exchange on good practices and success stories	No of guidelines established No of eco-friendly certifications received on tourism/ fisheries/ agriculture		Monitoring every 3 years BOBLME SAP
2.5. Establish collaborative long-term monitoring programmes for transboundary species.	Conducting studies on the stocks of transboundary and migratory species	No of studies conducted The status of stocks of transboundary species		
2.6. Build capacity on taxonomy, scientific measures on conservation, endangered species legislation, eco-tourism development etc.	Training held on taxonomy and legislation and scientific measures on conservation	No of workshops and public training No: of trainees aware on taxonomy/legislation/ecotourism		
3. Control of Alien Invasive Species				
GOAL 3: Marine Invasive Alien Species (IAS) do not pose a threat to the native biota of the SAS Region **Desired Outcome:** The risk of introduction of marine and coastal IAS to South Asia is mitigated through management measures and safeguards, and alien species already introduced are controlled so as to prevent invasion. **Target 3:** By 2030, Marine and coastal IAS risks in SAS are identified, knowledge on control of transmission pathways is improved and countries adopt regionally coherent policies and practices for marine IAS prevention and control				

Sub-targets	Activity	Indicator/s	Partners	Time Frame/Possible funding sources
3.1. Ensure access to information on IAS, including establishment of regional data and information sharing mechanism and where possible drawing on and further developing existing databases such as GISD	Developing regional database on IAS	No of data entry in the database No of users of the database Biological species database No. of IAS recorded	SACEP to facilitate	1 year after approval Global Invasive Species Database.
3.2. Regional IAS risk assessment including identification of pathways for introduction and spread in the region.	Training on IAS Risk Assessment Identification of regional pathways (hotspots) for IAS Information sharing on success stories of IAS management	No of trainings held No of regional risk assessments conducted No of regional pathways (hotspots) No of information exchange conducted / no of tools for information exchange	National: National maritime authorities. Research and tech. groups International: SACEP-SASP; UNESCO- IOC; IMO; IUCN	Start now and have it ready by 2030
3.3. Establishment of a Regional collaborative mechanism on IAS, such as an Expert Task Force established under SACEP and in collaboration with relevant agencies such as IMO	Establish a regional Expert Task Force on IAS	Task Force in place		Every 2 years

3.4. Establish regionally coherent approaches/guidelines for e.g. risk screening for commercial use of non-native species (in aquaculture) and reducing risk of spread through marine species trade and tourism.	Establishing regional approaches and guidelines	No of countries which become party to new initiatives following the approaches No. of guidelines published Number of policies that make reference to IAS (including risk analysis, prevention, control, and quarantine measures on introduced species for aquaculture).		Every year
3.5. Raise awareness about IAS among the general public as well as policy makers	Survey to assess the understanding of IAS Conduct awareness campaigns about IAS for general public, for policy makers Conduct a post survey on the effectiveness of the awareness programs	No of surveys and level of understanding No of media awareness programs broadcast/published Survey results/articles published and the changes in the level of understanding	SACEP to facilitate	Every 2 years IMO and FAO

3.6. Ratification of the Ballast Water Convention by SAS countries and implementation of its provisions	Conduct regional policy dialogues to assist ratification process Ratification of the Ballast Water Convention	Status of ratification Biological species database No. of IAS recorded		IMO

4.Sustainable Fisheries and Aquaculture

GOAL 4: Sustainable Fisheries and Aquaculture in SAS region underpin food security and economic development

Desired Outcome: Fisheries and aquaculture in the South Asian Region are managed so as to support livelihoods and food security of coastal people as well as economic development, without compromising ecological integrity and inter-generational equity**.**

Target 4: By 2030, all fisheries and aquaculture activities are developed and managed using an ecosystem approach and guided by a management plan, and by 2030 there are specific measures in place in each fishery to avoid by-catch, particularly of endangered and vulnerable species.

Sub-targets	**Activity**	**Indicator/s**	**Partners**	**Time Frame/Possible funding sources**
4.1. Improve catch reporting and fisheries statistics, as well as environmental assessment of the effects of fishing.	Establish mechanisms and collaboration for catch reporting and fisheries statistics	Trends of catch per unit effort (CPUE), and Maximum Sustainable Yield (MSY)	National: Environment/Fisheries Ministries and Departments; Research institution and academia International: BOBP –IGO; IOTC, FAO; UNESCO-IOC BOBLME SAP	Every 2 years BOBLME SAP
4.2. Combat illegal unreported and unregulated (IUU) fishing, with clear measures on how to address this issue at the regional and national levels	Develop National Plan of Action to combat IUU in line with International Plan of Action adopted by FAO	No. of national regulations and strategic plans to address IUU		Every 2 years

4.3. Implement measures that minimize by-catch, waste and discard.	Develop a fishery code of conduct	No of regulations and practices that are incorporated to reduce by-catch, waste and discard		Every 3 years FAO, BOBLME SAP Partnerships with private sector and certification schemes
4.4. Control/Minimize the impact of fishing gear on habitats, especially critical habitats, and endangered.	Demarcation of critical habitats (core zones, buffer zones and utilization zones)	No of regulations on fishing	FAO, BOBP-IGO, Departments of Fisheries	Every 2 years Partnerships with private sector and certification schemes
4.5. Develop regional protocols on Monitoring Control and Surveillance (MCS).	Design and approval of regional protocol	No and type of instruments created	FAO, BOBP-IGO, Departments of Fisheries	Every 5 years FAO, IMO, Port State Measures
4.6. Prepare recovery plans for all depleted species (with special focus on trans-boundary species).	Preparation of recovery plans	No of recovery plans for targeted species	Departments of Fisheries	Every 3 years BOBLME SAP
4.7. Promote and build capacity for application of an ecosystem approach in fishery resource management.	Conduct capacity building programme on ecosystem approaches in fisheries resource assessment and management	No. of capacity building programs conducted for fisheries resource assessment and management	FAO, BOBLME SAP, BOBP-IGO	Every 3 years BOBLME SAP GEF International Waters

	Development of EA management plans for SAS countries	Number of transboundary and national stocks that have EA management plans		
4.8. Drawing on global efforts where possible, develop regional guidelines on use of an ecosystem approach in aquaculture (including waste management and fish feed).	Develop regional guidelines for sustainable aquaculture certification Development of regulations and guidelines on waste management in aquaculture and fish feed and anti-biotics	No. of countries that utilize aquaculture certification. No. of regulations in place	FAO, BOBLME SAP, BOBP-IGO	2 years from approval FAO, Partnerships with private sector and certification schemes
4.9. Drawing on global efforts where possible, develop regional standards for sustainability certification of fishery and aquaculture products.	Develop a criteria for Regional Certification Standards for sustainable fishery and aquaculture	Green protocol criteria for sustainable fishery and aquaculture in place	FAO, BOBLME, UNEP Partnerships with private sector	Follow up in every two years
4.10. Identify specific needs and develop and implement specific measures to limit by-catch of endangered and vulnerable species.	Identification and development of specific measures to limit by-catch of endangered and vulnerable species Implementation of those measures in collaboration with other international bodies	Trends in fisheries certified by the Marine Stewardship Council Proportion of fish stocks within biologically ustainable levels (reflected Aichi Targets in SDG's)	FAO, BOBLME, Fisheries sector, UNEP, CMS	Every 3 years follow up

5. Prevention of Marine Pollution

GOAL 5: Marine Pollution, especially nutrient loading, is brought to sustainable levels in the SAS region
Desired Outcome: Pollution loading from land and sea, and in particular nutrient loading, is brought to a level that does not degrade coastal ecosystems, threaten biodiversity, contribute to anoxia, or otherwise exacerbate ecosystem vulnerability to climate change and ocean acidification.
Target 5: By 2030, nutrient use efficiency in agriculture is increased by 20%, and marine pollution from municipal wastewater and vessels is reduced by

Sub-targets	Activity	Indicator/s	Partners	Time Frame and possible funding sources
5.1. Update National Plans of Actions under GPA	Develop and update national plans of Action under GPA	Heathy ecosystem monitoring as per Aichi targets, reflected also in SDG's indicators.		
5.2. Enhance the nutrient efficiency and recovery in agriculture, livestock, poultry and aquaculture sectors.	Development of remedial measures for nutrient recovery and nutrients efficiency.	Monitoring the appropriate Water Quality parameters as per reflected Aichi Targets in SDG's.	Government SACEP-SASP; UNEP-GPA, GPNM; LOICZ – South Asia Node;	2 years UNEP-GPA GEF
5.3. Improve treatment of sewage including enhancing nutrient recovery, through development of municipal secondary and tertiary treatment as well as other methods appropriate in rural areas	Establishment of sewage treatment plants at the national levels Minimization of sewage	Ecosystem health status Physiochemical parameters of nearshore waters (necessary ecosystem healthy indicator microbial communities, BOD, DO, & COD)		3 years Large coastal cities

5.4. Promote efficient solid waste management practices.	Development of efficient solid waste management plans and rules at the country level Identify targets to reduce mismanaged solid wastes (especially in coastal cities)	Number of Marine Litter Management Plans, policies and rules etc. in place.		3 years Large coastal cities
5.5. Develop and implement marine water quality standards for South Asian seas.	Developing national and regional sea water quality standards	No of regulations and standards that affect effluent water standards in the region reflected Aichi Targets in SDG's and other conventions ratification to this effect (nutrient levels in effluent discharged, No of sewers established, No of septic tanks in non-urban areas, etc.)	UNEP, SACEP;	3 years UNEP-GPA
5.6. Improve disposal facilities for oils and other waste in major and minor sea ports/harbors and fish landing sites.	Development of guidelines on the environmentally sustainable disposal mechanism and implementation of them Develop facilities for collecting and recovery of oil and related wastes	Number of facilities for collecting and recovering oil and related wastes, Oil levels in main ports, solid waste management measures in place.	IMO	3 years UNEP-GPA IMO GEF

6.Effective and Equitable Governance of Marine and Coastal Protected Areas				
GOAL 6: Marine and Coastal Protected Areas (MCPAs) in South Asia effectively conserve biodiversity and generate ecosystem service benefits to stakeholders. **Desired Outcome:** Marine and Coastal Protected Areas in South Asia form an ecologically connected network of well managed sites with the participation of all stakeholders including indigenous and local communities, and support ecosystem service provision of the marine and coastal environment also beyond protected area sites, **Target 6:** By 2030, countries have put in place measures for effective and equitable management of PAs, including management plans and periodic assessment of management effectiveness for all protected areas and other area-based conservation measures, and at least 10 % of coastal habitats have been incorporated in newly established protected areas through a participatory approach.				
Sub-targets	**Activity**	**Indicator/s**	**Partners**	**Time Frame and possible funding sources**
Identify the percentage of coastal (and marine) ecosystems already covered by MCPAs	Establishing protected areas and transboundary protected areas within the SAS region	Area covered	UNEP, IUCN, SACEP	Every 5 years
6.2. Establish regional standards/practices for assessing and enhancing management effectiveness of existing MCPAs, drawing on existing international, regional and national tools and measures	Developing tools for measuring effective management	Tools in place Trends in extent of MCPAs		

6.3. Identify vulnerable habitats and species (with particular attention to trans-boundary ecosystems) and develop area-based management measures for their protection.	Identification of vulnerable habitats and species Identification of area-based management measures	Gap analysis	SACEP, IUCN, UNEP, BOBLME SAP, CITES, CBD	3 years GEF Biodiversity and International Waters
6.4. Establish a regional institutional network mechanism for and the creation of a Regional Network of MPAs and Protection of Trans-boundary and migratory species, based on past regional efforts under SACEP/SAS	Identification of routes and pathways of transboundary and migratory species Establish measures to protect the pathways and routes and management plan for conservation of habitats Establishment of regional institutional mechanism for the creation of MPAs	MoU signed, Existence of the Regional Network. Coverage of Key Biodiversity Areas, Management Effectiveness (including reflected Aichi Targets in SDG's for equitable management)		5 years GEF Biodiversity and International Waters
6.5. Promote legislative and institutional reform to secure MCPA effectiveness and impact.	Development of a regional action plan to secure the MCPA effectiveness	Regional action plan in place No of legislations and plans enacted Governance effectiveness and MoU drafted and operative		Monitoring every 2 years

6.6. Organize exposure and exchange programs to learn from countries within the South Asian region, and also from other regions, to learn about effective management and governance measures.	Conduct regional learning and exchange programmes among SAS countries And sharing of success stories and good experiences	No of training and exchange programs carried out No of success stories and case studies published Regional Ocean governance.	UNESCO - IOC	

ANNEXES

Annex 1: The international obligations of the SAS countries (National level participation of Conventions, Initiatives and other process - as of 10th September 2018)

	Bangladesh	India	Maldives	Pakistan	Sri Lanka
• ***Conventions***					
Convention on Biological Diversity (CBD)	03/05/1994	18/02/1994r	09/11/1992r	26/07/1994r	23/03/1994r
Cartagena Protocol on Biosafety	05/05/2004r	11/09/2003r	11/09/2003a	31/05/2009r	26/07/2004r
Nagoya Protocol on Access & Benefit sharing (NIF)	06/09/2011s	09/10/2012r			
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	20/11/1981r	20/07/1976r	12/12/2012a	20/04/1976a	04/05/1979a
Convention on Migratory Species (CMS)	1/12/2005	1/11/1983		1/12/1987	01/.09/1990
MoU on IOSEA Marine turtles	23.10.2003	01.05.2007	26.04.2010	12.07.2004	23.06.2001
MoU Dugong	19.02.2013	28.05.2008	rs	rs	31.01.2012
MoU Marine Sharks	rs	rs	rs	rs	rs
Central Asian Flyway	rs	rs	rs	rs	rs
The International Treaty on Plant Genetic Resources for Food And Agriculture (IPGRA)	14/11/2003r	10/06/2002r	02/03/2006a	02/09/2003a	
Ramsar Convention on Wetlands	21/09/1992	01/02/1982		23/11/1976	15/10/1990
UNESCO – World Heritage Convention (WHC)	03/08/198a	14/11/1977r	22/05/1986a	23/07/1976r	06/06/1980a

UN Convention on the Law of the Sea (UNCLOS)	27/07/2001r	29/06/1995r	07/09/2000r	26/02/1997r	19/07/1994r
Agreement on Part XI	27/07/2000	29/06/1995	07/09/2000	26/02/1997	28/07/1995
UN Fish Stocks Agreement	05/11/2012r	19/08/200a	30/12/1998r	15/02/1996s	24/10/1996r
IMO Environmental Related Conventions					
MARPOL 73/78	party	party	party	party	party
OPRC Convention	party	party			
Ballast Water Management Convention -NIF			party		
• ***Other Initiatives, Programmes, projects***					
Millennium Development Goals	party	party	party	party	party
RIO+20 – The Future We Want	party	party	party	party	party
UNEP – Global Programme of Action For the Protection from Land Based Activities	party	party	party	party	party
SACEP/South Asian Seas Action Plan	party	party	party	party	party
SAARC – Coastal Zone Management Center	party	party	party	party	party
Bay of Bengal Large Marine Ecosystem Project	party	party	party	party	Not a party
Mangrove for the Future Imitative	party	party	party	party	party
Global Environmental Facility	party	party	party	party	party
UNESCO – Man and Biosphere Programme					
Indian Ocean Tuna Commission and its various Resolutions on Fisheries		party	party	party	party
BIrdLife International – Asia (NGO partners)	party	party			Party
Land Ocean Interaction in the Coastal Zone – South Asia node					
International Coral Reef Initiative					
Wetland International					

NIF – Not in Force; r- Ratification; s – signatory; rs – Range State

Annex 2: Government and international organizations in SA supporting conservation, management and sustainable use of marine and coastal resources

Countries	Department of Environment	Roles of the organizations
Bangladesh	Ministry of Environment and Forests	Conservation and management of natural environment including mangroves, wetlands, sea grass meadows and coral reefs
	Forest Department	Conservation and management of mangroves, wetlands.
	Water Resources Planning Organization	Integrated Coastal Zone Management
	IUCN – Bangladesh	Education, contributions to national efforts in conservation of living resources.

India	Ministry of Environment and Forests	Conservation and management of natural environment including mangroves, wetlands, sea grass meadows and coral reefs
	Forest Department	Conservation and management of mangroves, wetlands.
	Department of Animal Husbandry Dairying & Fisheries (DADF)	
	Ministry of Earth Sciences (Centre for Marine Living Resources and Ecology Integrated Coastal and Marine Area Management Project Directorate; The National Institute of Ocean Technology; ESSO - Indian National Centre for Ocean Information Services)	Promoting research and education on marine living resources. Reporting possible conservation & restoration measures. Dissemination of information and services for sustainable exploitation and management.
	IUCN – India	Education, contributions to national efforts in conservation of living resources..
Maldives	Ministry of Environment and Energy	Coordination of matters related to the environment
	Environment Protection Agency	Conservation and management of resources and a regulatory body responsible for IEE and EIA approvals
	Ministry of Fisheries and Agriculture	management of fisheries
	Marine Research Center	Responsible for coral reef monitoring, fisheries research and monitoring of sensitive habitats.
	IUCN - Maldives	supporting environmental conservation and addressing development challenges. Project Regeneration is aimed at enhancing resilience of social-ecological coral reef systems. This initiative is supported by USAID.
Pakistan	Climate Change Division	Coordination of matters related to the environment.
	Pakistan Environmental Protection Agency	Overall responsibility in the management of the environment including coastal and marine
	IUCN - Pakistan	Education, contributions to national efforts in conservation of living resources.
	WWF- Pakistan	
Sri Lanka	Ministry of Mahaweli Development and Environment	Coordination of matters related to the environment
	Ministry of Fisheries and Aquatic Resources	Management of fishery resources
	Department of wildlife Conservation	Management of all kind Protected Areas (terrestrial and Marine), conservation of species, habitat and there ecosystems.
	Forest Department	Conservation of mangroves
	Central Environmental Authority	Mainly a regulatory body for granting IEE and EIA approvals. Also responsible for setting up environmental quality standards and safeguarding the environment.
	Department of Coast Conservation and Coastal Resources Management	In charge of the coastal zone and is also a regulatory authority entrusted with granting approvals for IEE and EIA within the coastal zone.

	Marine Environment Protection Authority	Responsible for controlling marine pollution from land based sources and from ships including control of invasive alien species.
	National Aquatic Resources Research and Development Agency	Responsible for research and monitoring of sensitive marine ecosystems and species. Also responsible for fisheries data collection and determining maximum sustainable yields of marine resources and monitoring water quality.
	IUCN –Sri Lanka	Education, contributions to national efforts in conservation of living resources.

Annex 3: National Legal framework for coastal and marine biodiversity conservation

	Main legislation	**Sectoral Frameworks**		
		Forestry	**Fisheries**	**Environment related others**
Bangladesh	Bangladesh Environment Conservation Act, 1995 (Amendment 2010)	Forestry Act, 1927; Forest (Amendment) Ordinance, 1989	Marine Fisheries Ordinance, 1983; Marine Fisheries Rules, 1983	Environment Protection Act, 1995.Bangladesh Biological Diversity Act 2017, Ecologically Critical Areas Management Rules 2016, and Blue Economy Action Plan respectively
India	Wildlife Protection Act of 1972:	Forest Act, 1927, Forest(Conservation) Act, 1980	Indian Fisheries Act, 1897; Marine Fishing Regulation Act, 1978; State Fisheries Acts	Biological Diversity Act, 2002; Environment Protection Act, 1995; Coastal Regulation Zone Notification, 1991; Maritime Zones Act, 1976
Maldives	Environmental Protection and Preservation Act of 1993		Fisheries Law of 1987	
Pakistan	Balochistan Wildlife (Protection, Preservation, Conservation and Management) Act (1974); Sindh Wildlife Protection Ordinance (1972, amended 1993)	Forest Act 1927	The Pakistan Fisheries Ordinance, 1961	Environmental Protection Act, 1997
Sri Lanka	Flora and Fauna Protection Ordinance, 1937 .	Forest Conservation Ordinance,2009	Fisheries and Aquatic Resources Act	Coast Conservation Act 1981

		National Heritage and Wilderness Act 1988	the No. 2 of 1996 Fisheries & Aquatic Resources (Amendment) Act, No.35 of 2013	National Environment Act, 1981 Maritime Zones Act, 1976 Prevention and Control of Invasive Alian Species act (on the process of formulation under the department of legal draftsmen)

Sources: MoFE/GgoB, 2005; Rajagopalan and Lakshmi, 2003;

Annex 4: Species of Conservation Concern Recorded from the Coastal and Marine Ecosystems of South Asia

Common English Name	**Scientific Name**	**Global Conservation Status**	
		IUCN Red listing	CITES and CMS Appendices
• **Mammals**			
Sei Whale	*Balaenoptera borealis*	EN	CITES A 1/CMS A 1
Blue Whale	*Balaenoptera musculus*	EN	CITES A 1/CMS A 1
Fin Whale	*Balaenoptera physalus*	EN	CITES A 1/CMS A 1
Sperm whale	*Physeter macrocephalus*	VU	CITES A 1/CMS A 1
Hump whale (Arabian sea pop)	*Megaptera novaeangliae*	EN	CITES A 1/CMS A 1
Indo –Pacific Finless Porpoise	*Neophocaena phocaenoides ssp. asiaeorientalis*	VU	CITES A 1
Ganges River Dolphin	*Platanista gangetica*	EN	CITES A 1/CMS A. 11
Indus Blind Dolphin	*Platanista gangetica*	EN	CITES A 1
Irrawaddy Dolphin	*Orcaella brevirostris*	VU	CITES A 1
Indo-pacific Humpbacked Dolphin	*Sousa chinensis*	NT	CITES A. 1
Short-finned Pilot Whale	*Globicephala macrorhynchus*	DD	CITES A. 11
Melon-headed Whale	*Peponocephala electra*	LC	CITES A. 11
Bridled Dolphin	*Stenella attenuata*	LR/cd	CITES A 11/CMS A 11
Spinner/Long-beaked Dolphin	*Stenella longirostris*	DD	CITES A 11/CMS A. 11
Rough-toothed Dolphin	*Steno bredanensis*	DD	CITES A 11/CMS A 1
Southern Right Whale	*Eubalaena australis*	LC	CITES A 1/CMS A 1
Minke Whale	*Balaenoptera acutorostrata*	LC	CITES A 1/CMS A 1
Bryde's Whale	*Balaenoptera edeni*	DD	CITIES A I/CMS AII
Pygmy sperm whale	*Kogia breviceps* -	DD	CITIES A II
Dwarf sperm whale	*Kogia sima*	DD	CITIES A II
Killer Whale	*Orcinus orca*	DD	CITES A II/CMS A I & II
False Killer Whale	*Pseudorca crassidens*	DD	CITES A II
Pygmy Killer Whale	*Feresa attenuata*	DD	CITES A II
Melon-headed whale	*Peponocephala electra*	LC	CITES A II
Risso's Dolphin	*Grampus griseus*	LC	CITES A II

Fraser's dolphin	*Lagenodelphis hosei*	LC	CITES A II
Dugong	*Dugong dugon*	VU	CITES A 1/CMS A1
Bengal tiger	*Panthera tigris tigris*	EN	CITES A 1
Asian Elephant	*Elephas maximus*	EN	CITES A 1
Indian Wild Ass	*Equus hemionus ssp. Khur*	VU	CITES A 1 & 11/CMS A 11
Leopard	*Panthera pardus*	EN	CITES A 1
Indian Smooth-Coated Otter	*Lutrogale perspicillata*	VU	CITES A 11
Fishing Cat	*Prionailurus viverrinus*	EN	
Oriental Small-clawed Otter	*Aonyx cineria*	VU	
• **Waders and Sea birds**			
Christmas island Frigatbird	*Fregata andrewsi*	CR	CITES A 1
Red-Breasted Goose	*Branta ruficollis*	VU	CITES A 11/CMS A 1 &11
Oriental White Stork	*Ciconia boyciana*	EN	CITES A 1/CMS A.1
Spotted Greenshank	*Tringa guttifer*	EN	CITES A 1/CMS A 1& 11
Spoon billed sand piper	*Eurynorhynchus pygmeus*	CR	CMS A 1& 11
Christmas island Frigatbird	*Fregata andrewsi*	CR	CITES A 1
Masked Finfoot	*Heliopais personata*	EN	
Lesser Adjacnt	*Leptoptilos javanicus*	VU	
Hooded Crane	*Grus monacha*	VU	CITES A 1/CMS A 1 &11
Dalmatian Pelican	*Pelecanus crispus*	VU	CITES A 1/CMS A 1 &11
Indian Skimmer	*Rynchops albicollis*	VU	
Greater Adjutant	*Leptoptilos dubius*	EN	
Lesser Adjutant	*Leptoptilos javanicus*	VU	
Great Knot	*Calidris tenuirostris*	VU	

• **Reptiles**			
Saltwater crocodile	*Crocodylus porosus*	LR/lc	
Mugger crocodile	*Crocodylus palustris*	VU	CITES App.1& 11
Olive Ridley Turtle	*Lepidochelys olivacea*	VU	CITES App. 1
Leather back Turtle	*Dermochelys coriacea*	CR	CITES App. 1 & 11/CMS APP. 1 & 11
Hawksbill Turtle	*Eretmochelys imbricata*	CR	CITES App. 1 & 11/CMS APP. 1 & 11
Green Turtle	*Chelonia mydas*	EN	CITES App. 1/CMS App. 1& 11
Logger head Turtle	*Caretta caretta*	EN	CITES App. 1 & 11/CMS APP. 1 & 11
Batagur terrapin	*Batagur baska*	CR	CITES App. 1 & 11/CMS APP. 1 & 11
Indian tent turtle	*Kachuga tecta*		
Asian Giant (Frog-faced) turtle	*Pelochelys cantorii*	EN	
Softshell Turtle	*Lissemys punctata*		
Indian soft shelled turtle	*Aspideretes gangeticus*		
Peacock marked soft shelled turtle	*Aspideretes hurum*		
Common Indian monitor			
Yellow monitor	*Varanus bengalensis*		

Water monitor	*Varanus flavescens*		
Indian rock python	*Varanus salvator*		
Asiatic (Indian) Rock Python	*Python molurus*	NT	
• **Fish**			
Humphead /Napoleon wrasse	*Rhincodon typus*	VU	
Giant Grouper	*Cheilinus undulates*	EN	
Banded Eagle Ray	*Epinephelu lanceolatus*	VU	CITES App. II
Largetooth Sawfish	*Pristis pristis*	CR	CITES App. II
Largetooth Sawfish	*Pristis microdon*	CR	CITES App. II
Knifetooth Sawfish	*Aetomylaeus nichofii*	VU	CITES App. II
Grey Nurse Shark	*Anoxypristis cuspidate*	EN	
Pondicherry Shark	*Carcharias taurus*	EN	
Queen Triggerfish	*Carcharhinus hemiodon*	CR	
Whale Shark	*Rhincodon typus*	VU	CITES App 11
Great Oceanic white tip	*Carcharinus longimanus*	VU	CITES App 11
Great hammerhead shark	*Sphyrna mokarran*	EN	CITES App 11
Smooth hammerhead shark	*Sphyrna zygaena*	VU	CITES App 11
Scalloped hammerhead	*Sphyrna lewini*	En	CITES App 11
Great White shark	*Carcharodon carcharias*	VU	CITES App 11
Ganges shark	*Balistes vetula*	VU	
Fossil Shark	*Glyphis gangeticus*	CR	
Triggertail Seahorse	*Hemipristis elongates*	VU	
Common Seahorse	*Hippocampus comes*	VU	
Headhodge Seahorse	*Hippocampus kuda*	VU	
Devil Fish	*Hippocampus spinosissimus*	VU	
Tawny Nurse Shark	*Mobula mobular*	VU	
Sharptooth Lemon Shark	*Nebrius ferrugineus*	VU	
Freshwater Sawfish	*Negaprion acutidens*	VU	
Shark Ray	*Pristis zijsron*	EN	
Common Shovelnose Ray	*Rhina ancylostoma*	VU	
Whitespot Giant Guitarfish	*Rhinobatos typus*	VU	
Smoothnose Wedgefish	*Rhynchobatus djiddensis*	VU	
Leopard Shark	*Rhynchobatus laevis*	VU	
Bigeye Tuna	*Stegostoma fasciatum*	VU	
Porcupine Ray	*Thunnus obesus*	VU	
Whitecheek Shark	*Urogymnus asperrimus*	VU	
	Carcharhinus dussumieri	NT	
• **Invertebrates**			
Giant clam	*Tridacna squamosa*		
Black coral	*Antipatharia*		
True stoney corals	Family: Acroporidae, Astrocoeniidae, Pocilloporidae		
	Alveopora fenestrate	VU	
	Catalaphyllia jardinei	VU	
	Acanthastrea brevis	VU	

	Physogyra lichtensteini	VU	
	Pectinia alcicornis	VU	
	Acropora hemprichii	VU	

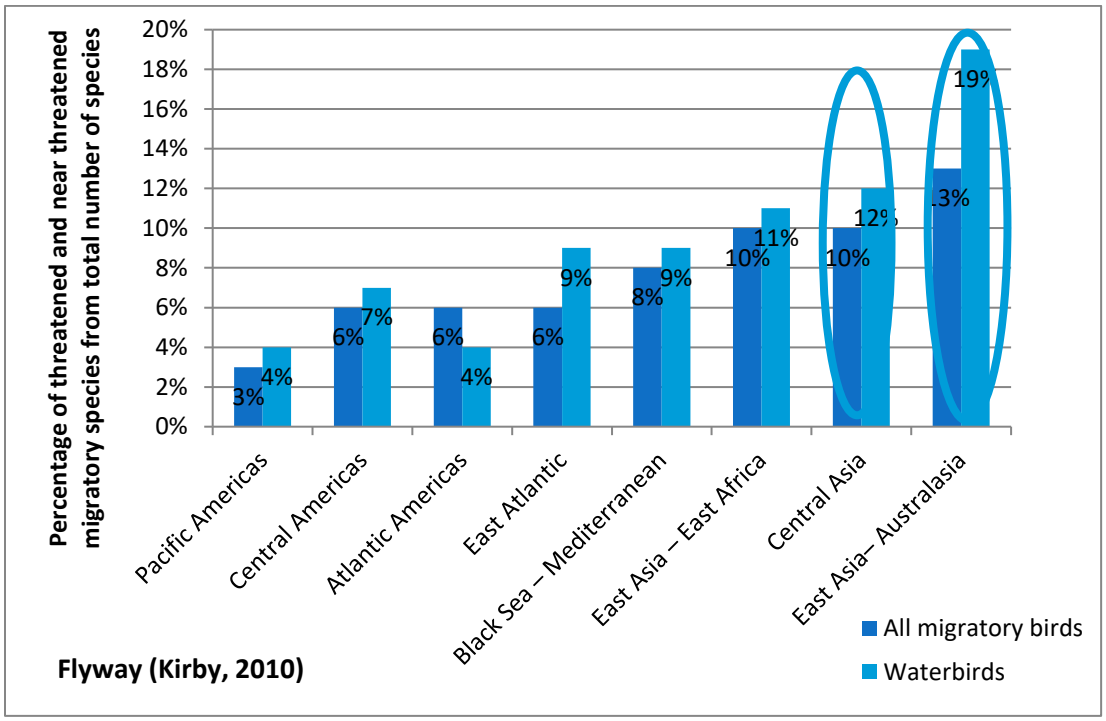
References: http://www.iucnredlist.org/

Annex 5a: Important Bird Areas (IBAs) located within the coastal zone

Total IBAs	IBAs located near to the coastline	Threatened bird species recorded
• **Bangladesh**		
19	05 (Ganges- Brahmaputra-Meghna delta;	*Pelecanus philipensis, Leptoptilos javanicus, Leptoptilos dubius, Haliaeetus leucoryphus, Haliopasis personata, Eurynorhynchus pygmeus, Tringa guttifer, Rynchops albicollis, Tringa guttifer*
465	50	*Gyps bengalensis, Gyps indicus, Pelicanus crispus, Pelecanus philipensis, Aquila clanga, Aquila heliaca, Falco naumanni, Grus antigone, Rynchops albicollis, Parus nuchalis, Saxicola marorhyncha, Tringa guttifer*
01	01	*Anous tenuirostris*
55	03	*Pelicanus crispus,*
70	13	*Pelecanus philipensis, Leptoptilos javanicus*

Ref: Bird life International, 2003

Annex 5b: Percentage of Threatened Migratory birds by region



Migratory birds know no political borders, and they are a shared resource among the different countries they migrate to during their life time. No action in one country alone can save these migratory birds. It is a group of birds that need joint action among countries and their peoples. It is a group of birds that need regional action for conservation in its breeding, wintering and lay over sites along its flyways. Of the nine flyways of the world, the Central Asian and the East Asia and Australasian Flyways which straddle the different South Asian Countries has the most number of globally threatened birds. This reflects a challenge and an opportunity that can be addressed together by the people of South Asia. A jointly developed and implemented programme on flyways and migratory birds conservation would be helpful to bring ordinary people together and also government institutions as well. The promotion of citizen science to monitor birds along the flyway will encourage ordinary people, students, birdwatchers and local communities to contribute to this programme across the region. A good example of this citizen science is what the Indian Bird Conservation Network (IBCN) does. It be an opportunity for governments, international organisations, corporations and other stakeholders to work together considering their own contexts and capacities. These organizations and other people can participate in flyway wide events such as the "Welcome to the Birds" events that reaches out to people from all walks of life and help make people aware of migratory birds and their flyways. "Migrant watch" in Sri Lanka is an example of a series of events that promotes migratory birds and flyways. Such a programme is ideal to promote network among people. This can also be a way of generating data from a regular and sustained source which will be important for tracking and assessing the impact of conservation actions

Annex 6: Recorded nesting and feeding habitats of the Marine Turtles

Recorded nesting and feeding habitats				
Bangladesh	**India**	**Maldives**	**Pakistan**	**Sri Lanka**
1.Green turtle (*Chelonia mydas*)				
St. Martin's Island	Malvan in Maharashtra; Gulf of Kutch; Few islands in Lakshadweep and Andaman & Nicobar	Mulhadhoo, Kunfunadhoo, Maadhoo, Gaadhoo	Hawkes Bay and Sandspit in Karachi, Astola Island in southern Balochistan	Southern and eastern coast of Sri Lanka specially from induruwa to Nilaweli
2.Hawksbill (*Eretmochelys imbricata*)				
St. Martin's Island (rare)	Andamans (particularly South Reef and North Brother in Andaman) and Nicobar islands and Lakshadweep atolls	Several islands in the Maldives (Vaadhoo, Baa atolls)		All the southern coastal areas of Sri Lanka
3.Olive Ridley *(Lepidochelys olivacea)*				
Sundarbans, St. Martin's Island, Sonadia and Maheskhali island of Cox Bazar	Orissa, Gujarat (Gulf of Kutch and Gulf of Khambhat), Maharashtra (Gorai, Kihim, Manowrie, Versova and the beach between Ambolgad and Vetye), Goa, Kozhikode district in Kerala.		The beaches of Hawkes Bay and Sandspit in Karachi	All the coastal areas of Sri Lanka

	Sporadic nesting in Tamil Nadu, Andhra Pradesh, and in Sundarbans.			
4.Leatherback (*Dermochelys coriacea*)				
	Andaman & Nicobar and Lakshadweep islands.		The beaches of Hawkes Bay and Sandspit in Karachi	All the southern coastal areas of Sri Lanka. Specially Induruwa, Kosgoda, Mavela, Usangoda, Amabalantota, Bundala, Kahandamodara
5.Loggerhead (*Caretta caretta*)				
	Sighted along the East Coast of India and Andaman & Nicobar Islands, but nesting has not been reported.			Bundala; Rekawa; Welipatanwila Balapitiya

Annex 7: Existing Policy and Strategic Actions at the National Level

Bangladesh	National Fisheries Policy of 1998 focused on the enhancement of the fisheries production, poverty alleviation, the provision of livelihoods and employment, food security, economic growth through exports, and maintaining healthy ecosystems. The 2006 Marine Fisheries Sector Sub-strategy aimed to: (a) improve support to capture fisheries; (b) prevent biodiversity losses; (c) promote sustainable aquaculture; (d) improve stakeholder involvement through co-management approaches; (e) increase partnerships with NGOs and the private sector. The government banned shrimp fry catchers along the coastal belt as a measure to preserve biodiversity.
India	States are responsible for the control and regulation of fishing activities within territorial waters, whereas the Union is responsible for areas beyond the territorial waters. The Central Government acts as a facilitator and coordinator responsible for policy formulation, fishery research and channeling funding support to the States/UT. India is currently under its XII Five Year Plan: 2012-2017 for the Development and Management of Fisheries and Aquaculture (Government of India, 2011), which emphasizes: (a) *socio-economic upliftment of the fishery community and provides long-lasting benefits to build-up their resilience and improve their safety nets*"; (b) improving the information base for better decision-making on policy needs; (c) a sound MCS system. The dual goals of "*enhancing production of fish on an environmentally sustainable and socially equitable basis*", and "*augmenting export of fish and fish products*" present a challenge in implementation.

Maldives	Fisheries policies aim to: (a) diversify fisheries; (b) reduce stress on reef fisheries, which support most of the current fishing activities' (c) develop the longline fishery; (d) promote multi-day fishing vessels. There are several incentives for the development of the fishing industry and expansion into offshore waters, such as: (i) long-term lease of multi-day fishing vessels; (ii) a temporary fuel subsidy programme; (iii) construction of longline fishing vessels; (iv) training of master fishers; (v) expanded fishing zones exclusive to Maldivian fishers; (vi) formulation of a guideline for safer and stable fishing vessels that can operate further away from shore. Maldives recently placed a complete ban on shark fishing in 2010. However, the recent development and expansion of the longline fishing for tuna, may increase impacts on shark by-catch. A national plan of action on shark is under development.
Pakistan	Fisheries is a highly important economic activity along the coastal villages and towns in Pakistan, being the sole source of employment and income in some villages (FAO country profile, 2009). Commercial shrimp trawling is highly important, and is mainly directed for exports, followed by tuna fishing carried out by artisanal boats. Joint ventures started in 1979, but were stopped due to conflicts with local fishers. There is only limited potential for tuna and other tuna-like fish in the Pakistan EEZ. The demersal resources also show signs of being fully fished and only a limited expansion may be possible. The major portion that is available is off the Balochistan coast where the continental shelf extends less than 35 nm offshore. Most fishing is done by small-scale artisanal boats. Lack of modern facilities, limited size of boats (only 4-5 large vessels), poor post-harvest technology, unfriendly gears are constraints for the development of the sector.
Sri Lanka	In Sri Lanka, with the overall guidance of the Ministry of Mahaweli Development and Environment and the Ministry of Sustainable Development, Wildlife and Rural Development, the Department of Wildlife Conservation and the Forest Department are the main organizations mandate to conserve the Biodiversity in Sri Lanka, together ,these two departments have declared about 26% of terrestrial land as protected area and 0.3% of marine area at present. National Biodiversity Strategic Action Plan 2016-2022 (NBSAP) is the main policy instrument for guiding Sri Lanka for the conservation on biodiversity and sustainable development and sharing its benefits. The Ministry of Fisheries and Aquatic Resources has formulated a 10 year fisheries development plan for implementation during the period 2007-2016 based on the national fisheries and aquatic resources policy objectives. The plan envisages the increase in the total production of fish in sustainable manner. Although coastal fisheries will continue to make a considerable contribution to total fish production, they have serious limits to further expansion due to resource constraints. Therefore, the major contributions to the increase in production are expected from inland fisheries and aquaculture, complemented with the high seas and offshore fisheries production. With regards to the offshore fishing policy the government is providing incentives to improve the facilities in the boats to preserve the catch and to minimize the post-harvest losses.

Annex 8: IAS Current Status in SAS nations and Recommended Actions for Mitigation

Country	Current Status	Recommended Measures
Bangladesh	a)Alien species found to be productive elsewhere, having potential to bring economic benefits were introduced b) fish species capable of producing a higher biomass in a shorter period than native species were introduced (e.g. Oreochromis mossambicus and Oreochromis niloticus) c)Weak Quarantine measures, d) inadequate scientific information	(a) inventory and identification of IAS; (b) description of the natural habitat of each alien species; (c) Mechanisms by which they propagate; (d) clear quarantine regulations; (e) international co-operation in information exchange; (f) prior clearance for species of economic and/or aesthetic importance before introduction to a country; (h) standardized procedures for introduction and monitoring; (i) political commitment through enactment of proper legal instruments.
India	While there are several legislative enactments which reference IAS, there is no exclusive legislation or policy to address IAS, and no system regulating species entering the country. Quarantine measures are weak. There is no national data base on IAS. Some states such as West Bengal and Tamil Nadu have adopted legislative and administrative measures for eradicating and preventing further invasion of the most noxious weed species and exotic fish carnivores (such as the Big Head Carp) replacing native species (MOEFCC, 2014)	Under the National Biodiversity Action Plan: (a) Regulation of introduction of IAS and their management; (b) develop a unified national system for regulation of all species entering the country; (c) rigorous quarantine checks.(d) develop a national database on IAS reported in India; (e) appropriate early warning and awareness system in response to new sightings of IAS; (f) priority funding to basic research on managing IAS; (g) promote regional cooperation in adoption of uniform quarantine measures and containment of invasive exotics.
Maldives	Follows cautious policy due to the fragile ecosystems on which economy is based. Management measures include: (a) formulate quarantine and other regulations to control IAS import; (b) adopt risk assessment techniques for identification, entry, establishment and control of potentially harmful species; Ballast water Management convention has been signed	(a) Establish quarantine facilities at points of entry of potentially harmful alien species; and (b) conservation of local biological diversity when transferring species from one locality to another within the country
Pakistan	(a) Need conservation projects aimed at conserving and restoring biodiversity, habitats and ecosystems that are threatened by IAS; (b) facilitate close coordination and collaboration between quarantine and plant protection departments; (c) prepare a black list of IAS in Pakistan; (d) inadequate education and awareness in the management of IAS;	(a) commission a technical review of IAS occurrence; (b) enhance local expertise for managing IAS, and train staff in the preparation of contingency plans; (c) strengthen and build capacity of the quarantine department for identification of IAS in the country due to increasing trade and travel; (d) initiate research to investigate the impacts of IAS on biodiversity,

		tourism, agriculture, livestock production; (i) develop legislation to discourage introduction of IAS and encompass linkages between animal, plant and bio-safety issues.
Sri Lanka	Threat from IAS to local species, particularly in agriculture, was recognized. Relevant legislation includes (i) Water Hyacinth Ordinance; (ii) Plant Protection Ordinance; and (iii)Fauna and Flora Protection ordinance of 1937 and amendments. These restrict the introduction of weeds, pests and diseases harmful to indigenous plants and restrict the movement of flora and fauna. While the Acts provide the support to act against the introduction of IAS, their scope is limited.	-Develop an appropriate legislative framework for effective prevention and subsequent control of IAS. -Strategic approach that encompasses prevention, eradication, control and containment is needed. -Sound management strategies based on ecological principles -co-ordination between line agencies -human resource development. Prevention is the cheapest and most preferred option

Source: GISP, 2003, Government of India, 2014.

Annex 9: Hilsa shad and Indian Mackerel - Ecosystem-based fisheries issues in the Bay of Bengal

(Source APFIC, 2012)

Biological status of hilsa (regional stock)	According to the latest stock assessment by the BOBLME hilsa working group, the regional hilsa stock is overfished. Widespread use of small mesh gillnets is leading to a large number of juveniles being caught, especially in riverine areas.
What impact is the fishery having on the environment?	There are no major impacts on the seabed or water column
What impact is the fishery having on endangered and threatened species?	The fishery also catches turtles, sharks and cetacean, but exact numbers are unknown. Sea turtles are considered to be a threatened species.
What impact is the fishery having on other species?	Small mesh fisheries have an adverse impact on aquatic biodiversity in rivers and floodplains.
What external factors threaten the fishery?	Loss of the riverine habitats through siltation and water diversion, pollution. Water quality in both India and Bangladesh is typically poor.

Socio-economic issues	
Contribution of the fishery to livelihoods	The hilsa fisheries play a critical role in the generation of employment and income. In Bangladesh, over 500 000 fishers are involved in catching hilsa and over 2 000 000 people are indirectly involved in the distribution and sale of hilsa., processing and export. The socio-economic status of most hilsa fishers can be categorized as socioeconomically disadvantaged in terms of access to services (education, health, banking, electricity, piped water), and income. However, given the relatively high value of hilsa as a result of strong local demand, the hilsa fishery may provide higher daily incomes compared to fisheries for other species.
Economic value of hilsa fisheries	Hilsa catches in Bangladesh are valued at about Tk. 90 billion/US$1.3 billion. Accurate estimates of landed values are problematic to obtain given complex relationships between money lenders and fishers that distort prices paid to fishers, but are thought to be about Tk. 45-60 billion/US$640 to US$850 million.
Governance issues	
Current management	There is no coordinated regional management of the hilsa stock. Bangladesh has a hilsa fisheries action management plan.
Implementation of an ecosystem approach to fisheries management (EAFM)	BOBP-IGO provides training in the Code of Conduct for Responsible Fisheries (the basis of EAFM).
Data and information	There are no integrated data management of collection activities for hilsa.
Legal tools and compliance	Legal tool exist, but few actions are directed at hilsa and enforcement of management measures is difficult.
MPAS	Bangladesh has about 1 394 km2 of MPA (about 0.05 percent of the EEZ); India has 12 276 km2 (about 0.5 percent of the EEZ); Myanmar has 341 km2 (about 0.01 percent of the EEZ). Degree to which these MPAs contribute to the protection of the stock is not known.
Institutional structure	The links between the main agencies that need to be involved in hilsa management (fisheries and environment) are weak. Agencies that manage these areas in each country also need to be involved.

Annex 10: Legal framework PA establishment in the region

	Overall Legal Framework	Sectoral Enactments		
		Forestry	Fisheries	Other
Bangladesh	Bangladesh Wildlife Preservation (Amendment) Act, 1974	Forestry Act, 1927; Forest (Amendment) Ordinance, 1989	Marine Fisheries Ordinance, 1983	Environment Protection Act, 1995;
India	Wildlife Protection Act of 1972	Forest Act, 1927, Forest (Conservation) Act, 1980	Indian Fisheries Act, 1897	Environment Protection Act, Coastal Regulation Z one notification, 2011; Biological Diversity Act, 2002 (State Governments)
Maldives	Environmental Protection and Preservation Act of 1993	-	Fisheries Law of 1987 (Law No: 5/87)	-
Pakistan	Balochistan Wildlife (Protection, Preservation, Conservation and Management) Act (1974); Sindh Wildlife Protection Ordinance (1972, amended 1993)	Forest Act 1927	The Pakistan Fisheries Ordinance, 1961	Environmental Protection Act, 1997
Sri Lanka	Fauna and Flora Protection Ordinance, 1937 and its periodic amendments	The Forest Conservation Ordinance	Fisheries and Aquatic Resources Act the No. 2 of 1996	Coast Conservation Act enacted in 1981 National Environment Act National Heritage & Wilderness Act.

Annex 11: Marine Protected Areas - Actions at National Level

Update on Marine Protected Areas – National Level

Bangladesh

- Biodiversity Act 2011 and the formation of Ecosystem Critical Areas (ECA)
- Four marine reserves have been set up under ECA and are areas important to conserve hilsa fisheries
- Identification of key areas that should be protected include Elephant Point (shrimp breeding), Meghna estuary (hilsa breeding), Swatch Of No Ground (shrimps & dolphins), marine areas in Chakaria Sundarbans & Sundarbans (mangrove habitat; nursery grounds)
- Government plans to extend the mandate of the Coast Guard and Navy to help with enforcement efforts in fisheries management

India

- Critically Vulnerable Coastal Areas include Sundarbans, Chilika, Bhitarkanika, Gulf of Mannar, all under Coastal Regulation Zone Notification (2011)
- Society for Integrated Coastal Management (SICOM) has been formed to implement ICZM in two sites in environmentally sensitive areas (World Bank Project)
- Several regional initiatives are underway including India-Bangladesh joint research initiative (on hilsa) and India-Sri Lanka joint working committee on fisheries
- Under GEF/UNDP project, India is implemented work in Gulf of Mannar (finalized in 2012), and planning work for mainstreaming coastal and marine biodiversity into production sectors East Godavari

Maldives

- Baa Atoll was declared a UNESCO biosphere reserve in June 2011
- Six new protected areas (Mendhoo, Goedhoo Korau, Maahuruvalhi Faru, Bathalaa, Mathifaru Huraa, and ship wreck near Fulhadhoo) are established in Baa Atoll
- The boundaries for two existing MPAs (Hanifaru Bay and Dhigli Giri) were extended

Sri Lanka

- MPAs such as Hikkaduwa Marine National Park, Pigeon Island National Park, Adam's Bridge Marine National park, Delft National Park, Chundikulam National Park, Vidaththalthiu Nature Reserve, Vankalei Sanctuary, Bar Reef sanctuary at Kalpitiya, Unawatuna Sanctuary, and Pareithiu sanctuary,
- Responsible ministries and agencies are Ministry of Mahaweli Development and Environment, Dept. of Wildlife Conservation under the Ministry of Sustainable Development Wildlife and Rural Development. Dept. of Fisheries under Ministry of Fisheries and Aquatic Resources, Coast Conservation Department under Ministry of Defense
- Further actions should include awareness about MPA for the community and financial assistance for park management

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Regional Marine Litter Action Plan for South Asian Seas Region

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Executive Summary

Marine Litter and micro plastic is increasing with every passing day due to the increased use of disposable substances specially. Plastic being light is easily carried by water from the inland through canals streams and finally to the seas in SAS region.

In the last few decades the adoption of different resolutions as well as multi-lateral Environmental conventions (MEAS) such as Convention on Biological Diversity (CBD), and the United Nations Environment Assembly- Three (UNEA-3) on Management of Marine litter and Micro Plastics indicate that the issue of marine plastic litter and micro plastics has continued to receive much international attention.

The origin and routes of marine litter are diverse and exact quantities and pathways are not fully known. The past studies showed that 83% of land-based plastic waste end up in the ocean and of those, majority countries are Asian and four of them (Bangladesh, India, Pakistan, and Sri Lanka are located in the South Asia Seas (SAS)region.

The amount of plastic waste eventually ending up in the ocean was mainly determined by the percentage of mismanaged waste. A study estimated that between 1.15 and 2.41 million tons of plastic waste flows from rivers into the ocean annually, and the top 20 of polluting rivers were located in Asia, and accounted for 67% of the global total.

Even though the main sources of marine litter and possible solutions offers a solid basis for effective management of the marine litter, it has become clear that so far the impacts of management strategies and policies and other initiatives are still not properly studied.

At present, there are several international efforts for reducing and preventing marine litter and for mitigating its impacts. More and more countries are implementing several management strategies and actions against marine litter. In the 2016 United Nations Environment Assembly countries unanimously adopted a stand-alone resolution on marine litter and micro plastics. In order to keep it also high on national agendas, pollution has been the focused of the UN Environment Assembly during June 2017.

The countries constituting the SAS Region have almost a fifth of the world's total population. High population density, low per capita income, low development indicators, and high dependence upon natural resources for livelihood characterize all these countries.

In the entire SAS region, data and information on the marine litter are very limited and current marine litter and micro-plastics management strategies of the SAS region are either non-available or very weak. In addition, no uniform and standard methods were adapted by the member countries to study and compare the micro-plastics for the better management including marine litter removal and disposal in the SAS region.

With reference to available literature it is observed that very little data is available in the open ocean on floating or submerged marine litter, as no systematic monitoring of such marine litter has so far been undertaken in the SAS region.

From different web references, it is clear that the Bangladesh marine litter is coming from land-based origin. It is also observed that the marine litter monitoring programme has not recently been conducted in Bangladesh. Quantification of marine litter in India including plastics in the water column, sediment and biota has been documented in the certain areas of the Indian beaches, coastal waters and open sea. However, systematic status and trend analyses are not available in India. Even though marine litter is one of the biggest environmental problems in the Maldives, it has not been done any quantification survey of marine litter. According to a study of environment ministry of Pakistan, the total solid waste generation is about 20 million tons a year. The marine litter data in Sri Lanka were analyzed based on the total number of pieces collected during the International Coastal Cleanup ICC program. As per the World Bank Waste Atlas, the per capita waste generation rate of Sri Lanka is 215.4 kg per year.

According to the country reports submitted by the SAS countries it was observed that all SAS countries are having unique problem to evaluate and quantify the total marine litter in the marine environment component of their respective countries.

Ecological, economic, and social impacts of marine litters must be understood to enable thoughtful prioritization and development of strategies to minimize the impacts of marine litters. However no area specific or site specific ecological, social and economic issues in relation to the marine litter have been studied or documented in the SAS region. Instead of the site specific or country specific information, these countries have indicated general issues in relation to marine litter.

Quantifiable targets for reducing marine litter for the SAS countries are needed and those targets must be based on scientific assessments of impacts. According to the present status, no quantifiable and scientific data and information is available in the SAS region. Therefore degradation of the coastal resource, habitats and biodiversity in the region may come to the critical condition in near future.

There are several management strategies implemented by the various agencies at the global, regional and country level to manage the marine litter and these strategies can be grouped under following categories: formation and declaration of management policies, international conventions, laws, regulations and treaties, implementation of direct development activities, conducting research and surveys, implementations of enforcement program, monitoring and evaluation, conducting education and awareness programs, and use market and economic instruments.

The existing international conventions, laws and regulations as well as SAS country level legislation, regulations and enforcement mechanisms need to be evaluated and strengthened. If existing systems are not effective a new set of legislation/regulation for marine litter and micro-plastics need to be enacted.

Except Sri Lanka, no other SAS country has been established a separate agency for marine litter management. This matter need to taking into consideration and need to assign marine litter management responsibilities to suitable existing agency or established a separate new agency.

The strategy of direct development basically targeted to prevent the solid waste enters into the coastal areas. According to the information, it was very clear that all the SAS countries are engaged in at least few of the direct development activities to control the marine litter. However, many countries have not yet adequately designed and implemented activities for sea bed marine litter removing programs or water Column litter removing programs.

Regulations and enforcement strategies are aiming to mitigate the impacts of marine litter and reduce the waste generation. One of most important requirement for regulation and enforcement is that the availability of a separate legal entity to prepare the regulation and enforcement plan. Except Sri Lanka, no any SAS country has established a separate agency to manage the marine litter issues. Further no any SAS country has prepared and implemented a proper enforcement program for the marine litter reduction. Therefore it is necessary for these countries to prepare a proper regulation and enforcement program.

Monitoring and evaluation strategy needs to implement by individual country by preparation of proper monitoring and evaluation program. For this it is required accurate scientific information. According to the available information, most of the SAS countries have not given priority for preparation and implementation of the monitoring and evaluation plan.

Research and studies in SAS region have been limited to coastal sections of the marine environment components. Other areas such as socio-economics cost, marine ecosystem cost due to marine litter are not sufficient or available.

Education and awareness program is the most useful management strategy for any type of resources management since the strategy is mainly used for changing the behavior of people to achieve desirable targets. According to the available reports and information, many SAS countries have been implemented awareness programs targeting general public rather than the essential stakeholders. It is also observed that all of the SAS countries have implemented mainly beach cleaning program annually. These programs have not targeted real stakeholders who are directly responsible for marine litter generation.

Even though marketing and economic strategies are very useful and effective very few marketing and economic strategies have been introduced and implemented by the SAS countries to minimize the marine litter.

01. Marine Litter Challenge in SAS region

1.1 Introduction

Marine Litter and micro plastic concentration is increasing with the every passing day due to the increased use of disposable substances specially. Plastic use has greatly increased during the past couple of decades as it is easily and cheaply available in the market. Plastic being light is easily carried by water from the inland through canals, streams and river to the seas in SA region. The increased quantity of marine litter and micro plastic has greatly affected the marine environment and therefore both animal and human life in the SAS region is badly affected besides shipping, tourism industry, fishery, aquaculture and other blue economy activities. With a view to mitigate the increased impacts of marine litter and micro-plastic SACEP and SAS member countries jointly initiated the regional marine litter action plan with the support of UN environment.

The origin and routes of marine litter are diverse and exact quantities and pathways are not fully known in the SAS region. However, research that aims to estimate the exact quantities and types of plastic litter and pathways in the environment are being conducted to quantify these parameters. The past studies shows that approximately 83% of the 4.8–12.7 million tons of land-based plastic waste ends up in the ocean from the 192 coastal countries. Ansje Lo hr1 et al. (01) of those, majority of the countries are Asian and four of them Bangladesh, India, Pakistan, and Sri Lanka are located in the in the SAS region.

The amount of plastic waste eventually ending up in the ocean was mainly determined as a percentage of mismanaged waste. Studies estimated that between 1.15 and 2.41 million tons of plastic waste flows from rivers into the ocean annually, Lebreton et al. (02) likewise the main drivers were population density, mismanaged plastic waste and production quantity per country globally. The top 20 polluting rivers were mostly located in Asia, and they accounted for 67% of the total global plastic waste. Available knowledge on main sources of marine litter and possible solutions offers a solid basis for effective management of the marine litter. Yet it is clear that so far the impacts of management strategies and policies and other initiatives are either missing or still not properly studied. Moreover, due to its multiple use, global plastic production increases each year and it has already exceeded 300 million tons in 2014.

At present, there are several international efforts aiming at reducing and preventing marine litter besides mitigating its impacts. These include worldwide initiatives such as the Global Partnership on Marine Litter (GPML), the Honolulu Strategy and the G7 countries. GPML is a voluntary multi-stakeholder co-ordination mechanism which brings together policymakers, civil society actors, the scientific community and the private sector to discuss solutions and catalyze actions.

In the last few decades the adoption of various marine litter resolutions as well as multi-lateral Environmental Agreement (MEAS) such as the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 and London Protocol prohibiting all dumping except for possibly acceptable wastes on the so-called "reverse list", 2006. The 3rd United Nations Environment Assembly (UNEA-3) adopted resolution on Management of Marine litter and Micro Plastics which indicate that the issue of marine plastic litter and micro plastics has continued to receive much international attention (03). The UNEA-3 resolution acknowledged marine plastic and micro plastic as a rapidly increasing, serious problem of global concern that needs urgent global response. The resolution signals countries continued willingness to put marine plastic pollution high on the environmental policy agenda. In order to keep it also high on national agendas, pollution has been the focused of the 3rd UN Environment Assembly held in December 2017.

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United Nations Conference held in June 2017 to Support the Implementation of Sustainable Development Goals as part of the 2030 Agenda also affirmed a strong commitment, through various SDGs such as SDG-12, SDG-6 clean water and sanitation, SDG-14 life under water etc. to conserve and use our oceans, seas and marine resources for sustainable development(04).

The solution to marine litter is likely to be found in a transition towards more sustainable ways of production and consumption that are also promoted via the Sustainable Development Goals (SDGs). Available knowledge on the causes of marine litter and possible solutions offers for effective management of the marine litter. Yet, it has become clear that so far the effects of management strategies, policies, and other initiatives are still lacking.

1.2 Marine Litter status in South Asian Seas (SAS) Region

The SAS Region includes the seas bordering countries such as Bangladesh, India, Maldives, Pakistan, and Sri Lanka and comprises the Northern part of the Indian Ocean, along with parts of the Bay of Bengal and the Arabian Sea. Bangladesh, India, and Pakistan are parts of the Indian subcontinent, while the island of Sri Lanka shares a part of the continental shelf with India. Maldives is a group of coral atoll islands.

The SAS member countries have almost a fifth of the world's total population. High population density, low per capita income, low development indicators, and high dependence on natural resources for livelihood characterize all these countries are highly prone to and vulnerable to the impacts of marine litter and micro-plastic. The SAS region comprised of has some of the largest biologically rich in marine biodiversity like the Gulf of Mannar, coral atolls of the Maldives, coastal lagoons like Chilika in India and Puttalam in Sri Lanka, vast mudflats of the Gulf of Kutch and Sundarbans, large sea grass beds in the Gulf of Manner, the mangroves of the Sundarbans, and Pakistani coastal belts, marine mammal like dolphin, Dugong, and whales in the Indian Ocean.

The current marine litter and micro-plastics management strategies of the countries in the SAS region are either non available or very weak and disjointed. There is no uniform and standard method adapted to study and compares the micro-plastics for the better management including marine/beach litter removal and disposal in the SAS region. From the available data it could be concluded that the major sources of marine litter and micro-plastics are domestic and industrial wastes, solid waste dumping, urban and sewage runoff, shipping and fishing activities, tourism and recreational activities, etc. Very little data is available in the open ocean on floating or submerged marine litter as no systematic monitoring of such debris has so far been undertaken in the SAS region.

1.3 Marine litter status in SAS countries

The Bangladesh has low laying riverine area and many inland waterways with a 580 km coastline along the Bay of Bengal. The country is the home to the Ganges, the Brahmaputra and the Meghna rivers, and networks of smaller rivers and canals. The delta plain of the Ganges (Padma), Brahmaputra (Jamuna) and Meghna Rivers and their tributaries occupy 79 percent of the country (05).

An overview of the marine litter in the SAS member countries show that Bangladesh marine litter are coming from land-based sources. Most of the big cities and industries are located near major rivers.

These rivers are the repositories of most of the waste discharge from different industries and municipal waste of the city. Various industries are mainly responsible for originating litter that are directly disposed to the main rivers without proper recycling and management nor is there any marine litter monitoring programme in Bangladesh. The last data about marine litter monitoring in Bangladesh was found in the SACEP/UNEP report in 2007.

Quantification of marine litter in India including plastics in the water column, sediment and biota has been documented in certain areas of the Indian beaches, estuaries, coastal waters and open sea. However, comparisons between studies or even systematic status and trend analyses are not available due to differences in the collection and measurement methodologies used by the respective researchers. India, has undertaken research on the circulation patterns to determine marine litter circulation. Marine litter is one of the biggest environmental challenges in the Maldives as there has been a significant increase in the magnitude of the problem in Maldives due to the rapid growth of population, changing consumption patterns, tourism industry, and logistical difficulties of waste disposal and lack of proper waste management facilities.

According to a study of Environment Ministry Government of Pakistan, the total solid waste generation in Pakistan is about 20.024 million tons a year, which is approximately 59,000 tons per day (06). The study also indicated that the growth rate of solid waste generation is about 2.4% per annum. At the rate of population increase in Pakistan, the amount of waste production will double in the next ten years. The marine litter data in Sri Lanka were analyzed based on the total number of pieces collected during the 2012-2015. The composition of debris is dominated by food and beverage packaging items. As per the World Bank Waste Atlas, the per person waste generation rate of Sri Lanka is 215.4 kg per year.

The marine litter data in Sri Lanka were analyzed based on the total number of pieces collected during the 2012-2015. The composition of debris is dominated by food and beverage packaging items. This clearly shows that the behavioral patterns of the public and the attitudes of disposing of their waste. As per the World Bank Waste Atlas, the per person waste generation rate of Sri Lanka is 215.4 kg per year (World Bank, 2013) (07). In Sri Lanka, collection capacity of the municipal waste is nearly 50 percent of the total waste (Waste Management Authority, 2016) (08). And balance 50 percent is damped or discarded into the nearest environment. As a result of this, large amount of land based waste enters into coastal and marine environment as marine litter.

Base on the available reports and the country reports prepared by the country representatives, the status of SAS countries marine litter were given in the **Table 1.1.**

Table 1.1 Marine Litter statuses in South Asian Seas (SAS) countries

Country	Marine litter status at country level	Marine litter quantity data availability at country level
Bangladesh	Litter classification information available.	Total Quantity Data not available.
India	Status of marine litter indicated 14 segments/regions. But not quantity not available	Quantity Data not available
Maldives	Waste management regulations and Island waste management plan has a mechanism in place to, but so far quantitative data is unavailable	Quantitative data specific to marine litter is not available. solid waste generation statistics for some regions are available
Pakistan	Regional level classification of marine litter is available.	Quantity Data not available
Sri Lanka	Urban level classification and quantity of solid waste is available and 50% of solid wastes are moving to sea as marine litter. .	Quantity Data not available

As shown in the above table, none of the SAS country has quantity data of marine litter. Therefore, under this situation these countries are not in a position to preparation of proper management plan to reduce the marine litter. However, arbitrary estimation was done for each country of the SAS region using beach cleaning data and per capita waste generation data. These estimated data and solid waste reduction activity data are indicted in the Table 1.2

Table 1.2 The estimated solid waste quantity and solid waste reduction activity data

Country	Total estimated solid waste Quantity per year	Availability of management system and quantity of reducing
Bangladesh	General data for solid waste is available; however no separate data for marine litter is quantified.	Local level solid waste management system is available in bigger coastal cities.
India	General data for solid waste is available; however no separate data for marine litter is quantified.	Local level solid waste management system is available in every state.
Maldives	Marine litter estimates are not available at national level. Solid waste quantity projections based on 2008 household waste audit are available. Per capita waste generation (1.1kg/day for Male' and 0.7 kg/day for atolls).	Quantity of recycling or re-use is not available
Pakistan	Total solid waste generation is about 20,024 million tons a year However, no specific .marine litter data	In Pakistan dumping and burning remain the most common methods of 60 per cent solid waste disposal.
Sri Lanka	General data for solid waste is available	Most of the organic waste is used to produce compost. Plastic is being recycled and recycle facilities are available but capacity in national level data is not available

According to the table 1.2, date on solid waste reduction is not available from all SAS countries. Since the total waste generation data and waste reduction data unavailability in the SAS countries it is very difficult to estimate the total quantity of waste are ultimately going to the coastal areas as marine litter.

02. Major marine litter management challenges in SAS Region

Marine litter is becoming a complex multi-sectorial issue with significant implications for the world's marine and coastal environments and human activities. Reduction of marine litter will entirely depend on a scientifically sound assessment of the litter. One of the issues for assessment is that an exact ecological, economic, and social cost due to marine litter around the globe is not properly estimated. The other issue is that the problems caused by marine litters are multifaceted. Still there are not available quantifiable targets for reducing marine debris. Much more complicated issue is that marine litter is constantly moving from place to place due to coastal process and current. However, it was observed that the management strategies are implementing by many countries without knowing the exact quantity of the marine litter.

All SAS countries are facing problems of marine litter quantification in their respective countries. As a result, they fail to identify the magnitude of the marine litter which is directly or indirectly impacting the ecological, social and economic systems in the SAS region. Therefore, this situation has severely affected preparation of the management strategies and policies to address the marine litter issues in the SAS region. Social, Economic and Ecological impacts of marine litter must be understood to enable thoughtful prioritization and development of effective management strategies. Entanglement of animals by marine debris presents issues of limited mobility and restricted movement that can lead to starvation, suffocation, laceration, subsequent infection, and possible mortality in marine animals.

No area specific or site specific ecological, social and economic parameters in relation to the marine litter have so far been studied or documented in the SAS region. Instead of the site specific or country specific information, these countries have indicated general issues experienced due to marine litter to their ecology. This is a very serious problem for preparation of management strategies and plans to mitigate the marine litter issues in the region as well as individual SAS countries and require urgent attention by national and regional organizations and authorities in the SAS region countries. However, according to the present status, no quantifiable and scientific data and information is available in the SAS region to prepare a target oriented management plan for the region as well as country level to manage marine litter on sustainable basis. Therefore, degradation of the coastal resource, habitats and biodiversity in the region may come to the critical condition in near future thereby making coastal biodiversity in the region unproductive, creating social unrest, and the uncountable economic losses. Therefore, immediate proactive measures need to be implemented in the region for avoiding any disaster to happen.

2.1 Ecological Challengers due to Marine litter in the South Asian seas countries

In Bangladesh, more than 10 areas are listed as an Ecologically Critical Area (ECA). Of them, majority areas are situated adjacent to the Bay of Bengal (Khulna, Satkhira, Bagerhat, Sundarban, Cox's Bazar and Saint Martins Island. Most of the above biodiversity rich areas are near the coast or in the coastal area. Therefore, any type of marine litter will create threats to the biodiversity in ECA. Even though there are many ecological impacts to the Bangladesh ECAs in the coastal zone, no any specific study or information available to indicate the level of ecological issues in relation to the marine litter. (09)

Even though India is the biggest coastal country in the South Asian region, there is no area specific information on ecological impacts on to the coastal ecosystems due to marine litter. However there is some general information indicated that Marine litter may impacts on to the coastal ecosystems in India.

Maldives is very famous for beautiful coral reefs and coral reefs associate ecosystems. It is also very famous for Tuna fisheries industry and many of the tuna based productions are exporting to the European Union countries. Therefore ecological damages to the coral reefs and their associate ecosystems due to the marine litter may impact on to their tourism industry, fisheries industry and as a result to the economy very badly. Unfortunately, site or area specific information on ecological impacts due to marine litter is not available.

In Pakistan, there is still lack of precise knowledge about the quantity, sources, transport, accumulation and fate of plastics in the oceans ecological systems. The most visible and disturbing impacts of marine plastic pollution in the Pakistan are the ingestion, suffocation and entanglement of hundreds of marine species. Floating plastics in the Karachi Harbor area, which are presently the most abundant items of marine litter, also contribute considerably to the transport of non-indigenous (alien) marine species thereby threatening marine biodiversity and the food web. In Pakistan also not sufficient information is available to indicate the impacts to the ecological systems due to the marine litter at national or local level.

Marine litter pollution in Sri Lanka claims the lives of many marine turtles and dolphins. Leatherback turtles feed on jellyfish and they eat mistakenly plastic bags floating in the water assuming as jellyfish. They also eat plastic bags and those bags are blocking the turtle's gut and the animals finally starve to death (TCP, 2015). Beach trash in many beaches in the southern coastal area including Rakawa have been prevented sea turtle normal access to nesting sites as well as block access to the sea for hatchling making them prime targets for predators. Mangroves in Negombo lagoon areas in Sri Lanka are impacted by marine litter generated from fishing activities and a large number of plastic debris accumulated in the lagoon mangrove areas. The coral reefs scatted along the coastal areas in Sri Lanka are one of the most productive and sensitive ecosystems where many artisanal and coastal fishermen are depend directly on them. The high biological diversity of coral reefs also makes them popular commercial and recreational fishing grounds, which often results in the presence of derelict fishing gear, abandoned fishing gear is known to cause significant and persistent threats to the coral reef ecosystems in many areas.

2.2 Social Challengers due to marine litter in the South Asian Seas countries

Social impacts due to marine litter can have significant affect to the marine sectors in the SAS region including aquaculture, agriculture, fisheries, shipping (including leisure boating), power generation and industrial use, and tourism.

Marine litter also is a serious issue to the visual and other aesthetic sensitivities of tourists and local visitors to beaches, especially sanitary, sewage related and medical waste which may also cause injuries and/or be a risk to human health.

Apart from beaches, high marine debris concentration on the seabed and on coral reefs may have serious impacts on the diving industry, as heavily marine litter polluted diving sites will be avoided by divers.

In the Bangladesh, country specific social issues due to marine litter have not been identified in the national report. However country report has indicated that some general social issues may be arises due to discarded fishing line, rope and plastic trash or food bags and medical wastes dumped onto beaches.

India has a long beach stretch and it is occupied by many fishermen, aquaculture farmers, tourist structures etc. Therefore marine litter may effect to their day to day life. Therefore site specific information is required to understand the magnitude of social impacts due to marine litter. Still, Indian country report also not indicted country specific social issues due to marine litter other than the general issues which are very common to other countries.

Even though some general information on social impacts due to marine litter in the Maldives is available no site specific information are available. Therefore it is very difficult to determine what type of social issues are emerging and which atoll/island communities are badly affecting the marine litter in the Maldives.

The marine fisheries are a direct source of livelihood for over one million people comprising more than 125,000 households in Pakistan. There are approximately 15,000 fishing vessels of various sizes ranging from small to medium-sized boats, large launches and trawlers engaged in fishing activities. The Pakistan report indicated that the fishermen health is impacting on marine litters. But the exact impacts are poorly studied in Pakistan even though it is an emerging problem.

Sri Lanka country report stated that the most incidents related to impact on human health due to marine litter. However these incidences are unrecorded or not studied. Beaches in Sri Lanka are very attractive and large number of local and foreign visitors is aware of the potential hazards due to marine litter. It was reported that the pollution due to marine litter is major issue of certain beaches in Sri Lanka (EFL, 2017) (09). The marine litter constantly blocking waterways in urban coastal areas of Sri Lanka and contribute to flood of that area during the rainy season. There were many incidences which have reported that marine litter accumulated in coastal beaches in Sri Lanka which were provided a breeding ground for mosquitoes and flies.

2.3 Economic Issues due to marine litter in the South Asian Seas countries

Measuring the full economic cost of marine litter is complex due to the wide range of economic, social and environmental impacts, and wide range of sectors impacted by marine litter. Some of the impacts are easier to evaluate in economic terms because they are more direct, such as increased marine litter cleaning costs but indirect impacts are more complex.

While marine litter has become an increasingly important issue in policy discussions, there is only a very little of knowledge on the costs of the impacts. Because of a lack of recording even the direct economic costs of marine litter tend not to be measured. Furthermore, even though there is a growing interest in ecosystem services little research has been done to date on the economic cost of marine litter on ecosystem service.

In Bangladesh, Cox's Bazar, Chittagong, Saints Martins, Sundarban, Nijhum Dwip (Island) etc are the main tourist spots. People of this area largely depend on tourism by doing many activities. However, a recent survey indicated that marine litter along beautiful beaches and waterways destroy the beauty and enjoyment of coastal beach areas, and hence, negatively affect tourism and the economic benefits they bring. However there are no any scientific studies or documents to calculate the total cost and economic loss due to marine litter in the tourist development areas of the Bangladesh.

The Indian country report indicted very clearly that they are having the difficulties to measure the economic cost due to the marine litter in the Indian coastal areas. The main fact indicated in the report is that sound economic impact evaluation studies have not been done and therefore understanding the actual economic impacts due to marine litter is not available.

Economic cost due to marine litter in the Maldives also not available since any such studied are not available in the country. However country report indicated that the marine litter has contributed enormous impacts to the tourism sector of the Maldives. Most of the tourism-related activities in Maldives consist of snorkeling, diving, beach use, and mega fauna watching tours. Marine litter may result in lower revenues from tourism in the country with increasing incidence of debris on beaches, shallow coastal areas and other marine environments.

The issue of marine litter pollution along Pakistan's coast is a major concern and is worsening due to an inadequate solid waste disposal system along the coastline. As per the observations and events recorded by the WWF-Pakistan during 2017, the number of incidents of marine animals trapped in plastic products is on the increase. The economic impact of marine debris on coastal communities, especially for fisheries and municipalities are very high.

All ocean based industries such as fisheries, coastal tourism, aquaculture, sea transportation and seabed mineral industries highly depend on sustainable healthy marine and coastal ecosystem in Sri Lanka. These industries represent major contributions to country's Gross Domestic Product (GDP). For example, coastal tourism is the 5th foreign income generator in Sri Lanka. Marine litter which accumulates along the beaches and waterways disrupts the natural aesthetic beauty of the beaches which reduces the recreational value and tourism quality of these resources.

The summarized status of information availability and ecological, social and economic issues due to the marine litter in the South Asian Seas countries are given in table 2.1 below.

Table 2.1: Information availability In SAS countries on Ecological, Social and Economic Issues

Country	Ecological Issues	Social Issues	Economic Issues
Bangladesh	General information is available on ecology near the major coastal cities but no long term research is available	Negative impact on tourism. General information is available. Country wide and sites specific social data not available	General information available but country wide and site specific quantitative information is not available
India	General impact information is indicated, with marine litter on beaches near populated areas of major coastal cities	General statements but country and sites specific social data are not available	General statements but not any quantifiable information is available
Maldives	Local data available in different regions, but not enough to represent nationwide status	General statement indicates it is an emerging issue, but data isn't site specific	General statement indicates it is an emerging issue, but data isn't site specific. The impacts are not well understood.
Pakistan	Some isolated information on turtles and fishery damages reported. Large scale information on ecological issues not recorded.	No specific information or data available on social aspects.	Increased level of pollution mainly plastic related material posed a threats to different economic activities like tourism, shipping, fishing, etc.
Sri Lanka	Turtle entanglement information, Coral reefs, Mangroves, Lagoon and estuaries, physical damages due to marine litter are available but quantities are not available	Disturbances to fisheries and tourism activities	Impact on aesthetic and recreational activities Impact on tourism, damages to fishing gear boat engine- but no data is available

According to the above table all SAS countries are having problem to identify the magnitude of the marine litter issues which are impacted on to the ecological, social and economic systems of the SAS region. This situation is very seriously affected to preparation of the management strategies and policies to address the marine litter issues in the region.

03. Available Management Strategies for Marine Litter Management

Control or reduction of the marine litter at global, regional and country level is critically important since the coastal and marine areas are providing many livelihood and economic benefits to the all coastal countries and communities. In these aspects many management strategies have been formulated and being implemented by various international, regional, and national level agencies. This section will explain and evaluate the impacts of all type of strategies implemented by various agencies.

There are no readily available tools which are suitable to all countries or that would be effective to collect and clean-up marine litters from large areas once it is adrift. Prevention at source is therefore the key to reducing marine litters and its associated impacts. A combination of measures in a regionally coherent context is required, with a focus on reducing the rate at which waste is produced as well as ensuring the appropriate management measures are in place for the safe disposal of material that cannot be reused or recycled.

This chapter provides information on strategies that have been implemented in waste management and recycling and which could be applied to reduce land-based sources of litters as well as sea based marine litters.

There are several management strategies implemented by the various agencies at the world wide to mitigate the marine litter and all of the strategies can be grouped under following categories.

a) Implementation of international conventions, laws, agreements and treaties
b) Implementation of direct development activities
c) Conducting research and surveys
d) Implementations of enforcement program
e) Monitoring and evaluation
f) Conducting education and awareness programs
g) Use market and economic instruments

3.1 Formation and declaration of International Conventions, laws, agreements and treaties

There are several International conventions, laws, regulations and treaties introduced by the various international agencies to control and minimize the generation of marine litter at the global level and regional level. Some of them are explained below.

3.1.1 International Conventions laws, agreements and treaties

There are several international Conventions laws, agreements, treaties and declarations which are directly or indirectly relevant to the marine liter. Agenda 21 and the Johannesburg Plan of Implementation, Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP), International Coastal Cleanup (ICC) , United Nations Convention on the Law of the Sea (UNCLOS), Annex V of MARPOL 73/78, London Convention and London Protocol, Action Plan on Tackling the Inadequacy of PRFs, UNEP Regional Sea Program, UNEP/IOC Guidelines on Surveying and Monitoring of Marine Litter, UNEP/FAO Abandoned, Lost or Otherwise Discarded Fishing Gear, Honolulu Strategy, and UNEP Global Partnership of Marine Litter are some of them. Except very few, most of the above Conventions laws, agreements and treaties are not applicable or implemented fully in the SAS region.

3.1.2 Regional level Conventions laws, agreements and treaties

There are several regional level Conventions, laws, agreements and treaties such as SAS Program, EU Port Reception Facility (PRF) Directive, EU Marine Strategy Framework Directive, EU Initiatives on Land-Based Waste Management, Helsinki Convention and Its` Associated Initiatives, OSPAR Initiatives on Monitoring Marine Litter, OSPAR Fishing for Litter, and the Commission for the Conservation of Antarctic Marine Resources (CCAMLR) established. Of them OSPAR has developed guideline for monitoring marine litter on the beach and also providing practical advices for required countries.

SAS program is one of 18 such programs established by UNEP and the South Asian Seas Action Plan was adopted in March 1995. The SAS action plan is based on the region's environmental challenges as well as its socioeconomic and political situation. The plan is supported by a strong legal framework in the form of a regional convention and associated protocols on specific problems. The legally-binding convention expresses the commitment and political will of governments to tackle their common environmental problems through joint, coordinated activities.

3.1.3 National level Instruments

There are several national level management instruments and program developed by some countries to manage the solid waste and marine litter. Some of those are US Marine Plastic Pollution Research and Control Act (MPPRCA), US National Marine Debris Monitoring Program, UK Legislations on Garbage from Ships and PRFs, UK Beach Cleanup and Awareness Campaigns, Scotland Marine Litter Strategy and National Litter Strategy, South Korea Initiatives on Marine Litter, Taiwan Legislations Relevant to Marine Litter and Taiwan Initiatives on Land-Based Waste Management.

Of them, US National Marine Debris Monitoring Program (NMDMP) was developed to standardize marine debris data collection in the US by using a scientifically valid protocol to determine marine litter status and trends. The Taiwan initiatives were the plastic restriction policy and the compulsory garbage sorting policy which were two major initiatives on land-based waste management. The above country experiences can be replicated in the SAS countries through the institutional strengthen program of the region.

3.1.4 SAS regional countries Initiatives

The SAS region coastal countries also initiated beach cleaning program on 16th, of September each year to commemorate the International Coastal Cleanup Day arranged by the SACEP and several local level activities being implemented in every countries.

There is no specific marine litter management agency in Bangladesh. However, many agencies are present for waste management, protection of environment, preservation of resources, water management, conservation of wildlife etc. that are indirectly have the act, rule, law or legislation which prevent marine pollution or litter. Bangladesh has initiated a process to develop National Program of Action (NPA) under the Global Program of Action (GPA) for the Protection of the Marine Environment from Land-based Activities in 1999. Even though Bangladesh has sign and rectified many international conventions, policies and laws it was observed that no any proper implementation mechanism to practically implement the litter management activities.

There are several management agencies, committees and policies which are directly or indirectly responsible to implement the international conventions, laws, regulations and treaties on marine litter management in India. The country has made effort to preparation of many acts and regulations to protect the environment, which came into force time to time. India also limited its marine litter management activities into the beach area.

Much like many other SAS countries, Maldives also addressed the issue of marine litter through variety of laws and regulations. However there is no specific legislation or legal frameworks governing marine litter in the Maldives.

Under Pakistan Environmental Protection Act (EPA) 1997, (revised in 2013) imposed ban on manufacturing, sale and use of non-degradable scheduled plastic products. Further as per order issued by the Pakistan EPA in February 2005, the powers related to monitoring and pollution control in the areas of Pakistan's Maritime Zones has been delegated to the Maritime Security Agency. Pakistan is lagging behind in implementing the strategy on International Conventions, laws, regulations and treaties due to non-availability of direct responsible agency to manage marine pollution and marine environment.

Sri Lanka also has gathered a number of agencies to manage the marine pollution. Even though there are many agencies to manage the marine litter only Marine Environment Protection Agency

(MEPA) has been engaged in to implement marine litter management activities in relation to the strategy on International Conventions, laws, regulations and treaties.

Institutional structure in relation to the implementation of the strategy on International Conventions, laws, regulations and treaties in the SAS region summarized in table 3.1

Table 3.1: Status of the implementation of the Strategy on International Conventions, laws, regulations and treaties in the deferent marine environment component of the SAS region

Country	In the beach/Coastline	Coastal Sea floor	In the water column	On the water surface	Deep sea	In the water column at deep Sea
Bangladesh	None	None	None	None	None	None
India	Very few but confined limited beach area	None	None	None	None	None
Maldives	Nationwide implementation quite well under waste management regulations (WMR 2013/R-58) as it falls under island management plans.	Marine protected areas. Green fins and some private parties (for localized regions)	Falls under WMR 2013/R-58, but weak implementation			
Pakistan	None	None	None	None	None	None
Sri Lanka	Certain polices island wide	Certain areas	None	None	None	None

The above table very clearly indicated that implementation of the majority of international conventions, laws, agreements; treaties and local level Acts and regulation have been confined to the beach areas of the countries.

Even though there are numerous international and regional conventions, agreements, laws, and treaties already exist and provide a good legal platform for management and minimization of marine litter issues, several cases indicate that cooperative action on marine litter has lagged behind, or the participation of states in these initiatives was insufficient. For example, there are no legal instruments in place dedicated to the management of marine litter as yet in the SAS region. Some countries in the region do not even initiated action in the UNEP Global Initiative. Therefore it is a very urgent requirement to prepare a regional level plan, to implement international conventions, agreements, laws, regulations and treaties.

3.2 Implementation of Direct development activities

The main objective of the direct development strategy is to prevent the litter and solid waste enters into the beaches and sea areas. Following activities are carry out by various countries under the direct development strategies which include; source reduction, waste reuse and recycling, structures for waste conversion to energy, reception facilities, development of gear marking facilities, litter contained at points of entry into receiving waters, beach and reef cleaning activities and various waste management initiatives on land. Product modification and improvement (e.g. through eco design) is an important method for source reduction. A variety of source reduction schemes have been developed and are available, such as designing packaging that the product can be refilled, maintaining and repairing durable products, developing more concentrated products.

3.2.1 Status of Direct Development Strategy in SAS region

In the SAS region, variety of direct development activates (DDA) have been initiated and being implemented. Some of them are construction of litter disposal and dumping structures, construction of barriers at river mouths or lagoon mouths to trap waste which are eventually entering to the sea, removing and cleaning of beaches under the beach cleaning programs, waste reuse and recycling, structures for waste conversion to energy, development of reception facilities.

According to the available information Bangladesh has been conducting beach cleanup program annually and these activity has been limited to certain beach areas of the country.

India also indicated that they have conducting beach cleaning activities in the beach cleaning day in many states. Activities such as 3R and waste in to energy are being done by India but data and information on other activities are not available.

Maldives formed a long-term partnership with Parley to implement Parley's creative, multi-disciplinary approach to collection of plastic from the sea and recycling them to create yarn or fabric. Further Maldivian government has adopted a plan in collaboration with the fishing industry whereby fishers collect and bring back drifting plastics they encounter within the country's EEZ and the collected plastics are to be handed over to the closest designated collection point, which will then be delivered to Parley for the Oceans for recycling.

The severity of inflow of solid waste material into the navigational channel was so high in Pakistan that Karachi Port Trust (KPT) needs extra effort and resources to dredge the harbor. In this regard KPT is constantly being hired boats which scoop the inorganic waste and floating litters including polythene bags and plastic material from the port vicinity on daily basis. Approximately five to ten tons of litters is collected from the navigational channels daily.

The Sri Lankan government has taken several measures to overcome marine litter issues through several direct development strategies. At present majority of solid waste management activities are focuses onto land base areas and these activities have not focused on to the marine and coastal areas. The waste collection and waste disposal mechanism have been introduced by the MEPA but the municipal waste collection and disposal facilities are not sufficient to collect all waste generated in municipal areas in Sri Lanka. MEPA has also taken initiative to provide a waste reception facility to unload ship generated waste at the arrival to Sri Lankan ports.

It is obvious that SAS countries have taken several actions under the direct development strategy. However most of them are confined to the land base activities and to the shoreline areas. Very few countries have focused on to the marine and coastal areas but none of countries have developed activities to reduce marine litters in deep sea areas. The details of the activities implemented within the marine environment component areas under the direct development strategies by SAS countries are indicated in table 3.2.

Table 3.2 Activities implemented within the marine environment component areas under the direct development strategies by SAS countries

Country	In the beach/Coastline	Coastal Sea floor	In the water column	On the water surface	Deep sea	In the water column at deep Sea
Bangladesh	Beach cleaning activities at few coastal districts	Water quality monitoring some areas	Water quality monitoring some areas	Water quality monitoring some areas	no	no
India	Beach cleaning activities at regular intervals at each coastal state.	Regular water quality monitoring activities are carried out.				

Maldives	National Waste Management Policy (NWMP) 2015 includes activities to reduce and manage waste in general. Not specific to marine environment	NWMP 2015 includes activities to reduce and manage waste in general. Not specific to marine environment.				
Pakistan	Several Beach cleaning activities	Same activities by Fort Authority of Karachi	None	None	None	None
Sri Lanka	Beach cleaning, litter collection bins. Prevention litter entering into sea and beach	Underwater debris collection in sensitive ecosystem	No	No	No	No

Remarks by India: Reporting process also exists for identifying and responding to marine pollution incidents.

According to the above tables 3.2 and 3.3 it is very clear that all the SAS countries are confined their direct development activities to land areas or beach areas and not to the sea areas.

3.3 Development and enforcement of Regulations

Regulations and enforcement strategies are basically aiming to mitigate the impacts of marine litter and reduce the waste generation. Under this strategy concern agencies are need to prepare guidelines, regulations and enforcement plan to control the ways that litter is going to dispose. These measures are largely command and control methods to control marine liter. This strategy is involved to prevent certain types of plastics litter from entering into the sea.

One of most important factor needed for effective regulation is a separate legal institute/agency to prepare the regulation and implement. In this case relevant agency also needs to have a separate legal instrument such as Act to provide legal base to prepare regulations. It is also required well trained qualified enforce/detective team who have knowledge to understand the thickness of the plastics or polythene etc.

3.3.1 Status of Regulation and enforcement Strategy in SAS region

Bangladesh was the first nation to ban polythene bags in 2002. In Bangladesh, the Department of Environment (the nodal Department) is directly responsible for coastal and marine pollution control. However, Marine litter has not been identified as a separate entity for exclusive monitoring and management in the National Plan of Action for Environmental Protection by the Department of Environment. In Bangladesh Marine Pollution Ordinance is directly relevant to the marine litter management. According to the available information there is no enforcement program implemented under the above Ordinance to achieve the desired objectives of marine litter management. In India, there are several national level legal frameworks established and available to enforce the provisions to manage illegal activates in relation to marine litter. However, most reports emphasize that urban local bodies (ULBs) in India have failed to implement laws and regulations adequately. Even though many acts and rules have been implemented by India, no any enforcement details are available.

The National Solid Waste Management regulation prescribes the Environment Protection Agency to be the implementing body of the waste regulation (Ministry of Environment and Energy, 2013). However, since the Regulation on the Protection and Conservation of Environment in the Tourism Industry is pursuant to the Maldives Tourism Act, the implementation of this regulation falls under the mandate of Ministry of Tourism. The overlapping nature of these responsibilities causes lack of clarity on whom to report on misconduct. Moreover, monitoring and enforcement of this legislation is weak, hence the regulations have not shown to be very effective at national level.

The Government of Pakistan enacted the Pakistan Environmental Protection Act (PEPA) in 1997 which provides a framework for establishing federal and provincial Environmental Protection Agencies (EPAs). One of the functions of EPA is to ensure implementation of different provisions of the legal instrument including monitoring of marine pollution / marine litter. However, there is no monitoring mechanism in place to check trans-boundary shipments of waste and dumping of plastic at sea under the international convention for the Prevention of Pollution from Ships. By realizing the extent of the problem and translating this concern the Karachi Port Trust (KPT) established Marine Pollution Control Department.

However there is no any information to check whether the Government of Pakistan has established a proper enforcement program to evaluate the Pakistan Environmental Protection Act (PEPA) provisions are met or not.

The management of solid waste is the primary responsibility of municipal councils, urban councils and other local authorities in Sri Lanka. Maintenance of clean beaches also falls within the purview of these local authorities. However, at present, removal of marine litter-floating or deposited on the sea bed has not dealt with any of these authorities. Marine Pollution Prevention Act also stipulates provisions for preventing dumping activities in the marine environment. The Marine Environment Protection (Sea dumping) regulations 2012 introduced by MEPA prohibits the sea dumping of waste and other matters without a valid permit.

The effectiveness of the Acts and regulations entirely depend on successful enforcement program. Therefore whenever any agency is planning to implement any regulation to manage illegal activities it is necessary to introduce a proper enforcement program. However in the case of marine litter management, no SAS countries have prepared and implemented a proper enforcement program to achieve the main objective of the marine litter reduction. Therefore it is necessary for these region countries to prepare proper regulations and enforcement program to manage the solid waste issues in the region. Present status regarding the enforcement programs implemented by the SAS region countries are indicated in Table 3.4

Table 3.4 Status regarding the enforcement programs implementing by SAS countries

Country	Availability of Separate Act for Marine Litter	Availability of Separate Agency for Marine Litter	Availability of Separate Regulations for Marine Litter	Availability of Separate team for Regulation Marine Litter
Bangladesh	No	No	No	No
India	No	No	No	No
Maldives	No	No	No	No
Pakistan	No	No	No	No
Sri Lanka	Yes	Yes	Yes	No

According to the above table only Sri Lanka has a separate Act, agency and regulations specifically made for marine litter management. Even Sri Lanka also not recruited a separate team for enforcement. All other countries still not established a separate Act, agency or regulations and enforcement team to prevent/manage the marine litter.

3.4 Monitoring and Evaluation

Since this strategy needs to be implement by individual country, preparation of proper monitoring and evaluation program for marine litter reduction need to be done by each country. Monitoring of any type of management strategies on marine litter required more accurate scientific base- line information and resources. However one of the issues in relation to the monitoring and evaluation of marine litter management program is it has not given priority. Most of the SAS countries have data and information upto some extent in respect to beach areas but do not have sufficient basic data on sea floor, water Colom, water surface, and deep sea marine litter. Therefore SAS counties are not in a position to develop an implementable monitoring and evaluation plan.

Taking into consideration the above issues and constrains, following section will explain the effectiveness of the monitoring and evaluation strategies implemented by various agencies in the SAS countries.

3.4.1 Status of the monitoring and evaluation strategies in SAS countries

As indicated before, baseline data is key to establish a proper monitoring plan to evaluate the effectiveness of the marine litter management program. However, according to available information, there is no proper data and information in the Bangladesh (except few places) for preparation of baseline information on marine litter to prepare a monitoring plan. In this situation it is very difficult to indicate that marine litter mitigation activities implemented in the Bangladesh are successful or not. Another unfortunate fact is that there is no responsible separate agency in the Bangladesh to collect the baseline data to commence monitoring program even in near future. Therefore it is necessary to establish separate agency or separate division under the Environment Department, Bangladesh to taking care of marine litter.

In respect to waste management in India, there are several ministries. Administration and regulation is governed by the Ministry of Environment and Forests and Climate Change (MoEF), the Ministry of Urban Development (MoUD), the National Environmental Engineering Research Institute (NEERI), CPCB, and State Pollution Control Boards (SPCBs). The ground level implementation responsibility lies with urban local bodies.

Maldives has developed program to monitor certain aspect of the marine litter under foreign funded project and therefore same aspect of marine litter data and information are available. "Olive Ridley Project" is one of the organization who is actively implementing a monitoring programme in Maldives and they are monitoring geographic location of ghost net with attributes such as length between two knots, net construction type of twine, number of strands, type of material, diameter of twine, colour, floatation, and attachments. Using these baseline data Maldives can monitor marine litter abundance of ghost nets and their points of origin.

In Pakistan, presently no formulized baseline data exists about marine litter. However, some of the national as well as sub-national institutions have started taking interests in this issue particularly Karachi Port Trust. Further on the notice of Supreme Court Karachi City District Government and Sindh Solid Waste Management Board has started streamlining the issue of proper disposal of marine pollution including marine litter. The efforts therefore need to be started an integrated monitoring programme to monitor marine litter.

Different agencies carried out marine litter monitoring programs in selected areas of the coast line of Sri Lanka. However, there is no comprehensive national program to monitor marine litter in beaches, coastal areas and ocean. MEPA has conducted International Coastal Cleanup day program and the data collected during this program analyzed to get the idea reading the source and amount of marine litter. There is still need for the establishment of a comprehensive national marine litter monitoring program to continuous assessment of marine litter in Sri Lanka.

According to the above information almost all SAS countries have not developed and implemented a proper marine litter monitoring programmes in their respective countries. As a result, effectiveness of the marine litter mitigations programs in these countries is not known. This will give very clear evidence that

most of the policies developed by these countries to mitigate marine litter are basically arbitrary. The status of monitoring and evaluation strategy to mitigate marine litter issues in the SAS countries are given in the Table 3.5.

Table 3.5: Status of monitoring and evaluation strategy in the SAS countries

Country	In the beach/Coastline	Coastal Sea floor	In the water column	On the water surface	Deep sea	In the water column at deep Sea
Bangladesh	No base line data	No base line data	No base line data	No base line data	No base line data	No base line data
India	Same monitoring data available	No base line data	No base line data	No base line data	No base line data	No base line data
Maldives	Weak enforcement					
Pakistan	No base line data	No base line data	No base line data	No base line data	No base line data	No base line data
Sri Lanka	National level monitoring programme is not available.	Same monitoring data available	Same monitoring data available	No base line data	No base line data	No base line data

3.5 Research and studies

One of the significant barriers to addressing marine litter is the absence of adequate scientific research, assessment, and monitoring. Reliable data and information on the amounts, distribution, and impacts of marine debris at global, regional, national, and local scales is essential to help prioritize, develop, and implement effective strategies to address the problem of marine debris. In relation to marine litter management, scientific research and studies needed to be done in all segments of the marine environment components (including land base solid waste, beaches/shoreline, sea surface, water column, sea floor, sea floor shallow, sea floor deep, ingestion by other marine organisms, entanglement rates of marine organisms, micro-plastic on shorelines, micro plastic at sea surface, ecological, and socio-economics.) In this situation, strategy of research and studies is cross cutting with all other strategies for marine litter management.

However, research studies in SAS region are limited mainly to the beaches/shorelines. Most of other research areas in relation to marine litter in the SAS countries such as marine litter impacts to the sea surface, water column, sea floor, sea floor shallow water areas, sea floor deep sea areas, micro-plastic on shorelines, micro plastic at sea surface, socio-economics cost due to marine litter, cost to the ecosystem are very few and not sufficient when compare to certain other part of the world.

In this session it is not going to review research studies done by SAS region but going to evaluate what are the areas for SAS counters need to do more research and studies to make proper policies and actions to mitigate impacts of the marine litter. Therefore each SAS country situation will evaluated following sections.

Bangladesh has done a preliminary investigation on marine litter 2017 in Cox's Bazar and Chittagong districts. According to the study it was found that among the all categories, the plastic litter was the most dominant marine litter in all four beaches of Cox's Bazar and Chittagong Districts. However, in Bangladesh, no marine litter generation study has conducted yet for Land Based Sectors to calculate generation of land based solid waste both micro and macro level. The situation is same for the coastal and marine areas as well. According to the available information no scientific information are also available at national level to understand the ecological, social and economic impacts due to marine litter in Bangladesh.

In India, despite having more than 7500 km of coastline, studies on sources and composition of marine litter on its beaches are scarce and fragmentary. Quantification of marine litter including plastics in the water column, sediment and biota has been documented in the Indian beaches, estuaries, coastal waters and Open Ocean. However, comparisons between studies or even systematic status and trend analyses are challenging because of differences in the collection and measurement methodologies used. India has studied the currents and circulation patterns to collect information to determine marine litter circulation. However quantifiable data from land based solid waste through rivers and canals, dumping by ships and boats, surface drainage and other sources such as tourists, and wind are not available.

No formal studies or records have been published about the typology and pathways of marine litter in the Maldives, except for ghost nets. The Olive Ridley project, an international organization researching and identifying the impact of ghost nets in the Indian Ocean, has collected a considerable amount of data on the number of ghost nets found in the Maldives marine ecosystem. Plastics are estimated to be the predominant type found amongst the marine litter in Maldives. This was also concluded based on observations and informal reports. Non availability of research on marine litter impacts on to the human health, and food safety, impacts to economic consequences is also common for Maldives.

Research on all aspect on marine litter in Pakistan is very limited and difficult to obtain. Therefore, calculation of different marine litters, policy formulation to minimize the marine litter, monitoring evaluation of marine litter management activities and preparation of the targeted environmental education plans are difficult in Pakistan.

Several research and studies have been conducted to estimate the quantity of marine litter in the beaches and sea bed areas in Sri Lanka. Marine litter classification and composition studies are also conducted by the authorities in Sri Lanka (World Bank, 2013) (10). However, there are no studies related to the circulation of marine debris in Sri Lankan waters.

According to the above information status of research in SAS region is summarize in the Table 3.6

Table 3.6 Status of Research in SAS region

Country	3Rs & Land base generation	Ecological Impacts	Social Impacts	Economic Impacts	Ocean circulation	Compartments of the marine environment
Bangladesh	No	No	No	Certain areas	No	No
India	Yes	Yes	Certain States	Very few	Yes	Certain component
Maldives	Household level in Male' (2008), Resort level-tourism sector (2010). Waste audits in few individual islands	No comprehensive studies conducted				
Pakistan	No	No	No	No		Certain component
Sri Lanka	Yes. But so far not introduced to fisheries sector	Yes. But quantitative data is not available.	Yes	No	No	Certain component

The table 3.6 very clearly proved that research on marine litter in the SAS countries are very few and need to improve. This may be a very alarming issue since lack of research impacted on to the policy preparation, litter mitigation, monitoring, and evaluation for sensitive coastal ecosystems, as well as sustainable development of the coastal resources in the region.

3.6 Education and Awareness

Education and awareness program is a most useful management strategy for resources management since the strategy is mainly use for changing the behavior of people to achieve desirable targets. This strategy is crosscutting and assist to develop and implementation of the other strategies also. Education and awareness strategies aim to encourage people to embrace the notion of waste as a resource and choose the products that generate lower quantities of litter, dispose of waste in a more environmentally sound way and participate in beach cleanups.

Marine litter management efforts are most likely to succeed if they are accepted as necessary and fair by large segments of the stakeholders. Acceptance comes with good communication particularly with those citizens directly affected by marine litter management measures. Hence, most marine litter managers are now consider environmental awareness and education as an essential aspect of a national, regional and international level marine litter management program.

If well-designed, education and awareness activities available, that creates the conditions necessary to implementing and adjusting policies for the sustainable management of coastal and marine litters.

Any good education and awareness program need to assign a main goal, priority topics/messages, target groups, educational objectives and massages to be delivered. Therefore, it is necessary to prepare well designed educational programs for short, medium and long time period.

3.6.1 Education and Awareness program in SAS countries on Marine Litter

According to the available reports and information, many SAS countries have been implementing marine litter management awareness program targeting general public rather than essential stakeholders. It is also observed that all of SAS countries have implemented beach cleaning program annually with participating general public but not with the real polluters of the beach who are directly responsible for marine litter. This very clearly indicated that it is necessary to prepare a well-designed awareness and education program for mitigation of the marine litter in the SAS region and countries.

Taking into consideration the above facts, it is necessary to evaluate awareness and education programs conducted by SAS region countries to reduce or manage the marine litters

It was observed that the Bangladesh has not prepared a separate education and awareness program targeting stakeholders of marine litter. The reason may be that in the Bangladesh marine liter management also comes under the Department of Environment in Bangladesh and they have mainly focused onto the country side environmental issues. According to the Environment Department, marine litter management may be low priority to them and therefore preparation and implementation of separate environment and awareness program for marine litter may be difficult to them.

India has not prepared a national level environmental education program for marine litter management. But according to the available information some states level awareness activities are being implemented. However none of programs has properly identified the target groups, massages to be delivered, delivering media, and awareness activities. Without such type of program India is also targeting the general public for their marine litter education program.

Maldives also has been implemented beach cleaning and some awareness program targeting general public. They are also not implementing a properly designed national environmental and

educational program. Like all other SAS countries the Pakistan also targeted general public as target group for their environmental education and awareness program and mainly implementing beach cleaning activities as awareness program.

There is no proper national environmental and awareness program prepared by the Sri Lanka for marine litter management and Sri Lanka also implementing awareness programs targeting the general public.

According to the above information, all SAS countries are not implementing national level education and awareness program to minimize the marine litter. Therefore it is immediately required to prepare country level environmental education and awareness program for each SAS countries to marine litter management. In addition to the country level plans it is also need to prepare a regional environmental and education plan. The regional education plan needs to address the regional issues in relation to the marine litter. At the same time it is necessary to do the need assessments to identify the major educational objectives, target groups, educational messages, educational medias, educational activities and time frame.

It was reviewed the environment educational and awareness activities implemented by the SAS countries as a strategy to mitigate the marine litter in the region and the outcome of the review is indicated in table 3.7

Table 3.7: Status of the Environment Education and Awareness programs implemented by the SAS countries

Country	Availability of National program	Identification of goal and objectives	Identification of Target groups	Priorities of education massages	Identification of education media
Bangladesh	No	No	General Public	No	No
India	Yes	Yes	General Public, Fisheries, Port, School, Colleges and other stakeholders	Through media	TV, News Paper and Social Media
Maldives	Available. "Saafu Raajje" (clean Maldives) National campaign	Identified. Eliminate public littering by developing willingness of the individuals to act in reducing or eliminating public littering	Identified. Schools, Colleges General public Expatriates Food distributors and Service providers Retail Shops Metals, wood works and Automobile shops	Reduce and eliminate public littering	Identified
Pakistan	No	No	General Public	No	No
Sri Lanka	No national level programe	Goal and objectives established for fishermen and school children	General Public, School Children and Fishermen	No	No

3.7 Use Market and Economic Instruments

As a management strategy to manage the marine litter economic instruments has been designed to achieve a number of objectives. Among them, main objective is to reduction of marine litter. In addition to the main objective there are several secondary objectives such as to minimize the negative impacts caused by marine litter, and to avoid unexpected consequences from the application of the instruments. Practically it is very difficult to achieve all of above objectives. But many countries are using economic instruments even though those are facing big challenges.

Marine litter causes different types of impacts and the damages are arising from suffocation by plastic bags, introduction of toxic substances such impacts may be unique to some types of waste or focused around particular types of waste. In contrast, the impact of marine litter on tourism due to the presence of litter on beaches is largely a factor of its total quantity. In resolving marine litter problems, market and economic instruments can be used to reduce the impacts of such litter in a different of ways.

3.7.1: Market Instruments

In generally, marine litter arises, like other waste or pollution problems, through market failure. The marginal price of goods on the market, and that of disposable plastics in particular, does not reflect the full marginal cost to society of producing that good. This mean, there is an external cost to society not borne by the producer (or consumer). In generally, unpolluted and clean beaches and ocean are public goods, which are highly risk to free-riding, thereby those disposing of waste, inappropriately benefit from the good without paying the full cost, thereby causing contamination and degradation of the marine environment.

There are a range of market-based instruments that can be used to address marine litter. The measures are includes;

a) Landfill taxes, if set at adequately high levels, can incentivize the final disposal of waste and help to incentivize recycling and recovery, reducing the risk of waste reaching the marine environment.
b) Product taxes, charges or ban can be used to discourage the consumption of certain products that frequently end up as marine litter, such as plastic bags, packaging and fishing tackle.
c) Infrastructure charges, for example, for the use of port waste facilities, help to ensure that waste management infrastructures and facilities are developed and maintained.
d) Deposit-refund schemes, which are most often applied to packaging items such as bottles, can encourage return and reuse by consumers, and therefore reduce the number of such items ending up as litter.
e) Direct investment in infrastructure, such as rubbish bins and secure waste collections on beaches and in coastal areas, can help to keep coastal areas free of litter and reduce the risk of items reaching the seas. Such investment can be financed for example by tourist taxes or car parking fees.
f) High fees and fines for littering, illegal waste disposal and fly-tipping help to dissuade behaviors that result in waste escaping from formal waste management processes, reducing the risk of waste reaching the marine environment as litter

3.7.2: Status of Market Instruments used by SAS countries

The following section focus on to what type of market base instruments/strategies used by the SAS region countries to mitigate the impacts of marine litter.

Bangladesh has imposed Product taxes and charges for use of polythene and subsequently bans use of polythene bags to discourage the consumption of certain products. This was a major and remarkable market instruments taken by Bangladesh. Most of the sewage lines of Dhaka city had been blocked by indiscriminate dumping of polyethylene bags over the years and the banning measure was taken by the Government of Bangladesh (GoB) in 2002. The government has banned the production, marketing, import, stock, distribution, carrying and use of polyethylene bags up to 20 microns thick or less from 01 March 2002.

India has not developed national level market instruments to mitigate marine litter but certain projects have been implemented at city level. One of such project is Ultra-Modern Waste Management Plant at Gurgoan. This project is comes under the market strategy of direct investment in infrastructure to reduce the marine litter. Under the similar strategy dustbin free and zero garbage town project was implemented at Suryapetin India. In Chennai, GPRS Equipped Waste Bin system introduced as market strategy which is also a success project. Andhra Pradesh of India has constructed a 3.66-MW Power Generation Project under the program of waste into energy program.

Some community islands in the Maldives (AA. Bodufolhudhoo, AA. Ukulhas, V. Keyodhoo) have taken the initiative to ban single-use plastic bags in their islands. However, it was observed that these initiatives are voluntary gestures and are not legally supported by regulations or Act.

The Pakistan has not taken any marketing strategy to minimize the marine litter in their country.

In 2017, Sri Lanka ban use of up to 20 microns thick or less polythene to discourage the consumption of certain products and gave incentives to use non polythene biodegradable products. This is very positive marketing strategy used by the Sri Lankan government to control the polythene.

The summarized details of the marketing instruments used by the SAS countries as a strategy to mitigate the marine litter in the region are indicated in table 3.8.

Table 3.8 Status of marketing instruments used by the SAS countries as a strategy to mitigate the marine litters in the region

Country	landfill taxes	Product taxes or ban	Infrastructure charges	Deposit-refund schemes	Direct investment in infrastructure	High fees and fines
Bangladesh	None	Yes	None	None	None	None
India	None	Yes	None	Partially implemented	Yes	Partially implemented
Maldives	None	Yes	None	None	None	None
Pakistan	None	None	None	None	None	None
Sri Lanka	None	Yes	None	None	None	None

Even though marketing strategy is very useful and effective strategy, according to the table 3.11 very few marketing strategies have been introduced by the SAS countries to minimize the marine litter.

3.7.3 Status of Economic instruments used by SAS countries

In addressing marine litter, economic instruments also can be used to reduce the marine litter in many ways. Such instruments are:

- Incentivize industries to use less plastic (packaging) either through economic disincentives/subsidies
- Landfill tax;
- Tax plastic bags;
- Target sources of waste most problematic for marine litter—such as shipping;
- Collection fee for individual types of marine litter—reduce ghost fishing;
- Pay for the collection of litter;
- Target the toxicity of litter;
- Discourage polluting behavior.

The present status of the economic instruments used by the SAS countries is explained below.

Under the Dhaka Environment Management Plan (2005) solid waste recycling activities has been promoted and less land filling encouraged. This strategy was implemented through incentives to recycle the waste by internalizing the external costs such as land filling. Solid Waste Management Action Plan for Bangladesh has selected eight secondary towns in Bangladesh in 2005 under Integrated Flood Protection (Phase-2) Project of Local Government Engineering Department, GoB. This project has developed 4 R principle i.e. reduce, reuse, recycle and recover of the solid waste. Bangladesh also targeted specific types of waste—such as plastic bags in 2002 and banning measure was taken by the Government of Bangladesh (GoB) to produce or imported the plastics bags.

The Government of India has established a national waste management committee in 1990 and the main objective of the committee was to identify the recyclable contents in solid waste picked up by rag-pickers. The details of the activities implemented under the above imitative are not available. E-Waste Management and Handling Rules was introduced by India in 2011. This strategy applied to stakeholders associated with the manufacturing, handling, utilizing, processing, and recycling of electrical and electronic-related waste items.

Indian government has prepared separate parallel decentralized schemes by providing financial support for the community based decentralized schemes for the development of waste management method. For example, the municipality of Bangalore has a parallel scheme, "Swaccha Bangalore", which levies mandatory fees from all households, businesses and educational institutions to increase its financial resources. These user fees imply that the residents will expect the municipality to provide proper waste collection services. It integrates them into the overall waste management strategy in all localities, thereby helping to reduce the amount of wastes going outside the locality.

By means of economic instrument an attempt was made to address the problem of lack of an effective and coordinated waste collection and management system in the Maldives, the Government of Maldives established the Waste Management Corporation Limited (WAMCO) on 1st January 2016. WAMCO is a fully government owned entity that collects waste from households, businesses, resorts, and islands and transports them from transfer points to the nearest waste management facility.

The Maldives government also formed a long-term partnership with Parley to implement Parley's creative, multi-disciplinary approach to collection of plastic from the sea and recycling them to create yarn or fabric. In addition to the above two economic instruments, the government of Maldives has begun an initiative in collaboration with the fishing industry whereby fishers collect and bring back drifting plastics they encounter within the country's EEZ. The collected plastics are to be handed over to the closest designated collection point, which will then be delivered to Parley for the Oceans for recycling and fishermen will receive an incentive based on their collection of plastics.

According to the available information the Pakistan has not taken economic instruments to minimize the marine litter in their country.

The Central Environmental Authority (CEA) of Sri Lanka has initiated the "Pilisaru" National Solid Waste Management Program in 2008 and donated a grant about 5.6 billion SL rupees to the local governments to implement solid waste management activities. The Sri Lanka Government also identified the importance of the promotion of the 3Rs and the establishment of an environmentally friendly final disposal site for sustainable SWM system. A national level program for solid waste management was implemented under the chairmanship CEA with initial budget of Rs. 5.675 billon to introduce small and medium level waste treatment system in all local government authorities in Sri Lanka from 2016 to 2018 and to cover 50% by the year 2016.

The summarized details of the economic instruments used by the SAS countries as a strategy to mitigate the marine litters in the region is indicated in table 3.9

Table 3.9 Status of Economic instruments used by the SAS countries as a strategy to mitigate the marine litters in the region

Country	Incentivize industries	Target waste arising	Target specific types of waste	Target sources of waste	Target individual types of marine litter	Pay for the collection	Discourage polluting behavior
Bangladesh	No	Yes	No	No	No	No	No
India	No	Yes	No	Yes	Partially	Yes	No
Maldives	No	Yes	Yes	Yes	Yes	Yes	Yes
Pakistan	No	No	No	No	No	No	No
Sri Lanka	No	Yes	Yes	Yes	Yes	Yes	Yes

According to the above table except Pakistan, all other countries have implemented at least one of the economic instruments to minimize the marine litter. The Maldives and Sri Lanka have implemented several instruments except instruments of incentivize industries.

04. Major Gaps and Challenges

Based on the national marine litter action plans of the SAS region coupled with the interactive dialogues during the consultative meetings at Mumbai and Indore, India, the following major gaps and challenges were identified:

4.1 Lack of Marine litter data in the SAS Region

SAS member countries do not possess any consolidated marine litter database nor does any indicators available for such database. Therefore, very little data exist on the quantities, trends, sources and sinks of marine litter in the SAS region and very little is known about the extent and nature of the problem in the region. As effectiveness of the management strategies can be ensured if accurate baseline data is available. Therefore, availability of accurate data for marine litter is critical to prepare proper policies, strategies and management plans to minimize the quantity of marine litter. Despite the existing management strategies for marine litter, the current knowledge of the quantities and the degradation of litter in the marine environment and its potential physical and chemical impacts on marine life is still scarce.

SAS member countries possess a great deal of knowledge gaps in terms of the biological consequences of marine litter and micro-plastics. These gaps hinder the ability to prioritize mitigation efforts and to assess the effectiveness of implementation measures. Therefore, accurate and quantitative data is highly essential for large-scale and long-term monitoring across SAS region and countries. The small-scale dynamics that affect plastic movement and accumulation, and transfer of persistent organic pollutants via plastics through the marine food web in the region as large number of coastal population in these countries directly depend on coastal and marine resources.

4.2 Poor Institutional system for management of Marine litter

One of the major gaps in the Marine litter management in the SAS region is lack of proper institutional mechanism to implement marine litter mitigation activities. Except Sri Lanka all other SAS member countries do not have any

dedicated agency for management of the marine litter. Due to non-availability of separate institutions and marine litter management system there is no separate Act or legal instruments to regulate and manage marine litter. The absences of proper regulations became hard to establish the enforcement system. Consequently, marine litter has emerged as a serious threat to the marine resources in SAS region. Therefore, establishment of institutional mechanism especially for management of marine litter in the SAS region and countries is urgently required.

4.3 Non-availability of legal framework for marine litter management

Legal framework which helps in regulating the production, use and recycling of the marine litter. SAS member countries do not possess any dedicated legal framework for regulating the marine litter. Despite the availability of many international and regional level legal instruments, SAS region is very poor in term of proper enforcement of regulatory and management regime of the marine litter. Therefore, marine litter continues to increase on the shorelines, in oceanic gyres, and on seafloors thereby, signaling that marine litter remains a significant problem, particularly with respect to micro plastics in the SAS region. There are complex reasons for this situation and, it is possible to identify a number of gaps in the current legal framework in the region since the existing legal framework does not specifically focus on the marine litter.

A few global examples indicate that such legal management measures have generated desirable results, such as fishing gear buyback programme in South Korea, Taiwan's plastic restriction and compulsory garbage sorting policy, US Fish for Energy, OSPAR Fishing for Litter, EU PRF Directive and HELCOM Baltic Strategy. Therefore, legal systems are highly helpful in ensuring effective control of marine litter. Under this situation enactment of new legal frame work for marine litter management in the SAS region countries is critically important.

4.4 Poor and insufficient enforcement of international Conventions, Agreements, laws, regulations and treaties

Even though there are numerous international and regional conventions, agreements, laws, and treaties that provide a good legal platform for effective management of marine litter, several cases indicate that cooperative action on marine litter has lagged behind, or the participation of states in these initiatives was insufficient. There is neither any legal framework nor any rules and regulations that support enforcement of the relevant MEAs in the SAS member countries. Therefore, it is urgently required to either develop new laws and regulations or modify the existing regulations in line with the provisions of the MEAs. This will greatly help in effective enforcement of the marine litter MEAs in the SAS member countries.

4.5 Limited Implementation of Direct development activities for marine management

SAS region possess very few direct development activities and those available are confined only to two main activities such as beach cleaning, and recycling of waste at limited level. The main objective of the direct development strategy is to prevent the litter and solid waste that enters into the beaches and seas. Therefore, there is an urgent need to undertake activities such as source reduction, waste reuse and recycling, structures for waste conversion to energy, reception facilities, development of bio-degradable fishing gear marking facilities. Marine litter contained at points of entry into receiving waters, beach and reef cleaning activities and various waste management initiatives on land are areas of special and immediate attention. Product modification and improvement (e.g. through eco design) is an important method for source reduction.

A variety of source reduction schemes have been developed and are available, such as designing packaging so that the product can be refilled, maintaining and repairing durable products, developing more concentrated products and electric messaging (Vaughn 2009) (11). Other methods include the development of

packaging material that is made from sustainable resources, the design of push-tap opening of metal beverage cans and the design of lids of beverage bottles or containers attached to bottles with a leash (Gold et al. 2013) (12).

4.6 Lack of Research and surveys on Marine Litter

The marine litter research and studies are very limited in the SAS member countries. Lack of research is a significant impediment in the way of innovation and developing futuristic mitigation strategies and action plans. Most of the research in the SAS region has been confined to the ecological and beach studies. There is therefore an urgent need to undertake marine litter and micro plastic research and survey of the marine environment components including land based solid waste, beaches/shoreline, sea surface, water column, sea floor, sea floor shallow, sea floor deep, ingestion by other marine organisms, entanglement rates of marine organisms, micro-plastic on shorelines, micro plastic at sea surface, ecological, and socio-economics.

India has done some research on marine litter circulation pattern in the Indian Ocean but other SAS member countries have so far not done such type of research on marine litter circulation to identify the marine litter circulation patterns.

No standard and uniform methodologies are followed in the SAS region for collecting, analyzing and interpreting the marine litter data. The available methods mismatch among countries and therefore this common problem of the SAS region could not effectively be tackled. Therefore, the SAS region failed to develop the required standard and uniform research methodologies for marine litter joint research studies. It is also strongly recommended to share data among the region and countries to avoid duplication and minimize cost for marine litter research.

4.7 Weak formulation and enforcement of regulatory framework.

Regulations formulation and enforcement strategies are basically aiming to streamline the development activities in relation to marine litter to mitigate the impacts of marine litter. The concerned agencies are required to prepare guidelines, regulations and enforcement plan to control the ways that marine litter is disposed. Methods of marine litter disposal that helps to minimize its adverse impact on the marine environment has to be adapted. These measures are largely command and control method to control marine liter.

One of the most important factors for regulation is a separate legal framework and institutions to prepare regulations and ensure its implementation. It is essential to employ qualified and trained enforcement team to understand different dimensions of marine litter. It is also essential to deploy adequate vessels and other equipment to facilitate the enforcement programs along with provision of adequate financial resources.

4.8 Lack of marine litter Production and Consumption Policy and Strategies

SAS region lacks proper marine litter production and consumption policies and strategies for regulating the marine litter in the member countries. Nor is there any formal forum to engage the producers and consumers of major marine litter products. This has created great deal of gaps between the regulators on the one hand of producers and consumers on the other hand.

4.9 Lack of Education and Awareness Program for Marine litter management

There is no dedicated education and awareness programme for marine litter in the SAS region. The education and awareness strategy is always crosscutting and same is true strategies for marine litter management. These strategies aim to encourage people to embrace the notion of waste as a resource and choose the products that generate low quantities of litter, dispose waste in a more environmentally sound and sustainable manner and regularly participate in

beach cleanups. Well-designed, education and awareness activities can create the conditions necessary to implementing and adjusting policies for the sustainable management of coastal and marine litter.

A sound and balanced education and awareness program need to assign a main goal, priority topics/messages, target groups, educational objectives and massages to be delivered. Therefore, it is essential to prepare well designed short, medium and long term education and awareness programme for SAS countries and region. Use of print and electronic media coupled with the use of smart communication technologies such as internet, social media and dedicated apps has to be developed as effective education and awareness tools.

According to the available reports and information many SAS countries have not prepared and developed any education and awareness program. Very few and scattered activities have been implemented that are targeting general public. It is also observed that all SAS countries are observing beach cleaning program annually but mostly such activities do not focus the real stakeholders/target group in public sector, civil society and private sector who are directly responsible for marine litter. There is no regular follow-up after the stand alone beach cleaning at institutional level.

Properly designed education and awareness program may lead to change of human behavior from the current throw-away culture into more accountable and responsible culture for marine litter disposal. The environmental education and awareness program need to focus on change of behavior of the stakeholders through changing their attitude toward the marine litter. Therefore, education and awareness program need to be designed very carefully identifying the correct target groups, correct massages to be delivered to the target groups, identifying effective communication tools such as print and electronic media, social media, internet seminars and workshop, discussion etc. It is therefore; strongly recommend to develop effective education and awareness need assessment in SAS member countries for preparing a comprehensive education and awareness program.

4.10 Lack of Marketing and Economic Instruments for marine litter management

SAS member countries lack marketing and economic tools and techniques for effective management of marine litter at production and consumption level. Private sector production, trade and consumption and businesses have never been involved for the marine litter management under market mechanism. Most of the developed countries are heavily using marketing and economic instruments to reduce plastics thereby reducing the marine litter. However, in the SAS region very few marketing and economic instruments are used to manage the plastics and marine litter. Reason may be the market failure in these countries or distorted market system that fails to properly reflect the marginal cost of the beach and marine pollution.

Under the market mechanism, direct tax can be introduced to the polluter as international environment law allows imposing laws for the polluter pay the price systems. Except few marketing instruments, most of SAS countries have not introduced any marketing instruments such as high tax for untreated landfilling which may incentivize recycling, recovery and reducing the risk of waste reaching the marine environment. Introduction of product tax for plastics bags, packaging, deposit refund schemes, direct investment in infrastructure such as rubbish bins and secure waste collections from beaches and high fees and fines for littering are the marketing and economic instruments that need to be introduced into the SAS member countries.

05. Way forward

In view of the information provided in the country action plans coupled with consultative workshops, the literature review and analysis of the gaps and challenges, the way forward of the marine litter action plan for the SAS region is given bellow:

5.1 Establishment and Revamping of the Institutional structure/system

Objective 3.1.1 Ensure that all SAS member countries have dedicated institutions for sustainable management of marine litter

Action-i: SAS member countries shall;

01) Review strengths and weaknesses of the existing institutional structure and improve their capacity for marine litter management.
02) Establish dedicated marine litter institution in countries lacking such institutions.

Action-ii: SAS member countries shall;

01) Review the existing marine litter policies, plans and strategies.
02) Develop marine litter policies, plans and strategies.
03) Enhance interagency cooperation among the relevant institutions for effective management of the marine litter.

Action-iii: SAS member countries shall

01) Review the annual or periodic marine litter management programme and plans
02) Develop periodic marine litter management programme and plans

Action-iv: SAS member countries shall

01) Review existing guidelines for governing the marine litter management
02) Formulate and implement guidelines for governing the marine litter management
03) Streamline coordination and information exchange among various agencies to identify interagency roles and responsibilities in relations to the marine litter management activities

5.2 Establishment of new Legal frame work

Objective 3.2.1 Ensure that all SAS member countries have legal framework in place for sustainable management of marine litter

Action-i: SAS member countries shall;

01) Review the existing legal framework including their strengths and weakness for effective governance of the marine litter
02) Develop dedicated laws or Act to minimize the legal dispute for sustainable management of marine litter

Action-ii: SAS member countries shall;

01) Review the existing rules and regulation relating to marine litter
02) Develop rules and regulations for effective governance of marine liter
03) Develop guidelines for governance of marine litter
04) Prepare enforcement program for the governance of marine litter.
05) Undertake regular monitoring and evaluation of the marine litter management systems.

5.3 Review and Establish Regional Institutional Mechanism for enforcement of the marine litter related MEAS

Objective 3.3.1 Review the existing institutional mechanism for enforcement of the marine litter related MEAs

Actions-i: SAS member countries shall:

01) Review the existing MEAs enforcement mechanism and identify gaps for improvement.
02) Align national and sub-national laws and regulations to the existing marine litter related MEAs.
03) Identify and establish institutional mechanism for the enforcement of marine related MEAs

Objective 3.3.2 Improve coordination within and among agencies for effective enforcement of marine litter related MEAs

Actions-i: SAS member countries shall:

01) Review existing coordination mechanism for enforcement of marine litter related MEAs.
02) Improve the coordination mechanism to facilitate enforcement of marine litter related MEAs.
03) Develop a mechanism to Monitor and report the progress on marine litter MEAs to the secretariats of the respective MEAs.

5.4 Review and encourage direct development activities to control and minimize marine litter

Objective 3.4.1 Develop programs and plan for management of waste to reduce the marine litter at source.

Action i: SAS member countries shall;

01) Review the existing source reduction activities such as recycling, reuse, reduce, structures availability waste to energy, reception facilities, sanitary waste disposal facilities etc.
02) Encourage direct development structure and tools at the river mouths at points of entry into the sea.
03) Prepare plans to implement identified source reduction activities for short term, medium and long term interventions.

Objective 3.4.2 Develop a programs and plan for Product modification and improvement to reduce marine litter

Action ii: SAS member countries shall;

01) Review all existing plastics and polythene Production modification and improvement possibilities (e.g. through eco design)
02) Prepare plans to implement plastics and polythene production modification and improvement program.
03) Encourage public private partnership for product modification activities
04) Encourage waste segregation at primary, secondary and tertiary levels.
05) Promote and develop recycling enterprise for increased marine litter recycling on decentralized scale.

5.5 Lack of Research, surveys and innovation of Marine Litter technologies

Objective 3.5.1 Research and innovation shall be undertaken to determine the total quantity of marine litter coming into the coastal areas through all sources and to prepare guidelines for best management of marine litter.

Actions-i: SAS member countries shall:

01) Start research studies to review the amount of solid waste generation of all segments of the country and estimate by kind total quantity of marine litter that they have managed.
02) Develop and regularly update marine litter data base
03) Involve local bodies for preparation of solid waste management plan and programme by all local authorities and relevant other private and public agencies to effectively manage the marine litter on sustainable basis.
04) Identify various recycling and removal tools and techniques, and activities for sustainable management of marine litter
05) Assess the quantity of marine litter recycled and removed as percentage of the total production.

Actions-ii: SAS member countries shall:

01) Introduce training and techniques for marine litter data collection on scientific basis.
02) Identify marine litter hotspots and focus its management on priority basis.

5.6 Encourage and involve Private sector, Public sector and Civil Society through partnership arrangement for marine litter management and recycling.

Objective 3.6.1 Involve and encourage Private sector, Public sector and Civil Society involvement for marine litter management through partnership

Actions-i: SAS member countries shall:

01) Review the existing public-private sectors and civil society partnership arrangements for marine litter management.
02) Identify private sector, public sector and civil society stakeholders involved in the marine litter management.
03) Encourage and identify private sector, public sector and civil society partnership arrangement.
04) Review and assess the existing marine litter recycling activities, and propose and develop measure to increase the recycling and management capacity under market mechanism.
05) Assist local authorities in identifying landfill/recycling sites in environmentally less vulnerable locations outside the coastal areas.
06) Assist local authorities to relocate dumping sites out of the coastal areas.

5.7 Development of Education and Awareness Program to manage the Marine litter

Objective 3.7.1 Prepare country specific education and awareness programme on marine litter management

Action-i: SAS member countries shall

01) Review the existing education and awareness programme on Marine litter management
02) Prepare need assessment reports for education and awareness Program
03) Prepare the education and awareness programme on Marine litter management
04) Provide foundation and context for effective public participation in Marine litter management

05) Motivate people and organizations to find appropriate solutions to marine litter problems and propose actions
06) Encourage people to comply with marine litter management regulations
07) Implement programs to encourage local participation in marine litter management

Objective 3.7.2 Prepare regional education and awareness programme for SAS region

Actions-ii: SAS region shall

01) Review the existing marine litter education and awareness programs in the SAS region and assess its strengths and weakness
02) Prepare need assessment reports for SAS region education and awareness program
03) Develop regional marine litter education and awareness programme
04) Assign each country responsibilities to implement regional education and awareness program activities

5.8 Introduction of market and economic instruments for marine litter management

Objective 3.8.1 Introduce new economic and market instruments for influencing consumers to reduce amount of marine litter

Action i: SAS member countries shall:

01) Review effectiveness of existing economic and marketing base instruments for managing solid waste and marine litter in the SAS countries
02) Introduce some economic instruments such as financial disincentives (penalties, taxes and charges for plastics and polythene) to discourage market behavior that may contribute to reduce the marine litter.
03) Introduce financial incentive schemes for polythene and plastics (deposit-refund schemes, subsidies, and direct payments, price differentiation,) to stimulate behavior of customers on polythene and plastics.

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WORK PROGRAMME OF SASP
YEAR 2020 - 2021

		US $
5.2.1	**Development and Implementation of National and Regional Oil and Chemical Spill Contingency Planning for South Asia**	
	SACEP signed a fresh MoU in June 2019. A Regional Exercise to be conducted to test the communication and the operational procedures.	Funding support from IMO
5.2.2	**Ballast Water Management under the GloFouling Project of the International Maritime Organization (IMO)**	
	SACEP signed a fresh MoU in June 2019.	On-going Process with IMO
5.2.3	**Sustainable Nitrogen Management for South Asia**	On Going Process. Reported under 15GC.SACEP
5.2.4	**Implementation of Regional Marine and Coastal Biodiversity Strategy for the South Asian Seas Region**	Measures will be taken for implementation subject to adoption by 6IMM.SASP
5.2.5	**Regional Marine Litter Action Plan for South Asia**	Measures will be taken for implementation subject to adoption by 6IMM.SASP
	Development of National Marine Litter Action Plans for SAS Member State	Funds expected from UN Environment to carryout activities
	Commemoration of International Coastal Clean Up Day	In Progress

WORK PROGRAMME OF SASP
YEAR 2020 - 2021

		US $
5.2.6	**Collaborate activities with Global Coral Reef Partnership and International Coral Reef Initiative (ICRI)**	Funds expected from ICRI to carryout activities
	Regional Coral Reef Monitoring for Adaption and Resilience	
	Revitalization of South Asia Coral Reef Task Force (SACRTF)	
5.2.7	**Promotion of the London Protocol in the South Asian Seas Region**	In Progress with IMO
5.2.8	**Sustainable Blue Economy Initiatives of SAS Region**	In Progress with UN Environment

SOUTH ASIAN SEAS PROGRAMME (SASP)

BUDGET FOR 2020 - 2021

			PRESENT AGREED INCOME US $	EXPENDITURE US $
1	**ANTICIPATED INCOME**			
	1.1	BANGLADESH	13,335.00	
		INDIA	35,405.00	
		MALDIVES	5,975.00	
		PAKISTAN	27,130.00	
		SRI LANKA	14,668.50	
		TOTAL COUNTRY CONTRIBUTIONS	**96,513.50**	
	1.2	Interest earned	29,000.00	
		TOTAL INCOME	**125,513.50**	
2	**ESTIMATED EXPENDITURE**			
	2.1	Senior Programme Officer (Regional)		40,000.00
	2.2	Local Staff		20,500.00
	2.3	Meetings & International Travel		15,000.00
	2.4	Administrative Cost		12,000.00
	2.5	Rental & Maintenance		15,500.00
	2.6	Furniture, Equipment & Consumables		8,000.00
	2.7	Documents		8,000.00
	2.8	Contingencies		5,000.00
		SUB TOTAL		124,000.00
3		Capital Costs		17,500.00
4		TOTAL EXPENDITURE		**141,500.00**
5		**INCOME OVER EXPENDITURE**		**(15,986.50)**

SOUTH ASIAN REGIONAL SEAS PROGRAMME

PREPARATORY MEETING OF NATIONAL FOCAL POINTS
FOR SIXTH INTER-GOVERNMENTAL MEETING OF MINISTERS
5TH NOVEMBER 2019
DHAKA, BANGLADESH

1. INTRODUCTION

The Preparatory Meeting of National Focal Points for the Sixth Inter-governmental Meeting of Ministers (IMM.6) of the South Asian Seas Programme (SASP) was held on 5th November 2019 in Dhaka, Bangladesh.

It was convened in order to discuss all substantive issues concerning the Institutional, Programme and Financial Matters of South Asian Seas Programme. It was also agreed that the Report of the Preparatory Meeting of National Focal Points on the various agenda items would form the basis of discussion of the Sixth Inter-governmental Meeting of the Ministers.

2. ATTENDANCE

The Meeting was attended by Representatives from the following Member Countries: Bangladesh, India, Maldives, Pakistan and Sri Lanka.

It was also attended by representatives from United Nations Environment Programme (UNEP) as observers.
List of Participants is at **Annex I.**

3. OPENING OF MEETING

The welcome address was delivered by Dr, Abas Basir, Director General, SACEP **(Annex II)**

Opening Remarks were delivered by Mr. Abdullah Al Mohsin Chowdhury, Secretary, Ministry of Environment, Forest and Climate Change Government of the Peoples Republic of Bangladesh the host of the IMM.6-SASP. **(Annex III)**

The gathering was then addressed by H.E. Mr. Shah Faisal Kakar, Acting High Commissioner of the High Commission of the Islamic Republic of Pakistan in Dhaka, the Out-going Chairman. **(Annex IV)**

Closing Remarks was delivered by Mr. Mahmud Hassan, Additional Secretary, Ministry of Environment, Forest and Climate Change Government of the Peoples Republic of Bangladesh. **(Annex V)**

4. ELECTION OF OFFICE BEARERS

In conformity with the Rules of Procedure of the Governing Council of SACEP, the following Office Bearers were elected for the Preparatory Meeting of the National Focal Points for the Sixth Inter-governmental Meeting of Ministers (IMM.6) of the South Asian Seas Programme (SASP).

Chairman	Mr. Abdullah Al Mohsin Chowdhury, Secretary, Ministry of Environment, Forest and Climate Change Government of the Peoples Republic of Bangladesh
Vice Chairman	Cdr. P.K. Srivatava, Scientist-F, Ministry of Earth Sciences, Government of India
Rapporteur	Mr. Ahmed Wisam, Environment Analyst, Ministry of Environment, Government of Maldives

5. ADOPTION OF AGENDA AND ORGANISATION OF WORK

The Draft Agenda prepared by the Secretariat for the Preparatory Meeting of National Focal Points for the Sixth Inter-governmental Meeting of Ministers of the South Asian Seas Programme was adopted. **Annex VI.**

6. INSTITUTIONAL MATTERS

6.1 APPOINTMENT OF THE SENIOR PROGRAMME OFFICER-REGIONAL / SOUTH ASIAN SEAS PROGRAMME

The Secretariat informed the Preparatory Meeting of the IMM.6-SASP that the Senior Programme Officer-Regional of the South Asian Seas Programme, Dr. Sivaji Patra, nominee of Government of India will complete his tenure on 1st October 2020 and Government of Maldives was notified on 1st October 2019, at the end of the second year tenure of the present Senior Programme Officer-Regional, to nominate a suitable candidate for the position in accordance with the approved Criteria for the post of the Senior Programme Officer-Regional of the South Asian Seas Programme to assume duties by 17th September 2020 with an overlap of 2 weeks.

Government of India requested the Secretariat to include Oceanography and Ocean Science to the selection criteria.

6.2 INCREASE OF THE SALARY OF THE SENIOR PROGRAMME OFFICER-REGIONAL – SASP

The 6th Inter-governmental Meeting of Ministers is requested to approve the increase of the Salary of the Senior Programme Officer-Regional/SASP, by US $ 500/- amounting to a total monthly salary of US $ 3,000/- from 06th November 2019 onwards. **(Annex VII)**

7. PROGRAMME MATTER

7.1 Programme Activities from 2014 – 2019

Under this Agenda Item, the SACEP/SASP Secretariat presented an overall report on the programme activities of the SASP since IMM.5-SASP held in December 2013. The presentation is given at **Annex VIII.**

The Meeting commended the efforts taken by SACEP/SASP for implementation of activities entrusted by its mandate of the South Asian Seas Programme

7.2. Work Programme for 2020 - 2021

The Meeting decided to recommend the continuation of the on-going activities of the South Asian Seas Programme and approve the Work Programme 2020-2021 as proposed by SACEP/SASP Secretariat.

7.2.1 Development and Implementation of National and Regional Oil and Chemical Spill Contingency Planning for South Asia (Annex IX)

The 6th Inter-governmental Meeting of Ministers of the South Asian Seas Programme requested the Secretariat to take necessary support as required from IMO for implementation of the Regional Oil and Chemical Spill Contingency Plan in the SAS Region and sharing of technical expertise of the Member States among each other.

The meeting recommended SACEP/SASP to coordinate and facilitate the activity.

7.2.2 Ballast Water Management under the GloFouling Project of the International Maritime Organization (IMO) (Annex X)

The Member States were requested to share knowledge and experience on the ratification and implementation of the BWM Convention, including between Parties and non-Parties. The Meeting was informed that SACEP/SASP joined the GloFouling Project of IMO as the Regional Coordinating Organization (RCO) for the South Asian Seas Region which is a sub- activity of the Ballast Water Management strategy.

The SAS Member States agreed to cooperate with SACEP/SASP under the objectives of the GloFouling project activity.

7.2.3 Sustainable Nitrogen Management for South Asia

The progress of the activity was reported under 15GC-SACEP held back to back with the IMM.6-SASP. Recommendation of 15GC-SACEP is highlighted below:

SACEP established 'the South Asian Nitrogen Hub', in collaboration with the Centre for Ecology & Hydrology and many other organizations across the UK and South Asia. The Hub is funded by UK Research and Innovation (UKRI) under its Global Challenges Research Fund (GCRF).

Over the next five years, South Asian Nitrogen Hub (SANH) will study the impacts of the different forms of pollution to form a coherent picture of the nitrogen cycle.

Regional Framework Policy on Nitrogen Management will be developed and adopted which will support cleaner and more profitable farming, as well as industrial recycling of nitrogen, fostering development of a cleaner circular economy for nitrogen. The activities are proposed to be carried forward according to the roadmap developed. (Annex 14)

15th Meeting of the Governing Council (GC) of SACEP is requested to :

a) Forward relevant data and information to the review as well as prepare the status report.
b) Co-ordinate and support SACEP for necessary policy development and implementation by the national legislations

7.2.4 Implementation of Regional Marine and Coastal Biodiversity Strategy for the South Asian Seas Region

The Preparatory Meeting of the National Focal Points for the IMM.6-SASP reviewed the Regional Marine and Coastal Biodiversity Strategy and recommended for adoption by IMM.6-SASP.

The Meeting further recommended the SACEP/SASP to develop a Project Proposal in coordination with International Funding Agencies including Global Environment Facility (GEF) for implementation of the Regional Marine and Coastal Biodiversity Strategy.

7.2.5 Regional Marine Litter Action Plan for South Asia

The Preparatory Meeting of the National Focal Points for the IMM.6-SASP reviewed the Regional Marine Litter Action Plan for South Asia and recommended for adoption by IMM.6-SASP.

7.2.6 Collaborate activities with Global Coral Reef Partnership (Annex XI)

The Meeting was informed that the Secretariat is organizing a Regional Workshop with the following objectives :

- To contribute to the production of the 2020 report on Status of Coral Reefs of the world.

- To sign a Data Sharing Agreement with SASP member countries.
- To strengthen the South Asia Coral Reef Task Force.

The members noted the importance of the Agenda item and encouraged the SACEP/SASP to assist the SASP member countries in implementation of such activities.

7.2.7 Promotion of the London Protocol in the South Asian Seas Region (Annex XII)

The Preparatory Meeting for the 6th Inter-governmental Meeting of the Ministers of the South Asian Seas Programme requested the member countries to consider signing and ratifying the London Protocol and reaffirm the support of SACEP/SASP on collaborative activities with the International Maritime Organization for the common benefit of the SAS Region.

7.2.8 Sustainable Blue Economy Initiatives of SAS Region (Annex XIII)

For sustaining the Blue Economy Initiatives SACEP/SASP prepared a Project Proposal in line with Global Environment Facility-Seven (GEF-7).

The IMM.6-SASP is requested to consider endorsement of this initiative which will be supported by GEF/UNEP for successful implementation in SAS region.

8. FINANCIAL MATTERS

8.1 REVIEW OF COUNTRY CONTRIBUTIONS FROM MEMBER STATES FOR SOUTH ASIAN SEAS PROGRAMME

SACEP/SASP Secretariat thanked the member countries for clearing the arrears of the Country Contribution of the South Asian Seas Programme to a commendable rate. Further it was informed by the Secretariat that it is important to clear the balance arrears of the SASP country contributions for smooth and effective functioning of the secretariat. **(Annex XIV)**

8.2 EXTERNAL FUNDING

Annexed **(Annex XV)**

The account statements of SASP may reflect a line item on the institutional service charges received under South Asian Seas Programme from external funding sources in future.

8.3 DRAFT BUDGET (2020 -2021)

Under the South Asian Seas Programme a 10% increase in the Annual Country Contribution from January year 2020 is requested as the present agreed country

contribution of SACEP was recommended at the Second Inter-governmental Meeting of Ministers of SASP held on 1st July 2002.

Until such concurrence is obtained, the Draft budget for year 2020-2021, proposed with the present agreed annual contributions of SASP to be recommended to the IMM.6-SASP for approval.
(Annex XVI)

8.4 PRESENTATION OF AUDITED REPORT OF ACCOUNTS FOR THE YEAR FROM YEAR 2011 - 2017

The Meeting recommended to the IMM.6-SASP, the Audited Report of Accounts for the year 2011,2012, 2013, 2014, 2015, 2016 and 2017 for approval.

9. ANY OTHER BUSINESS

No matter was discussed under this Agenda Item.

10. ADOPTION OF REPORT

The Meeting adopted the above recommendations for submission to the Sixth Inter-governmental Meeting of the Ministers for its endorsement.

11. CLOSURE OF MEETING

The Chairman thanked the members for active participation and closed the meeting.

SOUTH ASIAN SEAS PROGRAMME

Preparatory Meeting of the National Focal Points for 6th Inter-governmental Meeting of Ministers

05 November 2019
held in Dhaka, Bangladesh

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Inaugural Session of
Preparatory Meeting of National Focal Points for

6th Inter-governmental Meeting of Ministers
South Asian Seas Programme (SASP)
Dhaka, Bangladesh

5th November 2019

Welcome Address by
Dr. Abas Basir
Director General of SACEP

Bi-smi llāhi r-raḥmāni r-raḥīm

Mr. Abdullah Al Mohsin Chowdhury, Secretary, Ministry of Environment, Forest and Climate Change of Bangladesh

Mr. Mahamud Hasan, Aditional Secretary to the Ministey

Distinguished Delegates from All the Member Countries of SACEP

Honored representatives from International Agencies

Ladies and Gentlemen,

Very good morning and welcome!

As the Director General of SACEP it is a great privilege and honor to welcome you at the Preparatory Meeting of the National Focal Point for the 6th Inter-Governmental Meetings of Ministers of the South Asian Seas Programme.

At the very outset, let me thank the Government and people of Bangladesh for hosting this meeting. In December 2013, the 5th Inter-governmental Meeting of Ministers of South Asian Seas Programme was held in Islamabad. After 6 years we have now gathered in

Dhaka to get prepared for the 6th Inter-governmental Meeting of Ministers of South Asian Seas Programme.

Distinguished delegates,

The coastal region of South Asia is rich in biological wealth and support multitude of economic activities. Yet it can be also known as an area of multiple vulnerabilities, including climate change induced disasters, and anthropogenic activities such as land and sea-based pollution.

The SAS region is constantly expanding coastal population and increased developmental activities have exacerbated pressure on coastal and marine resources, with growing evidence seen in further degradation of the coastal and marine environment and continued exploitation of living as well as non-living resources.

South Asian Seas Programme is the appropriate regional platform in addressing these challenges, working on need-based actions for protection and sustainable management of marine environment including preparation of regional action plans, regional policy, capacity development, awareness raising and experience sharing among the Member Countries. This programme has played a leading role in addressing the environmental challenges that our marines and coast systems are faced with. Particularly, from 2013 to date the South Asian Seas Programme has gone through a considerable transformation. A vast difference can be seen from the 5th Meeting to the present 6th Meeting. During the past 6 years, South Asian Seas Programme has shown strong commitment and the co-operative spirit shown by its Member States made it easy for the programme to take the lead role in performing marine environment related activities in the region, some of which have had global impacts.

Using this opportunity, I would like to highlight some of these achievements

1. Signing of the MoU for Co-operation on Response to Oil and Chemical Pollution in South Asian Seas Region and the associated Action Plan by all 5 Member States.
2. Under the Ballast Water Management Convention, SAS has achieved capabilities on Compliance Monitoring and Enforcement (CME), risk assessment and port biological baseline surveys (PBBS)

3. On nitrogen management, adoption of the UNEA 4 Resolution titled, 'Sustainable Nitrogen Management' and establishment of the South Asian Nitrogen Hub (SANH). The Nitrogen Management for South Asia was initiated under the SAS Programme and now the SANH covers all 8 Member States of SACEP,
4. On biodiversity protection the Coastal and Marine Biodiversity Strategy for the South Asian Seas Region is developed and is ready for adoption at this platform
5. And also the Regional Marine Litter Action Plan
6. On prevention of marine pollution by dumping of wastes and other matters, we have organized many national and regional workshops and hopefully will facilitate the ratification of London Protocol by SASP member countries. as well as some project activities for working on the ground.

Distinguished delegates,

As the Director General, I request your continuous support and guidance to carry forward the activities under the South Asian Seas Programme. Regional co-operation is highly essential to tackle environmental challenges especially on the areas that are transboundary in nature.

I am confident that this Preparatory Meeting of the National Focal Points will table fruitful recommendations the 6th Inter-governmental Meeting of Ministers of South Asian Seas Programme of SACEP which will be held tomorrow. I thank each and every one of you for attending this important meeting.

Thank you very much!

Inaugural Session of
Preparatory Meeting of National Focal Points for

6th Inter-governmental Meeting of Ministers
South Asian Seas Programme (SASP)
Dhaka, Bangladesh

5th November 2019

Opening Remarks by
Mr. Abdullah Al Mohsin Chowdhury, Secretary
Ministry of Environment, Forest and Climate Change
Government of the Peoples Republic of Bangladesh

Director General, SACEP

Distinguished Delegates of SASP member countries

Ladies and Gentlemen,

Very good morning to you all.

On behalf of the Government of Bangladesh and on my behalf, I warmly welcome you all in this National Focal Points Preparatory Meeting's opening session of the 6th Inter-governmental Meeting of Ministers of the South Asian Seas Programme (SASP). I am honored and delighted to be here and utter a few words in front of you.

Distinguished Delegates,

Bangladesh has a strong environmental and natural resource management policies and regulations. By unlocking the potential of the climate smart 'Blue Economy', Bangladesh has been improving its protection of ocean health, creating sustained jobs & livelihoods and strengthening its management of vast marine resources. Knowledge management has been given a high priority to facilitate decision making to address the challenging environmental issues.

Happy to note that SACEP has established "the South Asian Nitrogen Hub", which will contribute to protection from marine pollution, air pollution and climate change from land-based sources in South Asia. SACEP also promoting the London Protocol & working on Sustainable Blue Economy Initiatives in the South Asian Seas Region. Preparation of a draft on 'Regional Marine and Coastal Biodiversity Strategy' for the South Asian Seas (SAS) Region, which is really appreciable.

Across the globe, mutual cooperation and cordial friendship is necessary to be nurtured, sustained and carried forward. We have a wider variety of scopes for a greater degree of cooperation in the arena of environment. We do believe the collective endeavors are needed to achieve the goals. SACEP's outstanding and dynamic activities in the arena of environment in South Asian counties will obviously contribute more consolidate and strengthen the friendship and co-operation between and among the countries.

The Government of Bangladesh remains fully committed to the decisions which will be made by the IMM and assures to revitalize and intensify our efforts to meet these commitments and achieve the set goals.

I believe that the Preparatory Meeting of the National Focal Points technical session, which will be held after this opening session, will be provided practical recommendations for consideration by the 6th IMM of SASP. Your wisdom and knowledge will provide clear direction to our future course of actions and contribute for the improvement of the quality of life in this region.

Finally, I would like to thank the SACEP Secretariat for their remarkable support in order to make this event successful.

Wish all visiting foreign delegates a joyful stay in Bangladesh.

Thank you.

Inaugural Session of
Preparatory Meeting of National Focal Points for

6th Inter-governmental Meeting of Ministers
South Asian Seas Programme (SASP)
Dhaka, Bangladesh

5th November 2019

Speech by
H. E. Mr. Shah Faisal Kakar
Acting High Commissioner of the High Commission of the
Islamic Republic of Pakistan in Dhaka

Out-going Chairman of IMM-SASP

Bi-smi llāhi r-raḥmāni r-raḥīm

Mr. Abdullah Al Mohsin Chowdhury, Secretary, Ministry of Environment, Forest and Climate Change, Bangladesh

Heads of delegations of SACEP member countries

Ladies and Gentlemen,

As-salamu alaykum and very Good morning

First of all, I would like to thank the Government of the Peoples Republic of Bangladesh for inviting Government of Pakistan to participate in the 15th Meeting of the Governing Council (GC) of South Asia Co-operative Environment Programme (SACEP) and the 6th Inter-governmental Meeting of Ministers of the South Asian Seas Programme.

Pakistan being a pioneer member of this esteemed organization and the out-going chair of the Inter-Governmental Meeting of the Ministers of the South Asian Seas Programme is very much glad to see the South Asian Seas Programme growing under the umbrella of SACEP as a visible Regional organization serving the Marine States of South Asia.

I am delighted to welcome Government of Bangladesh for taking over the chairmanship of the Inter-Governmental Meeting of the South Asian Seas Programme and would like to wish them all the best in providing a dynamic leadership to the programme.

Ladies and Gentlemen,

As we all are aware, marine pollution is a significant threat to the South Asia Region and discarded plastic waste is considered as one of the priority marine pollution issues faced by the region. Sustainable management of our marine resources is vital to achieve food security in the Region as pollution threatens marine food sources for human consumption. Therefore mitigation of marine pollution reduces chemical and pollution impacts on human health and I believe that SASP together with SACEP could take the lead role in the South Asian Seas Region in order to effectively deal with this issue.

Ladies and Gentlemen,

It is alarming to hear that the waste is getting accumulated in the world's oceans as marine litter day by day. Approximately 80% of marine debris originates from land-based activities, with inputs from shorelines or via rivers and wastewater pipelines. Inputs at sea may be from normal operations, accidental losses, or deliberate discarding such as derelict vessels. Also sources include street and beach littering; improper waste management; ships including fishing vessels; aquaculture; offshore drilling; at-sea accidents; extreme natural events; construction; and coastal tourism.

We all are aware that the coastal region of South Asia is rich in biological wealth, but also it is known as an area of multiple vulnerabilities. Climate change also can affect coastal areas in a variety of ways. Coasts are sensitive to sea level rise, changes in the frequency and intensity of storms, increases in precipitation, and warmer ocean temperatures.

In addition, constantly expanding coastal population and increasing developmental activities in our region has exacerbated pressure on coastal and marine resources, with growing evidences of degradation of the coastal and marine environment due to continued exploitation.

As Inter-governmental collaboration is a key to address disaster risk reduction at a regional level, South Asian Seas Programme (SASP) is the appropriate regional platform to work on the need-based actions for protection and sustainable management of marine environment and Pakistan believes that the all member states have a role to play in addressing this critically important issue individually and collectively. In this regard Pakistan is committed to give the fullest support in enhancement of cooperation and knowledge sharing in the South Asian region and will extend its fullest assistance to South Asia Seas Programme and South Asia Co-operative Environment Programme to implement their activities under this issue.

Last but not the least, Pakistan would like to take this opportunity to thank the SACEP member states, Government of Bangladesh and the SACEP secretariat for their support during the period of Pakistan's chairmanship.

Thank you

Inaugural Session of
Preparatory Meeting of National Focal Points for

6th Inter-governmental Meeting of Ministers of
South Asian Seas Programme (SASP)
Dhaka, Bangladesh

5th November 2019

Closing Remarks by
Mr. Mahmud Hassan
Additional Secretary (Environment)

Ministry of Environment, Forest & Climate Change
Government of the People's Republic of Bangladesh

Bismillahir Rahmanir Rahim
Honourable Mr. Abdullah Al Mohsin Chowdhury, Secretary of Ministry of Environment, Forest and Climate Change, Bangladesh,
Dr. Abas Basir, Director General of SACEP
Distinguished delegates, Ladies and Gentlemen

Assalamualikum and a Very good morning.

I am honored to be here among this distinguished gathering in the preparatory meeting of the national focal points for the 6th inter-governmental meeting of ministers of South Asian seas programme to deliver the vote of thanks.

It is our obligation and responsibility to carry forward this message of an environmentally sustainable south-asia for the benefit of our future generations. Only with the collaborative and co-operative efforts of our member governments and other donor community, that we can implement the necessary measure to tackle environmental challenges we face in our region today.

This is the previledge that the government of Bangladesh is hosting the meeting of the governing council of SACEP and inter-governmental meeting of ministers of South Asian Seas Programme. The SASP is a regional agreement formally adopted in 1995.

It is our government's firm determination and willingness to collaborate with our neighboring countries to safe guard our region's environment, seas and marine resources. Seas are our global commons. Sustainable management of marine resources and marine environment is our collective responsibility.

I thank all the delegates for coming here and taking part in this meeting.
I would also like to express my word of appreciation to the Hon' DG, SACEP and his staff for their unwavering support and patience while organizing this meeting.

I thank all the delegates for Attending this conference.

Lastly, I would like to thank my colleague of the Ministry of Environment, Forest and Climate Change especially honourable secretary of Ministry of Environment, Forests and Climate Change for his inspiring and informative welcome address and I render my thanks and gratitude to all of you.

I wish today's meeting a great success.

Thank You.

SOUTH ASIAN SEAS PROGRAMME

PREPARATORY MEETING OF NATIONAL FOCAL POINTS FOR 6TH INTER-GOVERNMENTAL MEETING OF THE MINISTERS

Dhaka, Bangladesh
4 - 5 November 2019

DRAFT PROVISIONAL AGENDA

AGENDA ITEM

1 Opening of the Meeting

2 Election of Office Bearers

3 Adoption of Agenda and Organisation of Work

4 Institutional Matters

5 Programme Matters

5.1 Programme Activities from 2014 – 2019

5.1.1 Regional Oil and Chemical Pollution Contingency Plan for South Asia & Memorandum of Understanding (MoU) for co-operation on the response to Oil and Chemical Pollution in the South Asian Seas Region

5.1.2 Ballast Water Management Convention under the GloFouling Project of the International Maritime Organization (IMO)

5.1.3 Nutrient Pollution on the Coastal and Marine Systems of South Asia

5.1.4 Regional Marine and Coastal Biodiversity Strategy for the South Asian Seas Region

5.1.5 Adoption of Regional Marine Litter Action Plan for South Asia and development of National Marine Litter Action Plans for SAS Member States

5.1.6 International Coastal Clean Up Day

5.1.7 Global Coral Reef Partnership and International Coral Reef Initiative (ICRI)

5.1.8 Regional Training and Capacity Building workshop in Coral Reef Monitoring Identifying Indication for Regional Adaptation and Resilience

5.1.9 Promotion of the London Protocol in the South Asian Seas Region

5.2 Work Programme for 2020 - 2021

6 Financial Matters

6.1 Review of Country Contributions from Member States for South Asian Seas Programme

6.2 External Funding - Budgetary resources required to support the Work Programme

6.3 DRAFT Budget (2020 -2021)

6.4 Presentation of Audited Reports of Accounts for the years 2011 to 2017

7 Any Other Business

8 Adoption of Report

9 Closure of Meeting

SOUTH ASIAN SEAS PROGRAMME

PREPARATORY MEETING OF NATIONAL FOCAL POINTS FOR

6TH INTER-GOVERNMENTAL MEETING OF THE MINISTERS

Dhaka, Bangladesh
5 November 2019

DRAFT ANNOTATED AGENDA

AGENDA ITEM
1 **OPENING OF THE MEETING** It is expected that a Senior High Ranking Official from the Government of Pakistan will inaugurate the Meeting.
TEA BREAK
2 **ELECTION OF OFFICE BEARERS** As agreed at the Meeting of Plenipotentiaries of the South Asian Seas Programme in March 1995 and as laid down in the South Asian Seas Action Plan, the Rules of Procedure of the Governing Council of SACEP will be applied mutatis mutandis for the conduct of the Inter-governmental Meeting of Ministers of SAS. In accordance with the Rules of Procedure of the Inter-governmental Meeting of Ministers, a Chairman will be elected. One or more Vice Chairman, a Rapporteur and other officials may also be appointed by the Meeting. The Director General of SACEP shall function as the Secretary of the Meeting during its sessions.
3 **ADOPTION OF AGENDA AND ORGANISATION OF WORK** The Meeting will consider the Provisional Agenda for adoption. Any matter regarding the Organisation of Work and the Sessions may also be considered.
4 **INSTITUTIONAL MATTERS** Under this Agenda Item, the SAS Secretariat will present an overall report on the institutional matters of the Secretariat since the IMM 5.

5 PROGRAMME MATTERS

5.1 Programme Activities from 2014 – 2019

5.1.1 Regional Oil and Chemical Pollution Contingency Plan for South Asia & Memorandum of Understanding (MoU) for co-operation on the response to Oil and Chemical Pollution in the South Asian Seas Region

5.1.2 Ballast Water Management Convention under the GloFouling Project of the International Maritime Organization (IMO)

5.1.3 Nutrient Pollution on the Coastal and Marine Systems of South Asia

5.1.4 Regional Marine and Coastal Biodiversity Strategy for the South Asian Seas Region

5.1.5 Adoption of Regional Marine Litter Action Plan for South Asia and development of National Marine Litter Action Plans for SAS Member States

5.1.6 International Coastal Clean Up Day

5.1.7 Global Coral Reef Partnership and International Coral Reef Initiative (ICRI)

5.1.8 Regional Training and Capacity Building workshop in Coral Reef Monitoring Identifying Indication for Regional Adaptation and Resilience

5.1.9 Promotion of the London Protocol in the South Asian Seas Region

TEA BREAK

5.2 **WORK PROGRAMME (2020-2021)**

Under this Agenda Item, the meeting will consider the approved work programme for the period of 2014 - 2019 and make suggestions for its continuance through 2020-2021

6 FINANCIAL MATTERS

Under this agenda item, the meeting will consider the review of the Country Contributions, External Funding, the Draft Secretariat Budget for 2020-2021. It will also consider the Audited Reports of Accounts for the years 2011 to 2017 for endorsement.

7 **ANY OTHER BUSINESS**

Under this Agenda Item, The Preparatory Meeting of National Focal Points for the Sixth Inter-governmental Meeting of the Ministers may wish to discuss any other relevant matters that may be raised by the representatives participating at the Meeting or by the Secretariat.

8 **ADOPTION OF REPORT**

The Rapporteur will present the Draft Report of the Meeting for its consideration and adoption.

9 **CLOSURE OF MEETING**

Any representative participating in the Meeting may wish to make concluding statements regarding the deliberations at the Meeting and its achievements. The Chairman will finally declare the Meeting closed.

Annex VII
6IMM.SASP/ NFP

INCREASE OF THE SALARY OF THE
SENIOR PROGRAMME OFFICER-REGIONAL
SOUTH ASIAN SEAS PROGRAMME (SASP)

The salary of the Senior Programme Officer – Regional (SPO-R) was decided at the First Inter-Governmental Meeting of the Ministers (IMM.1) of the South Asian Seas Programme (SASP) (**Annex 1**)

The salary of the SPO-R / SASP had not been increased during the period of time.

At present financial position of SASP is sufficient to cover a reasonable increase of the salary of the Senior Programme Officer-Regional as the average of the annual income generated from the country contributions within a period of 5 years and the interest earned annually amounts to US $ 128,000 (approx) per annum.

Considering the period of stagnant, the Secretariat recommends to the 6th Inter-Governmental Meeting of Ministers of the South Asian Seas Programme (SASP), that the salary of the Senior Programme Officer-Regional may be increased upto US $ 3,000/- per month.

SOUTH ASIA CO-OPERATIVE ENVIRONM

SOUTH ASIAN SEAS PROGRAMME

SOUTH ASIAN SEAS PROGRAMME

First Intergovernmental Meeting of Ministers

Islamabad, Pakistan 26th March 1999

REPORT OF THE FIRST MINISTERIAL MEETING OF THE SOUTH ASIAN SEAS PROGRAMME

7.(a) REVIEW OF PROGRESS OF IMPLEMENTATION OF THE ACTION PLAN

The concerned Document under this Agenda Item was SAS / NFP / IMM 1 / WP 1, titled Review of Progress of the Implementation of the Action Plan.

a) The date of commencement of the implementation of the Action Plan was agreed as February 1998 mainly because all the country contributions to the SAS Trust Fund to meet the cost of the Secretariat were received in January 1998.

b) While it was left to the discretion of the countries to decide upon the composition of the National Co-ordinating Committee, the role for the National Focal Point vis a vis the National Committee was defined.

c) Lack of funding for developing detailed project documents for the priority projects was discussed in length. UNEP representative informed the meeting that due to the financial crisis his organisation was unable to support the South Asian Seas Programme to the levels expected by SACEP. However as the situation has improved now UNEP has included among other Regional Seas Programmes the South Asian Seas Programme in its programme of work for 2000 and 2001. He requested the SAS Secretariat to make available concrete proposals for consideration for funding by UNEP. In this regard, the meeting felt that since the implementation of the South Asian Seas Action Plan is in the interest of the member countries, the projects, which have significant national components, should be funded by the countries themselves without awaiting external assistance.

d) Even though the Action Plan was adopted in March 1995 all the country contributions were received only by January 1998. However the SAS Secretariat with the available SACEP staff had carried out several interim activities such as development and implementation of a Training Programme for the Management of Marine Protected Areas, active participation in the Global Coral Reef Monitoring Network (GCRMN) and organising a meeting to develop a proposal to study the Bleaching of Corals in the South Asian Region, International Coral Reef Initiative Network (ICRI), Organising a Regional Workshop for the Development of National Plan of Action towards the implementation of the Global Programme of Action for the protection of the Marine environment from Land based activities etc. The meeting appreciated the efforts made by the Secretariat.

7. (b) INSTITUTIONAL, ORGANISATIONAL AND FINANCIAL ARRANGEMENTS

The concerned Document under this Agenda Item was SAS / NFP / IMM 1 / WP 2, titled "Institutional, Organisational and Financial Arrangements of the South Asia Seas Action Plan.

(a) The meeting noted that while the need to designate National Focal Points, constitution of the National Co-ordination Committee and designation of National Institutions have been specified in the action plan, the need for identification and strengthening Regional Centres of Excellence has been specified only under the Priority Areas of Activities. It was clarified by the Secretariat that such centres would be useful to deal with the regional aspects of the projects identified.

(b) Two countries have already hosted the IGMM meetings and the next meeting could be held in any of the other three countries. The Secretariat can initiate the consultations to hold the next IMM in October 2000 with the probable host country at least six months prior to October 2000. The dates should be intimated to the member countries at least 3 months in advance.

(c) The SAS Secretariat in consultation with other Regional Seas Secretariats may formulate suitable Rules and Regulations of SASAP for administrative and financial activities for approval by the next meeting of IMM. These rules will have to be formulated within six months from the date of issue of report of the present IMM meeting. Till then SACEP can be empowered to make all administrative and financial decisions as per accepted procedure followed by SACEP.

(d) SACEP will recruit within 6 months from the date of issue of Report of the First IMM, one Senior Programme Officer (Regional) and within 3 months one Programme Officer

(Local) and a Secretary. The posts will be on contractual basis for a period of 4 years with the salary of US $ 2,500 per month for the Senior Programme Officer (Regional) and Sri Lankan Rupees 17,000 per month for the Programme Officer (Local). The salary includes house rent, medical and other expenses. The Guidelines for formulation of Schemes of Recruitment are given in **Annex 11.**

(e) The countries, which are yet to constitute their National Co-ordinating Committee are requested to do so within 4 months from the date of issue of report of the IMM.

(f) Selection of the National Institutions will be made by the National Focal Points for each priority area. Broad guidelines for selection include availability of core expertise in the relevant field and infrastructure at a reasonable level. These institutions are meant for one or more priority areas, which will be designated as the National Institutions for the SAS programme. Adequate efforts will have to be made by the Governments/National Focal Points/National Institutions/Others to make available the services of National Institutions to the SAS programme on a long-term basis.

(g) The meeting considered the issue of payment of the compensation to the Deputy Director Programmes and 7 other Administrative and Supporting Staff of SACEP who spared their services for the SAS programme. It was agreed that payment of the compensation be considered from 1 February 1998, which has been fixed as the date of commencement of the Action Plan. Payment of an amount Sri Lankan Rs.10,000 per month was approved for the Deputy Director Programmes from 1 February 1998 and will be continued till the date the Senior Programme Officer is appointed. For other staff it is 15% of their salary and may be continued till the time the Secretary is appointed. Thereafter, the payment for the other administrative staff will be determined on actual time spent on SAS work.

(h) The member countries may consider expediting the payment of their country contributions in order to facilitate smooth functioning of the Secretariat. Minor differences arising due to currency exchange rate fluctuations are ignored.

(i) The Audit Report for the year 1997 was approved. It was agreed thet the unspent balance available may be treated as a Reserve fund which will be used for payment of salary to the SAS staff in case there are delays in receiving the country contributions.

(j) The Director General, South Asia Co-operative Environment Programme (SACEP) was empowered for reappropriation upto 20% from one item to the other. In case of more, it need to be approved by the Consultative Committee which will be ratified at the time of IMM. The budgetary requirements proposed for the Secretariat and corresponding country contributions for the years 1999 and 2000 was approved by IMM. The details are given below:

(k) The IMM requested the UN organisations such as UNEP, UNDP, UNIDO etc, International and Regional financial institutions such as the World Bank, Asian Development Bank and multi and bi-lateral donors for funding activities essential for implementation of the Action Plan. It seeks co-operation for technical assistance of NGO's such as WWF, IUCN etc, for South Asian Seas Action Plan.

CONTRIBUTIONS FOR THE SAS TRUST FUND

COUNTRY		1997	1998	1999	2000
	%	US $	US $	US $	US $
Bangladesh	14.5	10,367.50	11,020.00	12,120.00	13,335.00
India	35.0	25,025.00	26,600.00	29,260.00	32,185.00
Maldives	6.5	4,647.50	4,940.00	5,435.00	5,975.00
Pakistan	29.5	21,092.50	22,420.00	24,660.00	27,130.00
Sri Lanka	14.5	10,367.50	11,020.00	12,125.00	13,335.00
TOTAL	**100.00**	**71,500.00**	**76,000.00**	**83,600.00**	**91,960.00**

GUIDELINES FOR FORMULATION OF SCHEME OF RECRUITMENT
POST OF SENIOR PROGRAMME OFFICER (REGIONAL)

Job Description

The Secretariat of the South Asian Seas Action Plan (SASAP) has been charged with the responsibility of implementing the South Asian Seas Action Plan agreed upon by the 5 marine member states based on the decisions of the participating governments at the Meeting of Plenipotentiaries held in New Delhi in March 1995.

The Senior Programme Officer will function under the overall direction and the supervision of the Director General of the South Asia Co-operative Environment Programme who has been designated as the head of the Secretariat of the SASAP. His duties and responsibilities which also include implementing of the Action Plan identifying, formulating, implementing, monitoring and evaluating projects, liaising with international, regional and national institutions and organisations, undertaking fund raising activities, keeping abreast of relevant projects and activities in the region and discharging any other assignments entrusted to him by DG SACEP.

Qualifications & Experience

- Age below 50 years
- A Ph.D. or Masters Degree in the field of marine sciences, environmental sciences or natural resource management.
- A minimum of 10 years experience after Masters Degree or a minimum of 7 years in case of Ph. D experience after first degree in project identification, formulation and management. Preference given to include implementing
- Excellent reading, writing and communicating skills in English
- Computer literacy of acceptable standards
- Good interpersonal skills and communication abilities

Terms and Conditions of Employment

- Employment will be on contract basis initially for one year and extendable annually upto 3 years or a maximum period of 4 years purely at the discretion of the Director General of SACEP.
- An all inclusive salary of US $ 2,500 per month
- Transport costs from home country to Colombo and back after period of contractual employment
- The duty station will be the SAS Secretariat presently located in Colombo, Sri Lanka

Method of Recruitment

Each National Focal Point will be required to nominate not more than 3 eligible and eminent candidates with requisite qualifications, experience and proven track record within eight weeks from date of vacancy announcement. The nominations so received will be scheduled and short listed by a panel of 3 International Experts appointed by the Director General of SACEP. The 3 best nominees so short listed will be interviewed in Colombo by the panel of International Experts along with the Director General of SACEP and the most outstanding nominee will be selected for appointment.

PROGRESS REPORT
South Asian Seas Programme (SASP)

Year 2014 – 30 September 2019

1. Endorsement for the Formal Adoption of the Regional Oil and Chemical Pollution Contingency Plan for South Asia

A Regional Oil and Chemical Pollution Contingency Plan and associated MoU were developed in association with the International Maritime Organization (IMO) for enhanced cooperation in the event of an Oil or Chemical spill in South Asian Seas region. The final adaptation of the same had been pending since the year 2000. The 4th Inter-governmental Meeting of Ministers (IMM) held in Jaipur, India on 22nd May 2008, requested SACEP to finalize the Regional Plan and MoU as a matter of High Priority and now all member countries viz. Bangladesh, India, Maldives, Pakistan and Sri Lanka have signed the MoU.

Maldives	- 13 October 2009
Pakistan	- 22 July 2010
Bangladesh	- 27 September 2010
Sri Lanka	- 17 December 2014
India	- 12 May 2018

The International Maritime Organization (IMO) has indicated that the South Asia Region will get much more benefits as all the members of the South Asian Seas Programme (SASP) have signed the MOU for collaborative activities.

SACEP and IMO signed an MOU to collaborate in the above activity in August 2013 for the implementation of a NORAD funded project titled 'Enhancing regional co-operation mechanisms on marine pollution preparedness and response in the SACEP region'. One of the specific projects under this IMO/NORAD Cooperation Programme was aimed at assisting the South Asian Seas (SAS) region to develop a regional cooperation mechanism for marine pollution preparedness and response. The long-term objective of the project was the effective implementation of the OPRC Convention and the OPRC-HNS Protocol in South Asia region. The following activities have been carried out continuously since year 2013 under the MoU between IMO and SACEP.

The First Regional Meeting of the National Authorities Responsible for Oil Spill Preparedness and Response, was held in Colombo, Sri Lanka from 26-28 February 2014. Each of the five countries involved in the project were represented by a delegation comprising a minimum of three persons. These country delegations included key personnel from those Ministries and governmental agencies involved in oil spill preparedness and response issues i.e. the competent national authorities. In addition to the SACEP Secretariat, a number of international organizations, including the private sector, were represented at the meeting.

This enabled the sharing of experiences from other regions, particularly during the technical symposium. 40 Participants were present in this meeting.

As per the recommendation of the Regional Meeting held in February 2014, National Workshops were held in the five SASP member states during year 2014-2015. These national workshops were held with the objective of updating and finalizing the National Oil and Chemical Spill Contingency Plan together with further recommendations for updating the SACEP Regional Oil and Chemical Spill Contingency Plan.

A Regional Training & Exercise for Oil Spill Preparedness and Response under 'Enhancing Regional Co-operation Mechanisms on Marine Pollution Preparedness and Response in the SACEP Region' was held from 02 - 06 November 2015 in Colombo, Sri Lanka.

'Regional Workshop for updating the Regional Oil and Chemical Spill Contingency Plan and its Annexes for South Asian Seas Region' was held in Male', Maldives from 22-25 August, 2016 to finalize and consolidate the updates to the Regional Contingency Plan. The workshop also identified future training activities and developed a three-year programme of trainings and exercises to enhance regional capacity building in spill preparedness and response.

SACEP is coordinating with IMO for further activities in SAS region and expected to have a regional meeting by the end of year 2019.

2. SACEP/SASP to develop a Regional Strategy and to set up a Task force to address Ballast Water Management (BWM)

South Asian Seas region lies within one of the busiest shipping lanes globally as it falls within the oil conveyor belt from the Gulf to East Asia. Therefore, ballast water can pose serious economical and ecological damage through introduction of invasive alien species to our coastal and marine waters. The International Convention for the Control and Management of Ships' Ballast Water and Sediments contains measures to prevent the potentially devastating effects of the spread of harmful aquatic organisms carried by ships' ballast water. It requires all ships in international traffic to implement a Ballast Water and Sediments Management Plan, to carry a Ballast Water Record Book, and an International Ballast Water Management Certificate. All ships will have to undertake Ballast Water Management procedures to a given standard. Existing ships will be required to do the same, but after a phase-in period. The BWM Convention was adopted on 13 February 2004 and entered into force on 8 September 2017. Presently out of five maritime countries of South Asia, only Maldives is signatory to the BWM Convention.

The International Maritime Organisation (IMO), through the GEF-UNDP-IMO GloBallast Partnerships Programme Coordination Unit, in collaboration with Government of India, organised a two-day regional workshop in order to discuss the development of a Regional Strategy for Ballast Water Management, in May 2012 in Mumbai. The key objective of the workshop was to develop a regional Strategy for a harmonised approach in the region on ships' ballast water control and management which is consistent with the requirements and standards of the BWM Convention.

At this meeting it was decided that SACEP, as the Secretariat for the South Asian Seas Programme, would be the Institutional Framework to support and finalize the Draft Regional BWM Strategy and to ensure the execution of the Action Plan. It was also agreed to establish

a Regional Task Force to facilitate the process. This activity was further strengthened under a MoU signed between SACEP and IMO in August 2013.

Accordingly, the First workshop was held to establish the Regional Task Force and to Develop a Regional Strategy and Action Plan for Ballast Water Management (BWM) in South Asia from 24-25 February 2014 in Colombo, Sri Lanka. It brought together the key decision makers from governments dealing with the BWM Convention to revisit the Draft Regional Strategy and amend it in accordance with the latest developments and finalize the Regional Strategic Plan for the full implementation of the BWM Convention in South Asia with the financial and technical support from the International Maritime Organisation (IMO), through the GEF-UNDP-IMO GloBallast Partnerships Programme Coordination Unit.

The 2nd Regional Workshop on the BWM Convention: Compliance Monitoring and Enforcement (CME), Risk Assessment and Port Biological Baseline Surveys (PBBS) was held in Malé, Maldives, from 18 - 20 June 2019 to assist the Administrations of the South Asia region in preparing for ratification and implementation of the BWM Convention, with a special emphasis on compliance monitoring and enforcement (CME) as well as port biological baseline surveys (PBBS) and risk assessments. Based on the feedback received from the SAS Member States the CME, Risk Assessment and PBBS were issues that most of the States were in need of detailed information. Accordingly, the workshop provided guidance for authorities involved in flag and port State control surveys and inspections carried out under the provisions of the BWM Convention. The workshop also provided the theory and practical training on how to plan and conduct PBBS for introduced marine species using standardized protocols, and how to conduct a risk assessment for the implementation of the BWM Convention with a focus on ship targeting for port State control and exemptions under regulation A-4 and the Guidelines for risk assessment under regulation A-4 of the BWM Convention (G7).

SACEP is in contact with IMO for further activities in SAS region.

2.1 GloFouling Project

SACEP has joined the GloFouling Project of the International Maritime Organization (IMO) as a Regional Coordinating Organization (RCO). This is a sub- activity of the Ballast Water Management strategy. This strategy played an instrumental role in the establishment of two significant events in the ballast water calendar: the IMO-GloBallast Research and Development (R&D) Forum and the International Conference on Ballast Water Management (ICBWM). These events were well-informed, highly-regarded and attracted multi-stakeholder gatherings on the subject and were pivotal in driving innovations in treatment systems, transparency in testing those systems, sampling and monitoring technologies and contingency-based measures amongst others.

SACEP became the Regional Partnering Organization with IMO since 2018 to address this very critical transboundary marine environmental issue and is confident that the GloFouling Partnerships Project will make a positive contribution to the global effort to protect the marine environment.

SACEP participated the technical workshop on IMO-GloFouling Research and Development Forum with an aim to bring some clarification on optimum techniques for

biofouling management and point us in the direction of promising future research in the SAS region and development to minimize or eliminate the spread of invasive by maritime industries with some specific below mentioned goals:

- Explore the current and future maritime landscape as it relates to recent and proposed regulations, standard development and implementation, including uptake of the IMO Biofouling Guidelines;
- Discuss the needs of vessel operators to find a balance between improved vessel fuel efficiency, reduced maintenance costs, effective biosecurity risk mitigation and compliance with proposed standards;
- Explore perspectives from non-shipping industries (e.g. aquaculture, ocean energy); and,
- Identify where the knowledge and policy gaps are that are hindering the implementation of effective biofouling management strategies and standards

3. A Scoping Study of Nutrient Pollution on the Coastal and Marine Systems of South Asia

SACEP/SASP participated in a Regional meeting in June 2012, in Phuket, Thailand to share experiences in addressing Land-based sources of Marine Pollution, in relation to development of a Regional Strategic Action Plan for the countries along the Bay of Bengal.

At this meeting SACEP/SASP was requested to develop and submit a project proposal to the Bay of Bengal Large Marine Ecosystem Project (BOBLME) to address the mitigating nutrient loading to the marine environment.

In this regard SACEP developed a project concept titled 'Controlling Nutrient Loading and Eutrophication of Coastal Waters of the South Asian Seas Region' with the inputs from UNEP-GPNM (Global Partnership on Nutrient Management). The main objective of the project was to reduce and control of nutrient loading into the coastal waters of the South Asian Seas Region through development of a Regional Action Plan and Policy Forum/Framework.

The activities included ;

- An inventory of point/non - point sources of nutrients that end up in the coastal waters
- Estimating the impact of nutrient enrichment on coastal water, especially through regular observations in potential hotspots at fixed coastal sites;
- Develop and undertake actions to reduce nutrient inputs to agriculture as well as remedial measures for over eutrophication/hypoxia conditions in identified sites.
- Development of a Regional Action Plan and establishment of a Regional Policy Forum to monitor progress of action and define corrective actions to be pursued by member countries.

FAO funded the project and SACEP Secretariat administered the project activities, while national level activities were carried out by the respective National Focal Points of the South Asian Seas Programme.

This activity was presented and approved at the 5-IMM of SASP held in Islamabad, Pakistan in December 2013.

Further to the above initiative a draft report on Scoping Study of Nutrient Pollution on the Coastal and Marine Systems of South Asia was prepared by a group of consultants (Indian Nitrogen Group). This report was validated during the two-day regional workshop held from 20 to 21 May 2014 in Colombo, Sri Lanka. Twenty-six participants representing government agencies and international/regional organizations participated at this important event. The workshop agenda included presentations from collaborative institutions, national governments and resource persons. The draft scoping study on nutrient loading was placed on the table by the consultants, which was followed by group activities. The ecosystem approach to pollution management was tested in the workshop which proved to be an excellent approach to managing the nutrient pollution in the region and the participants agreed on a vision 'South Asian Seas free of nutrient pollution by 2020'. This vision was further supported by setting targets, hence opportunities for technical and financial support from multi-stake holders were highlighted.

The draft report was updated with comments received during and after the workshop and then again it was circulated among the member countries for any concerns. The workshop report and the updated scoping study report then were submitted to BOBP-IGO/FAO and were further revised with the inputs received from them.

SACEP is working closely with BoBLME-Phase 2 to incorporate some of the actions identified in First Phase report. The Phase 2 is expected to commence in 2020.

As a further follow up for the second activity, SACEP worked with UNEP-GEF on a global project titled 'Targeted Research on the Global Nitrogen Cycle, towards the establishment of an International Nitrogen Management System (Towards INMS) and SACEP acts as the South Asian collaborating partner in this forum. This activity was initiated during the UNEP/GEF Global Nutrient Cycle Project, First Steering Committee Meeting held in Bhubaneswar (Orissa), India in March 2014. The First Plenary in preparation for the Global Project 'Targeted Research on the Global Nitrogen Cycle, towards the Establishment of an International Nitrogen Management System' (Towards INMS) was held in Lisbon, Portugal from 27 – 30 April 2015 and SACEP could not attend the meeting but made the presentation through the web link. SACEP became a partner of International Nitrogen Management System (INMS) to work as the regional partner in South Asian region.

SACEP with the assistance of INMS organized a regional meeting in Maldives on Nitrogen Management from 12-14 September, 2017. The report was finalized and prepared a Draft Resolution on Nitrogen for submission to the United Nations Environment Assembly (UNEA-3) but due to paucity of time it could not be registered for the UNEA-3.

The Resolution on Sustainable Nitrogen Management was adopted by UNEA-4 while giving recognition to SACEP for initiating the process.

The UNEA 4 Resolution titled, 'Sustainable Nitrogen Management' (UNEP/EA.4/L.16), recognizes the multiple pollution threats resulting from anthropogenic reactive nitrogen, with adverse effects on the terrestrial, freshwater and marine environments and

contributing to air pollution and Greenhouse Gas (GHG) emissions, and highlights ways to better manage nitrogen.

The Resolution supports exploring options for better management of the global nitrogen cycle to achieve the SDGs, including through the "sharing of assessment methodologies, relevant best practices and guidance documents and emerging technologies for recovery and recycling of nitrogen and other such nutrients."

The Resolution acknowledges that current policies related to reactive nitrogen in many countries are fragmented and incoherent, resulting in unquantified trade-offs between different forms of nitrogen pollution and contributing to barriers to the adoption of policies for cleaner water, cleaner air, climate mitigation and adaptation and biodiversity protection. The Resolution therefore calls for a coherent approach towards sustainable nitrogen management.

To address nutrient pollution in South Asia, South Asian Nitrogen Hub (SANH) is established under the Global Challenges Research Fund (*GCRF*) with the support from South Asia Cooperative Environment Programme and its member countries. SACEP secretariat is a partnering organization for South Asian Nitrogen Hub working with its member countries and other partners at SANH to develop a Framework Policy on Nitrogen Management for South Asia region in order to regulate nitrogen at the national level through intergovernmental coordination mechanisms (i.e GC and IMM bodies).

Over the next five years, South Asian Nitrogen Hub (SANH) will study the impacts of the different forms of pollution to form a coherent picture of the nitrogen cycle. In particular, it will look at nitrogen in agriculture in eight countries – Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. The Hub's recommendations will support cleaner and more profitable farming, as well as industrial recycling of nitrogen, fostering development of a cleaner circular economy for nitrogen.

4. Development of a Marine and Coastal Biodiversity Strategy for the South Asian Seas Region

In order to strengthen and update the National Biodiversity Strategies and Action Plans (NBSAPs) process, foster collaboration, and help identifying and addressing challenges that require regional solutions, South Asian Seas Programme together with UNEP have initiated an activity to develop a South Asia Regional Marine and Coastal Biodiversity Strategy in partnership with various other stakeholders.

The Strategy was prepared, in parallel with the NBSAPs and it will assist the five maritime countries of South Asia to achieve Aichi Biodiversity targets relevant to Marine and Coastal biodiversity at national as well as regional level.

The following activities were carried out:

1. Conducted a desk review to provide a knowledge base for the Regional Marine and Coastal Biodiversity Strategy;
2. Prepared draft Strategy based on desk review and consultation with countries;
3. Organized regional workshop to validate and fine-tune the Strategy;
4. Finalized Strategy to be presented for endorsement at the next IMM-SASP.

Based on the desk reviews the First Order Draft of the regional coastal and marine Biodiversity Strategy for the South Asian Seas Region was prepared. The draft was discussed and further developed during the First Regional Workshop that took place in Colombo, Sri Lanka on 8-10 July 2014. It brought together 52 participants including national experts from the key relevant competent national authorities of the project's beneficiary countries, regional partner organizations, academia and other relevant stakeholders. This enabled the sharing of experiences from on-going regional process.

Additional financial support secured from the Bay of Bengal Large Marine Ecosystem Project was vital for ensuring the participation of all relevant stakeholders at the meeting.

The feedbacks from the workshop participants were incorporated into the draft.

SACEP in collaboration with UN Environment organized a Regional Consultative Workshop on 12 – 13 September 2018 in Maldives to ensure the common understanding and agreement on the strategy contents as well as pathway to finalization of the Draft. This Draft Regional Marine and Coastal Biodiversity Strategy was re-circulated among the member countries for their necessary consents prior to its adoption at the 6-IMM/SASP.

The Draft Regional Marine and Coastal Biodiversity Strategy contributes to strengthening regional efforts in planning for implementing and tracking progress towards the 2030 Agenda for Sustainable Development including SDGs and associated Aichi targets.

5. Regional Marine Litter Action Plan for South Asia and Development of National Marine Litter Action Plans for SAS Member States

As a partner of the UN Environment Project entitled 'Global Partnership on Marine Litter' SACEP agreed to develop National and a Regional Policy/Action Plan on Marine Litter for the South Asian Seas Region.

In this regard SACEP Member Countries requested SACEP to collaborate with UN Environment and assist its members to implement the activities on marine litter by formulating a regional policy on marine litter management in SAS region. SACEP developed a regional marine litter management framework for the SAS region in 2007 with the assistance of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities. The framework provided recommendations for further implementation and one of the important recommendations was to develop a regional policy on marine litter management for the SAS region.

The need for a regional plan was recognized important as marine litter move irrespective of national territorial boundaries. As such SACEP and UN Environment signed a MoU for preparation of a Regional Marine Litter Management Action Plan for the SAS region.

5.1 As an outcome of the activity, the Draft Regional Marine Litter Action Plan was prepared based on the National Status Reports produced by the SAS Member States to combat marine litter pollution, containing programmes and measures for marine litter prevention and reduction, and timeframe for their implementation under this project. The Draft Regional Report was validated at a Regional Workshop held on 5-6 April 2018 in Mumbai, India with the

inputs of the delegates. This report proves as an implementational and reference tool for future policy, planning, research and development of marine litter mitigation tools in areas related to marine environment as well as pollution from the land and sea-based sources.

5.2 Commemoration of the International Coastal Cleanup day of September 2017 was organized by SACEP in the SAS member states under this project. SACEP also has being encouraging the member states to adopt 3R Initiative to manage plastic litter through plastic re-cycling. In this regard, a Plastic Crusher Machine was displayed and demonstrated during the 'Beach Clean-up Day organized by Government of Sri Lanka in September 2017. SACEP handed over the Plastic Crusher Machine to the Marine Environment Protection Authority (MEPA), Government of Sri Lanka.

5.3 Recognizing its importance, some best management practices (BMP) guidelines have also been developed during the year 2019, supported by UN Environment, that could be used for combating the marine litter through reduction and reuse, recycling, composting and fermentation, better management of landfills and land application. The developed BMP also facilitate and support the development of National Action Plan/Policy by member countries. The necessary reports have been shared amongst the SAS member states to receive their final consents.

Presently, SACEP is coordinating with UN Environment to assist Government of India for the development of National Marine Litter Action Plan.

5.4 International Coastal Clean-up day

In the International Environment Calendar for each year, Saturday of 3rd week of September marks the International Coastal Cleanup Day, where events are organized to make the public aware of the growing problem of debris accumulated in coastal areas. Litter such as plastic bags, soda cans and broken glass are slow to degrade. Studies have shown that marine debris threatens over 265 different species of marine and coastal wildlife through entanglement, smothering, and interference with digestive systems. It is a problem that not only damages our marine and coastal ecosystems, but also affects the coastal tourism and public health.

In 1986, the Ocean Conservancy, an NGO ran its first Coastal Cleanup event in Texas, USA and in later years became the coordinating agency for the International Coastal Cleanup, helping to spread the concept to nations around the world. In year 2010 it celebrated the 25th year of the International Coastal Cleanup Day.

The International Coastal Cleanup engages people to remove trash and debris from the world's beaches and waterways, to identify the sources of debris and to change the behaviors that cause pollution.

Also as decided at the 18th Global Meeting of the Regional Seas Conventions and Action Plans held in Seoul, Korea in October, 2016 and according to

general circular of UNEP (UNEP/EA.2/Res.11; dated-4 August, 2016), Government of Sri Lanka has requested SACEP to prepare a joint project to implement UNEA resolution 2. Accordingly, SACEP prepared a project concept on '*Capacity Development for Marine Litter Management at National Level of South Asian Seas (SAS) Region*' which will be implemented jointly by the two island nations namely; Sri Lanka and Maldives in coordination with SACEP.

Since 2006, SACEP has being organizing many activities to commemorate the Coastal Cleanup Day and informs the SASP member states regarding the activity which is held in the third week of September each year.

6. Contribution to strengthening local and regional enabling environments to foster the uptake and adoption of innovative approaches in reducing threats to coral reefs from nutrient and wastewater and other land-based pollution in Sri Lanka and Regional Stakeholder Meeting to discuss the capacity building needs on Sustainable Nutrient Management to reduce soil, water and coastal pollution in South Asian Seas region

Coral reefs, Mangroves, Seagrass and coastal aquaculture in South Asia Seas (SAS) region are particularly vulnerable to land-based pollution, which not only threatens the health of the ecosystems and the biodiversity contained therein, but also the health and wellbeing of hundreds of millions of people who depend on ocean habitats services for nutrition, livelihoods and a safe living environment. Increasing sediment and nutrient loads have been linked to decline the ocean habitats around the world. Release of excess nutrients into coastal waters causes eutrophication, resulting in macroalgae proliferation, algal blooms and the creation of hypoxic 'dead zones', which can kill large numbers of organisms.

The SAS region is rich in marine biodiversity. By taking this advantage, countries in the SAS region achieve huge tourist economic gain. In order to maintain the harmony and synergic relations among human activities and ecology of coastal environment, SACEP in collaboration with UN Environment organized an initial dialogue together with expertise from Government of Sri Lanka, Civil society and academia to discuss the best possible management practices to overcome the current prevailing issues in March 2018.

As a result, a pilot project was initiated with the cordial support and co-ordination of the National Focal Point of Sri Lanka as a candidate country for a demonstration initiative given the diversity of its coral reef ecosystems, the livelihoods they support and the multiple threats that climate change and bleaching events, in combination with pollution have been exerting on reef ecosystems in the country. To best demonstrate the tangible cause-effect linkages between land-based activities, pollution and the impacts on coastal ecosystems, a watershed area that is undergoing land degradation with an offshore coral reef ecosystem that has been affected from nutrient and wastewater pollution was identified. Reef communities at particular locations in the country have demonstrated resilience to recent bleaching events, signaling possibly a higher chance of being less impacted by climate change in the coming decades. This made a good case for their protection from anthropogenic

stressors where these reefs may be used in the future for restorative work in other locations. This further strengthened the case of integrated source-to-sea management.

The First Phase of the project focused on land-based sources of pollution (solid, wastewater and nutrient) in the Maduru Oya watershed in Sri Lanka. The lesson learnt from the Sri Lanka pilot project exercises will further scale up to the other Member States of the SAS region to develop guideline and appropriate measures. The pilot project was a Small Scale Funding Project with a limited period of time.

As the Second Phase the Regional Stakeholder Meeting addressing on Sustainable Nutrient Management to reduce soil, water and coastal pollution in (SAS) region was held from 1-2 April 2019 in Colombo, Sri Lanka to demonstrate the outcomes of the Desk Reviewed Pilot Study. It was understood by the attendees and experts that the pilot project could make a significant contribution for the achievement of SDG 2030 targets and planned to upscale the work regionally – potentially in both the Bay of Bengal and the Arabian Sea.

7 Ratification of the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matters, 1972 (London Protocol)

The London Protocol (LP) provides comprehensive framework for embracing the precautionary principle and prohibiting all dumping of wastes and other matter, except for those on a prescribed list, which may be assessed and given permits for dumping. A monitoring mechanism is also included for further measures. As the LP support other such agreements and declarations and is in line with mandate of SASP, it needs to be ratified completely by SAS region member states for combating the human generated pollutions discharging to coast and marine environment of SAS region. The LP is in line with many other resolutions, conventions and regional seas agreements. South Asian Seas (SAS) region would benefit from this in protecting marine environment from land-based sources of pollution.

International Maritime Organization (IMO) is working as the secretariat of LC/LP. SACEP organized the First Regional Workshop on Promotion of the LP in the South Asian Seas (SAS) Region, supported financially as well as technically by the IMO and hosted by the Ministry of Environment and Forest, Government of Bangladesh from 10 – 12 July 2019 in Dhaka, Bangladesh to sensitize relevant authorities to the benefits and implications of ratifying, implementing and enforcing the LP.

The participants of SAS member countries understood the importance of ratification of the London Protocol. A National Workshop was also organized for Government Officials on 12th July 2019 back to back with the Regional Workshop aiming to produce a draft National Action Plan for London Protocol ratification and implementation in Bangladesh and highlighted the future cooperation when protecting the marine environment in the region, thus maximizing the benefits that can be derived from full implementation of this instrument.

Development and Implementation of National and Regional Oil and Chemical Spill Contingency Planning for South Asia

The International Convention on Oil Pollution Preparedness, Response and Co-operation, 1990 (OPRC) facilitates international co-operation and mutual assistance in preparing and responding to a major oil pollution incident and encourages States to develop and maintain an adequate capability to deal with oil pollution emergencies. The basic obligation of this convention is for parties to establish a national system for responding promptly and effectively to oil pollution incidents, while in order to facilitate the operational aspects of oil spill monitoring and response, the OPRC Convention encourages parties to conclude bilateral or multilateral agreements for oil pollution preparedness and response.

To fulfill the above requirement in accordance with the South Asian Seas Action Plan, the Regional Oil and Chemical Pollution Spill Contingency Plan and associated MoU were developed in association with the International Maritime Oganization (IMO) for enhanced co-operation in the event of an Oil or Chemical spill in South Asian Seas region. During the past two decades SACEP organized several activities in collaboration with IMO to facilitate the process of signing the MoU.

All SAS member countries viz. Bangladesh, India, Maldives, Pakistan and Sri Lanka have now signed the MoU :

Maldives	- 13 October 2009
Pakistan	- 22 July 2010
Bangladesh	- 27 September 2010
Sri Lanka	- 17 December 2014
India	- 12 May 2018

Since year 2012 SACEP and IMO organized activities collaboratively for the implementation of a NORAD funded project titled 'Enhancing regional co-operation mechanisms on marine pollution preparedness and response in the SACEP region'. One of the specific projects under this IMO/NORAD Cooperation Programme is aimed at assisting the South Asian Seas (SAS) region to develop a regional cooperation mechanism for marine pollution preparedness and response. The long-term objective of the project is the effective implementation of the OPRC Convention and the OPRC-HNS Protocol in South Asia region. The following activities have been carried out continuously since year 2012 under the MoU between IMO and SACEP.

The First Regional Meeting of the National Authorities Responsible for Oil Spill Preparedness and Response, was held in Colombo, Sri Lanka from 26-28 February 2014. Each of the five countries involved in the project was represented by a delegation comprising a minimum of three persons. These country delegations included key personnel from those Ministries or governmental agencies involved in oil spill preparedness and response issues i.e. the competent national authorities. In addition to the SACEP Secretariat, a number of international organizations, including the private sector, were represented at the meeting.

This enabled the sharing of experiences from other regions, particularly during the technical symposium. 40 Participants were present in this meeting.

As per the recommendation of the Regional Meeting held in February 2014, the National Workshops were held in the five SASP member states during the period of 2014-2015. These National Workshops were held with the objective of updating and finalizing the National Oil and Chemical Spill Contingency Plan together with further recommendations for updating the SACEP Regional Oil and Chemical Spill Contingency Plan.

The Regional Training & Exercise for Oil Spill Preparedness and Response under 'Enhancing Regional Co-operation Mechanisms on Marine Pollution Preparedness and Response in the SACEP Region' was held from 02 - 06 November 2015 in Colombo, Sri Lanka.

Regional Workshop for updating the Regional Oil and Chemical Spill Contingency Plan and its Annexes for South Asian Seas Region was held in Male', Maldives from 22-25 August, 2016 to finalize and consolidate the updates to the Regional Contingency Plan. The workshop also identified future training activities and developed a three-year programme of trainings and exercises to enhance regional capacity building in oil spill preparedness and response.

A fresh MoU was signed between SACEP and IMO on June 2019 aiming that the South Asia Region to achieve the following results under this project:

- Key issues of importance regarding co-operation in case of major pollution incidents, such as the use of dispersants, aerial surveillance and liability and compensation addressed and related agreements reflected in the regional contingency plan implementation; and
- A regional exercise to be conducted to test the communication and the operational procedures.

The Secretariat requests the recommendation of the 6th Inter-governmental Meeting of Ministers of the South Asian Seas Prograame to take appropriate technical and financial support from IMO for implementation of the Regional Oil and Chemical Spill Contingency Plan in the SAS Region and sharing of technical expertise of the Member States among each other.

Ballast Water Management under the GloFouling Project of the International Maritime Organization (IMO)

South Asian Seas region lies within one of the busiest shipping lanes globally as it falls within the oil conveyor belt from the Gulf to East Asia. Therefore, ballast water can pose serious economic and ecological damage through introduction of invasive alien species to our coastal and marine waters. To prevent the spread of harmful aquatic organisms from one region to another, the International Convention for Control and Management of Ships' Ballast Water and Sediments (BWM) was adopted on 13th February 2004. The Convention entered into force on 8 September 2017.

It requires all ships in international traffic to implement a Ballast Water and Sediments Management Plan, to carry a Ballast Water Record Book, and an international Ballast Water Management Certificate. All ships will have to undertake ballast water management procedures to a given standard. Existing ships will be required to do the same, but after a phase-in period. Out of the five maritime countries of South Asia, Bangladesh and Maldives are signatory to the BWM Convention.

The International Maritime Organisation (IMO), through the GEF-UNDP-IMO GloBallast Partnerships Programme Coordination Unit, in collaboration with Government of India, organised a two-day regional workshop in order to discuss the development of a Regional Strategy for Ballast Water Management, in May 2012 in Mumbai. The key objective of the workshop was to establish a regional Strategy for a harmonised approach in the region on ships' ballast water control and management which is consistent with the requirements and standards of the BWM Convention.

At this meeting it was decided that SACEP, as the Secretariat for the South Asian Seas Programme, would be the Institutional Framework to support and finalize the Draft Regional BWM Strategy and to ensure the execution of the Action Plan. It was also agreed to establish a Regional Task Force to facilitate the process. This activity was further strengthened under a MoU signed between SACEP and IMO in August 2013.

Accordingly, the First workshop was held to establish the Regional Task Force and to Develop a Regional Strategy and Action Plan for Ballast Water Management (BWM) in South Asia from 24-25 February 2014 in Colombo, Sri Lanka. It brought together the key decision makers from governments dealing with the BWM Convention to revisit the Draft Regional Strategy, amended it in accordance with the latest developments and finalized the Regional Strategic Plan for the full implementation of the BWM Convention in South Asia.

The 2nd Regional Workshop on the BWM Convention: Compliance Monitoring and Enforcement (CME), Risk Assessment and Port Biological Baseline Surveys (PBBS) was held in Malé, Maldives, from 18 - 20 June 2019 to assist the Administrations of the South Asia region in preparing for ratification and implementation of the BWM Convention, with a special emphasis on compliance monitoring and enforcement (CME) as well as port biological baseline surveys (PBBS) and risk assessments. Based on the feedback received from the SAS Member States the CME, Risk Assessment and PBBS were issues that most of the States were in need of detailed information. Accordingly, the workshop provided

guidance for authorities involved in flag and port State control surveys and inspections carried out under the provisions of the BWM Convention. The workshop also provided the theory and practical training on how to plan and conduct PBBS for introduced marine species using standardized protocols, and how to conduct a risk assessment for the implementation of the BWM Convention with a focus on ship targeting for port State control and exemptions under regulation A-4 and the Guidelines for risk assessment under regulation A-4 of the BWM Convention (G7).

SACEP joined the GloFouling Project of the International Maritime Organization (IMO) as the Regional Coordinating Organization (RCO) for the South Asian Seas Region. This is a sub-activity of the Ballast Water Management strategy. This strategy played an instrumental role in the establishment of two significant events in the ballast water calendar: the IMO-GloBallast Research and Development (R&D) Forum and the International Conference on Ballast Water Management (ICBWM). These events were well-informed, highly-regarded and attracted multi-stakeholder gatherings on the subject and were pivotal in driving innovation-innovation in treatment systems, transparency in testing those systems, sampling and monitoring technologies and contingency-based measures amongst others.

Follow up actions:

1. The countries of the region are requested to share knowledge and experience on the ratification and implementation of the BWM Convention, including between Parties and non-Parties. Such regional collaboration could be pursued through the South Asian Seas Programme (SASP), which has an important role in facilitating and supporting activities for the protection of the marine environment in the South Asian Seas (SAS) region.

2. Any formal request for training at the national level on the BWM Convention should be considered under the Integrated Technical Cooperation Programme (ITCP) planning for the next biennia depending on available funds. The importance of the County Maritime Profile (CMP) was also highlighted and the Administrations in the region should ensure to update their CMPs to facilitate ITCP planning.

SAS Member States are requested to cooperate with SACEP/SASP under GloFouling project activity.

Regional Coral Reef Monitoring for Adaption and Resilience

South Asia Coral Reef Task Force (SACRTF) was launched in July 2007, an important event in the history of SACEP and the South Asian Seas Programme. The establishment of SACRTF was endorsed at the 10th Meeting of the Governing Council (GC) of SACEP held in 2007 and the progress was reported at the 4th Inter-governmental Meeting of Ministers (IMM) of the South Asian Seas Programme on 22nd May, 2008 in Jaipur, India. SACRTF was to facilitate and coordinate management of coral reefs and associated ecosystems at a national level, and to promote collaborative action at the regional level, encouraging synergies for trans-boundary responses to shared environmental challenges and raising the political and public profile of coral reef related issues in the SAS region.

SACEP and International Coral Reef Initiative (ICRI) is in the process of revitalizing SACRTF by linking to 'The Global Coral Reef Monitoring Network'**, one of the ICRI networks,** working through a global network of stakeholders coordinated, when possible, by regional nodes for the management and conservation of coral reefs.

SACEP will be organising a Regional Workshop supported by ICRI under the proposed collaboration. The major aim of this initiative is to organize a regional workshop for the South Asian Seas Region with the National Focal Points, officials in charge of coral reefs including relevant stakeholders in order to achieve the final outcome.

The objectives of this initiative are :

- To contribute to the production of the 2020 report on Status of Coral Reefs of the world.
- To sign a Data Sharing Agreement (DSA).
- To strengthen the South Asia Coral Reef Task Force (SACRTF).

The 6th Inter-governmental Meeting of Ministers of the South Asian Seas Programme is requested to recommend the continuation of this activity for the benefit of the South Asian Seas Region

Promotion of the London Protocol in the South Asian Seas Region

In 1972, the Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matters (London Convention) was adopted aiming at banning the dumping of specified wastes at sea, marking a significant step towards regulating the dumping of wastes at sea and protecting the marine environment from human activities. The London Convention being one of the earliest Multilateral Environmental Agreements is very well placed in protecting marine environment for dumping of wastes.

The London Protocol to the Convention (LP), adopted in 1996, built on and modernized the principles developed under the earlier treaty. The LP has been protecting the oceans from indiscriminate dumping of wastes and other matter for more than two decades.

This LP provides comprehensive framework for embracing the precautionary principle and prohibiting all dumping of wastes and other matter, except for those on a prescribed list, which may be assessed and given permits for dumping. A monitoring mechanism is also included for further measures. As the LP support other such agreements and declarations and is in the line with mandate of SAS as Regional Seas Action Plan, it needs to be ratified completely by SAS region member states to enter into force for combating the human generated pollutions discharging to coast and marine environment of SAS region. The LP is in line with many other resolutions, conventions and regional seas agreements. South Asian Seas (SAS) region would benefit from this in protecting marine environment from land-based sources of pollution.

International Maritime Organization (IMO) is the secretariat of LC/LP. SACEP organized the First Regional Workshop on Promotion of the London Protocol in the South Asian Seas (SAS) Region, with the financial and technical support of IMO and hosted by the Ministry of Environment and Forest, Government of Bangladesh from 10 – 12 July 2019 to sensitize relevant authorities to the benefits and implications of ratifying, implementing and enforcing the LP. A special emphasis was placed on the protection of ports and ocean environment. The participants of SAS member countries understood the importance of ratification of the London Protocol. A National Workshop was also organized for Government Officials of Bangladesh on 12th July 2019 back to back with the Regional Workshop aiming to produce a draft National Action Plan for London Protocol ratification and implementation in Bangladesh and highlighted the future cooperation when protecting the marine environment in the region, thus maximizing the benefits that can be derived from full implementation of this instrument.

The Member States of the South Asian Seas programme is requested to consider ratifying the London Protocol and reaffirm the support of SACEP/SASP in collaboration with the International Maritime Organization in implementing the same in appropriate manners at their national levels for the common benefit of the Region.

Sustainable Blue Economy Initiatives

South Asian Seas Region

Coral reefs, Mangroves, Seagrass and coastal aquaculture in South Asia Seas (SAS) region are particularly vulnerable to land-based pollution, which not only threatens the health of the ecosystems and the biodiversity contained therein, but also the health and wellbeing of hundreds of millions of people who depend on ocean habitats services for nutrition, livelihoods and a safe living environment. Increasing sediment and nutrient loads have been linked to decline the ocean habitats around the world. Release of excess nutrients into coastal waters causes eutrophication, resulting in macroalgae proliferation, algal blooms and the creation of hypoxic 'dead zones', which can kill large numbers of organisms.

The SAS region is rich in marine biodiversity. By taking this advantage, countries in the SAS region achieve huge tourist economic gain. In order to maintain the harmony and synergic relations among human activities and ecology of coastal environment, SACEP in collaboration with UN Environment organized an initial dialogue together with expertise from Government of Sri Lanka, Civil society and academia to discuss the best possible management practices to overcome the current prevailing issues in March 2018.

As a result, a pilot project was initiated with the cordial support and co-ordination of the National Focal Point of Sri Lanka as a candidate country for a demonstration initiative given the diversity of its coral reef ecosystems, the livelihoods they support and the multiple threats that climate change and bleaching events, in combination with pollution have been exerting on reef ecosystems in the country. To best demonstrate the tangible cause-effect linkages between land-based activities, pollution and the impacts on coastal ecosystems, a watershed area that is undergoing land degradation with an offshore coral reef ecosystem that has been affected from nutrient and wastewater pollution was identified. Reef communities at particular locations in the country have demonstrated resilience to recent bleaching events, signaling possibly a higher chance of being less impacted by climate change in the coming decades. This made a good case for their protection from anthropogenic stressors where these reefs may be used in the future for restorative work in other locations. This further strengthened the case of integrated source-to-sea management.

The First Phase of the project focused on land-based sources of pollution (solid, wastewater and nutrient) in the Maduru Oya watershed in Sri Lanka. The lesson learnt from the Sri Lanka pilot project exercises will further scale up to the other Member States of the SAS region to develop guideline and appropriate measures. The pilot project was a Small-Scale Funding Project done during a limited period of time.

As the Second Phase the Regional Stakeholder Meeting addressing on Sustainable Nutrient Management to reduce soil, water and coastal pollution in (SAS) region was held from 1-2 April 2019 in Colombo, Sri Lanka to demonstrate the outcomes of the Desk Reviewed Pilot Study. It was understood by the attendees and experts that the pilot project could make a

significant contribution for the achievement of SDG 2030 targets and planned to upscale the work regionally – potentially in both the Bay of Bengal and the Arabian Sea.

In this regard, the focus is to be on blue economy, reducing solid wastes in the SAS coastal and marine environment, reducing nutrients and wastewater pollution on coastal and marine ecosystems (coral reefs, seagrass and mangroves) to improve the livelihoods of coastal people in the region. All the representatives agreed to develop a transboundary International Waters GEF funded project towards the protection of Coral reefs, Mangroves and Seagrass in Bay of Bengal Large Marine Ecosystem (BOBLME), Arabian Sea and then also partly in the Indian Ocean.

SACEP and UN Environment facilitated a Review Meeting back to back with the Fourth International Nitrogen Management System (INMS-4) Project Meeting with all the South Asia countries representatives (governments, experts and scientists) attending the INMS-4 on 30th April 2019 at UN Headquarters, Nairobi, Kenya.

The following activities were targeted:

a. Develop project concept paper (PIF)

- ✓ Led by SACEP together with IW GEF consultant – by **Mid-September 2019**
- ✓ Submission to SAS member countries Government for reviews – **October 2019**
- ✓ Submission to SACEP Governing Council and IMM for appropriate decision for its further action by SAS member country Governments - **November 2019**
- ✓ Final review by SAS member country Government comments if any - **January 2020**

b. Submission of the project concept to GEF Secretariat

- ✓ Led by Isabelle Vanderbeck – **March 2020**

c. Feedback and review of the project concept by GEF Secretariat – **June 2020**

For the preparation of the larger GEF-VII project 4, SAS member countries have share their country specific criteria and one member country is yet to submit. A decision has to be made whether to develop two Concept Notes for these large marine ecosystems, or to whether to integrate them into one joint concept.

- *Request the remaining Member State to share the inputs for submission to the GEF proposal on time with UN Environment.*
- *Request SAS Member governments for necessary endorsement of this project proposal as per appropriate GEF procedure for successful execution and implementation in SAS region.*

South Asian Seas Programme

SASP Country Contribution Status: as at 30 September 2019

Country	Arrears upto Jan 2013	Agreed CC 2013	Received CC 2013	Arrears upto Dec 2013	Agreed CC for 2014	Received CC 2014	Arrears upto Dec 2014
	US $	US $	US $	US $	US $	US $	US $
Bangladesh	103,267.40	13,335.00		116,602.40	13,335.00		129,937.40
India	-	32,185.00		32,185.00	35,405.00	67,590.00	-
Maldives	-	5,975.00	5,975.00	-	5,975.00	5,975.00	-
Pakistan	102,199.05	27,130.00	26,733.87	102,595.18	27,130.00	26,708.95	103,016.23
Sri Lanka	62,406.70	13,335.00		75,741.70	13,335.00		89,076.70
TOTAL	**267,873.15**	**91,960.00**	**32,708.87**	**327,124.28**	**95,180.00**	**100,273.95**	**322,030.33**

Country	Arrears upto Dec 2014	Agreed CC for 2015	Received CC 2015	Arrears upto Dec 2015	Agreed CC for 2016	Received CC 2016	Arrears upto Dec 2016
	US $	US $	US $	US $	US $	US $	US $
Bangladesh	129,937.40	13,335.00		143,272.40	13,335.00	143,272.40	13,335.00
India	-	35,405.00	35,405.00	-	35,405.00	35,405.00	-
Maldives	-	5,975.00	5,975.00	-	5,975.00	5,975.00	-
Pakistan	103,016.23	27,130.00	53,567.83	76,578.40	27,130.00	26,964.17	76,744.23
Sri Lanka	89,076.70	14,668.50		103,745.20	14,668.50	118,413.70	-
TOTAL	**322,030.33**	**96,513.50**	**94,947.83**	**323,596.00**	**96,513.50**	**330,030.27**	**90,079.23**

Country	Arrears upto Dec 2016	Agreed CC for 2017	Received CC 2017	Arrears upto Dec 2017	Agreed CC for 2018	Received CC 2018	Arrears upto Dec 2018
	US $	US $	US $	US $	US $	US $	US $
Bangladesh	13,335.00	13,335.00	26,670.00	-	13,335.00		13,335.00
India	-	35,405.00	35,405.00	-	35,405.00		35,405.00
Maldives	-	5,975.00	5,975.00	-	5,975.00		5,975.00
Pakistan	76,744.23	27,130.00	-	103,874.23	27,130.00	54,132.69	76,871.54
Sri Lanka	-	14,668.50	-	14,668.50	14,668.50	14,668.50	14,668.50
TOTAL	**90,079.23**	**96,513.50**	**68,050.00**	**118,542.73**	**96,513.50**	**68,801.19**	**146,255.04**

Country	Arrears upto Dec 2018	Agreed CC for 2019	Received CC August 2019	Arrears upto 30 September 2019
	US $	US $	US $	US $
Bangladesh	13,335.00	13,335.00	13,335.00	13,335.00
India	35,405.00	35,405.00	70,810.00	-
Maldives	5,975.00	5,975.00	11,950.00	-
Pakistan	76,871.54	27,130.00		104,001.54
Sri Lanka	14,668.50	14,668.50	13,335.00	16,002.00
TOTAL	**146,255.04**	**96,513.50**	**109,430.00**	**133,338.54**

PROJECTS SANCTIONED FROM APRIL 2014 to 30 SEPTEMBER 2019

Activity	Donor	Budget US $
To organize a regional meeting of relevant national authorities dealing with oil spill preparedness and response and to discuss the way forward to finalize the Regional Strategic Plan for the full implementation of the BWM Convention in South Asia	International Maritime Organization (IMO)	62,867.79
To organize Five National Preparatory Meetings (Bangladesh, India, Maldives, Pakistan, Sri Lanka) for discussing National Contingency Plan and advances in the field of Oil Spill Preparedness and Response and to prepare and Organization of the Regional Exercise	International Maritime Organization (IMO)	85,400.00
To organize a Regional Workshop for updating the Regional Oil and Chemical Spill Contingency Plan and its Annexes for South Asian Seas Region, Male', Maldives	International Maritime Organization (IMO)	44,000.00
To assist member states in the process of acceptance of the MoU for Cooperation on the Response to Oil and Chemical Pollution	UNEP - Division of Environmental Policy Implementation	10,000.00
To conduct a Scoping Study of Nutrient pollution on the coastal and marine systems of South Asia and to organize a sub-regional validation workshop	Food and Agriculture Organization of the United Nations ("FAO")	28,539.94
To organize a regional workshop to implement Nitrogen Management for South Asian Seas (SAS) Region with SACEP and International Nitrogen Management System (INMS)	Centre-for-Ecology-&-Hydrology, United Kingdom	35,020.00
Development of a Regional Marine and Coastal Biodiversity Strategy for the South Asian Seas Region	UNEP	56,000.00
To finalize and adopt the Regional Marine and Coastal Biodiversity Strategy for South Asia	UNEP-ROAP	50,000.00
For preparation of a Regional Action Plan on Marine Litter for the South Asian Seas region based on national information collection.	UNEP Ecosystems Division, Nairobi, Kenya,	50,000.00

Annex XV
6IMM.SASP/ NFP

Activity	Donor	Budget US $
To contribute to strengthening local and regional enabling environments to foster the uptake and adoption of innovative approaches in reducing threats to coral reefs from nutrient and wastewater and other land-based pollution in Sri Lanka .	UNEP Ecosystems Division, Nairobi, Kenya,	84,700.00
MoU Between SACEP and International Maritime Organization (IMO) for effective implementation of IMO's Global Maritime Standards and the Marine Environment Strategies adopted by SACEP under the South Asian Seas Programme (SASP).	IMO, London	72,220.00
TOTAL		**578,747.73**

SOUTH ASIAN SEAS PROGRAMME (SASP)

PROPOSED BUDGET FOR 2020 - 2021

			PRESENT AGREED INCOME US $	EXPENDITURE US $
1	**ANTICIPATED INCOME**			
	1.1	BANGLADESH	13,335.00	
		INDIA	35,405.00	
		MALDIVES	5,975.00	
		PAKISTAN	27,130.00	
		SRI LANKA	14,668.50	
		TOTAL COUNTRY CONTRIBUTIONS	**96,513.50**	
	1.2	Interest earned	29,000.00	
		TOTAL INCOME	**125,513.50**	
2	**ESTIMATED EXPENDITURE**			
	2.1	Senior Programme Officer (Regional)		40,000.00
	2.2	Local Staff		20,500.00
	2.3	Meetings & International Travel		15,000.00
	2.4	Administrative Cost		12,000.00
	2.5	Rental & Maintenance		15,500.00
	2.6	Furniture, Equipment & Consumables		8,000.00
	2.7	Documents		8,000.00
	2.8	Contingencies		5,000.00
		SUB TOTAL		124,000.00
3		Capital Costs		17,500.00
4		TOTAL EXPENDITURE		**141,500.00**
5		**INCOME OVER EXPENDITURE**		**(15,986.50)**

Annex XVI
6IMM.SASP/ NFP

SOUTH ASIAN SEAS PROGRAMME (SASP)

PROPOSED BUDGET FOR 2020 - 2021

			ANTICIPATED INCOME WITH 10% INCREASE US $	EXPENDITURE US $
1	**ANTICIPATED INCOME**			
	1.1	BANGLADESH	14,668.00	
		INDIA	35,405.00	
		MALDIVES	6,572.00	
		PAKISTAN	29,843.00	
		SRI LANKA	14,668.50	
		TOTAL COUNTRY CONTRIBUTIONS	**101,156.50**	
	1.2	Interest earned	29,000.00	
		TOTAL INCOME	**130,156.50**	
2	**ESTIMATED EXPENDITURE**			
	2.1	Senior Programme Officer (Regional)		40,000.00
	2.2	Local Staff		20,500.00
	2.3	Meetings & International Travel		15,000.00
	2.4	Administrative Cost		12,000.00
	2.5	Rental & Maintenance		15,500.00
	2.6	Furniture, Equipment & Consumables		8,000.00
	2.7	Documents		8,000.00
	2.8	Contingencies		5,000.00
		SUB TOTAL		124,000.00
3		Capital Costs		17,500.00
4		TOTAL EXPENDITURE		**141,500.00**
5		**INCOME OVER EXPENDITURE**		**(11,343.50)**