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On behalf of:

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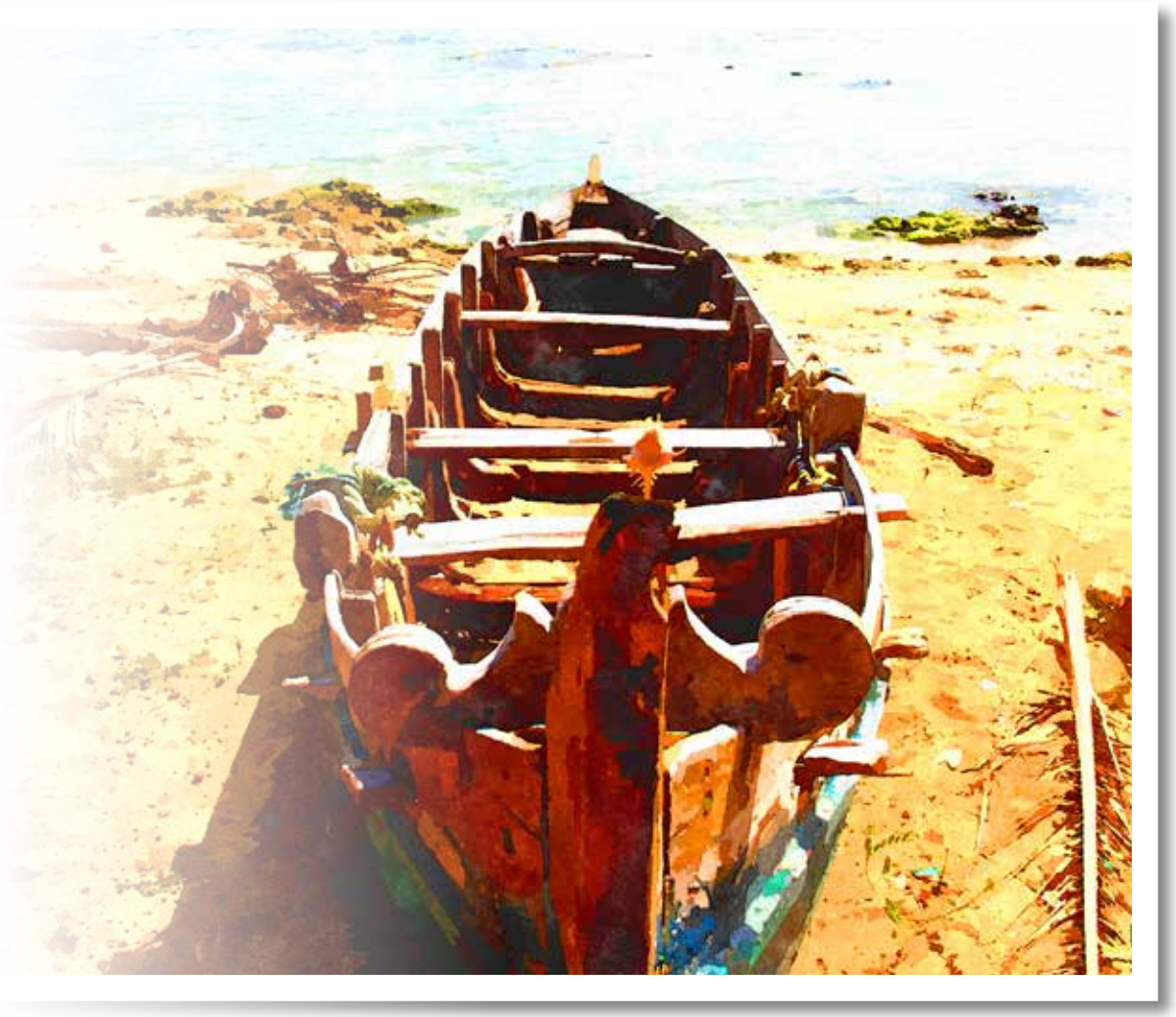
of the Federal Republic of Germany

Trainer's Guide

Communicating Coastal and Marine Biodiversity Conservation and Management Through the Media

Using participatory training methods



भारतीय वन्यजीव संस्थान
Wildlife Institute of India

ST PAULS INSTITUTE OF COMMUNICATION EDUCATION

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Trainer's Guide
Communicating Coastal and Marine Biodiversity Conservation and Management Through the Media
Using participatory training methods

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Trainer's Guide

Communicating Coastal and Marine Biodiversity Conservation and Management Through the Media

Using participatory training methods

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FOREWORD

Indian media has played a pivotal role in creating higher levels of awareness and support for environmental and biodiversity conservation. The focus has largely been on the terrestrial issues, with very less coverage of the coastal and marine conservation issues. Media has a vast potential of taking the message of coastal and marine biodiversity conservation to the masses and key stakeholders. Understandably, media professionals need specific and customized resource material to further their own knowledge on the issue.

I am pleased to present the training resource material on 'Communicating Coastal and Marine Biodiversity Conservation and Management through the Media'. This competence-based training material for media professionals, students and trainers has been conceptualized and realized under an Indo-German technical cooperation project entitled 'Conservation and Sustainable Management of Coastal and Marine Protected Areas (CMPA)' and is being jointly implemented by the Ministry of Environment, Forest and Climate Change (MoEFCC) and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH on behalf of the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB).

This material has been developed to address the gaps in knowledge, skills and appreciation pertaining to coastal and marine biodiversity. It is also an important step in India's march towards achieving Aichi Biodiversity Target 19 relating to increasing knowledge and promoting science-based technologies relating to biodiversity.

I congratulate all those who were involved in this challenging assignment, especially the lead coordinators and editors Dr. Neeraj Khera, GIZ, Dr. K Sivakumar, Wildlife Institute of India, Mr. Luke Mendes, Media Trainer, Mumbai, Mr. S. Gopikrishna Warrier, PANOS South Asia, Mr. Darryl D'Monte, Forum of Environmental Journalists of India, and Mr. Dirk Asendorpf, Journalist and Media Trainer, Germany. I also place on record the guidance by Shri Hem Pande, former Special Secretary, Mr. Edgar Endrukaitis, former Programme Director, Mr. Konrad Uebelhoer, Programme Director, Indo-German Biodiversity Programme, GIZ, Dr V B Mathur, Director, Wildlife Institute of India, and Dr. J. R. Bhatt, Scientist-G MoEFCC in this endevaour.

I wish every success to India's media training institutions in using this learning resource for taking forward the issues of coastal and marine biodiversity conservation into the mainstream media. I am confident that this material will help media professionals and students in advancing their knowledge and will encourage them to do their best to generate the required appreciation for conserving coastal and marine biodiversity.

7.12.16

Dr. Amita Prasad
Additional Secretary
Ministry of Environment, Forest and Climate Change

7th December, 2016
New Delhi

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Preface and Acknowledgements

This trainer's guide is part of the resource material developed for media professionals, trainers and students for communicating coastal and marine biodiversity conservation and management through the media. It has been developed under the Human Capacity Development component of the Indo-German project "Conservation and Sustainable Management of Existing and Potential Coastal and Marine Protected Areas" (CMPA).

The Curriculum "Communicating coastal and marine biodiversity conservation and management through the Media" is based on competencies-based approach of curriculum development and therefore, is best suitable for media professionals and students as a ready guide for reporting and communicating on coastal and marine issues.

The training approach and methods suggested in this guide were pilot tested with the post-graduation students of the course "Communication for Development (C4D)" during December 2014-May 2015 at the Xavier Institute of Communication (XIC) Mumbai. The curriculum was implemented as part of the mainstream curriculum at the four media training institutions: Xavier Institute of Communication (XIC) Mumbai, St Xavier's College, Mumbai; St. Pauls Institute of Communication Education (SPICE) Mumbai, and Department of Communication and Journalism, Gujarat University.

Based on the review and feedback from the students, media trainers, management of the training institutions who implemented this curriculum, as well as external experts, the curriculum, training material and methods have been revised and edited three times over the past two years. The present training material is the refined version after this review and revision process.

We would like to thank the 2014 batch of "Communication for Development" (C4D) students at Xavier Institute of Communication (XIC), Mumbai, who participated in the pilot testing of this material in 2014. We would like to also thank the students and faculty of the BMM Department of St Xavier's College Mumbai, St Paul Institute of Communication and Education (SPICE), and Department of Communications, Journalism and Public Relations of Gujarat University for implementing courses based on this training resource material and using participatory training methods. A special word of gratitude to the management and faculty of the XIC, especially Fr. Lawrence Ferrao SJ, Director, and Prof J. B. Mistry, Dean for guiding and facilitating the process of pilot testing in the most efficient and effective way possible. Special thanks to Dr. Agnelo Menezes, Principal of St Xaviers College, Fr Shaiju Joseph and Dr (Fr) Dominic Savio D'Silva, Directors of SPICE, and Dr Sonal Pandya, Head of the Department at Gujarat University for their support and commitment to integrate the topic of coastal and marine biodiversity as part of the media curriculum at their respective institutions and departments, and for peer review of the training material.

Section 1 and 2 of this trainer's guide were also tested and revised on the basis of two events that need special mention: the Training of Trainers workshops organized during August 6-7, 2014 in Gandhinagar, Gujarat in partnership with the Gujarat Forest Department, and September 11-13, 2014, in Mumbai. We would like to thank the master trainers, Stefan Bannach and Ms Manali Shah, and all the participants of the two workshops for their valuable contribution to the customization of participatory training methods.

We would like to thank all the contributors of the Curriculum Development Workshop of 23–24 July 2014 in Mumbai for shaping the curriculum and clearing the path for elaboration of the contents of this resource material. We are thankful to the experts who contributed text, case studies and key

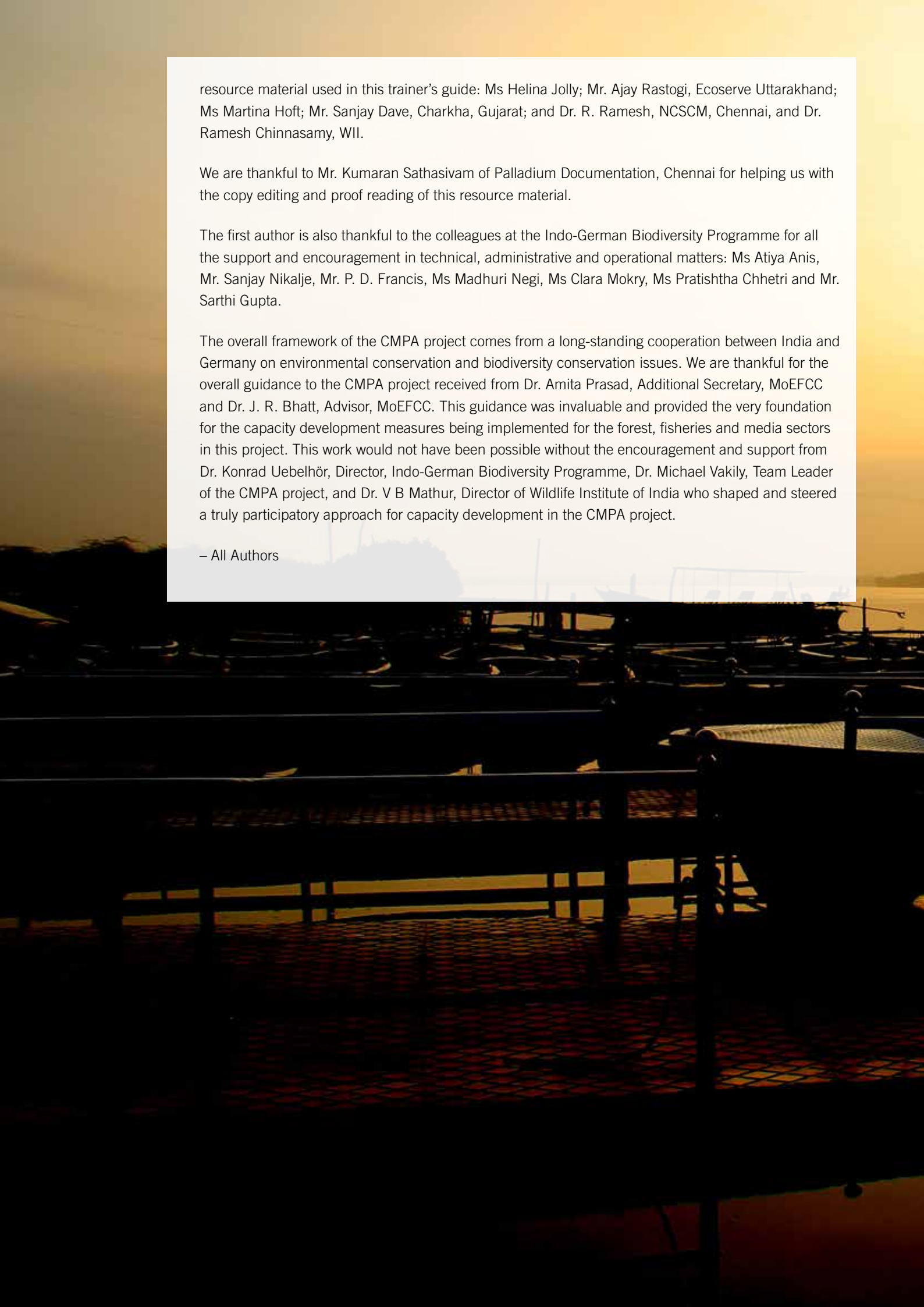
resource material used in this trainer's guide: Ms Helina Jolly; Mr. Ajay Rastogi, Ecoserve Uttarakhand; Ms Martina Hoft; Mr. Sanjay Dave, Charkha, Gujarat; and Dr. R. Ramesh, NCSCM, Chennai, and Dr. Ramesh Chinnasamy, WII.

We are thankful to Mr. Kumaran Sathasivam of Palladium Documentation, Chennai for helping us with the copy editing and proof reading of this resource material.

The first author is also thankful to the colleagues at the Indo-German Biodiversity Programme for all the support and encouragement in technical, administrative and operational matters: Ms Atiya Anis, Mr. Sanjay Nikalje, Mr. P. D. Francis, Ms Madhuri Negi, Ms Clara Mokry, Ms Pratishtha Chhetri and Mr. Sarthi Gupta.

The overall framework of the CMPA project comes from a long-standing cooperation between India and Germany on environmental conservation and biodiversity conservation issues. We are thankful for the overall guidance to the CMPA project received from Dr. Amita Prasad, Additional Secretary, MoEFCC and Dr. J. R. Bhatt, Advisor, MoEFCC. This guidance was invaluable and provided the very foundation for the capacity development measures being implemented for the forest, fisheries and media sectors in this project. This work would not have been possible without the encouragement and support from Dr. Konrad Uebelhör, Director, Indo-German Biodiversity Programme, Dr. Michael Vakily, Team Leader of the CMPA project, and Dr. V B Mathur, Director of Wildlife Institute of India who shaped and steered a truly participatory approach for capacity development in the CMPA project.

– All Authors



Trainer's guide navigator

This trainer's guide facilitates delivery of the curriculum 'Communicating Coastal and Marine Biodiversity Conservation and Management Through the Media' by trainers and faculty members of media-training institutes and universities in India.

This guide serves as an interactive working document composed of flexible modules, expeditions and media product development ideas and corresponding training methods for their implementation. The training material and methods can be customized for offering courses varying from a semester-long programme to a 3-day training, to suit the learning objectives, audience, time availability, resource availability and other factors. It is also possible to include new case studies, relevant reading material and training methods as they become available.

The guide consists of five sections:

Section 1: About the curriculum and training resource material

This section provides an overview of the concept of capacity development, a brief history of the development of training material and the pilot testing.

The section also provides an understanding of the expected learning outcomes for different target groups, possible schedule of the training and trainers' profile.

Section 2: Overview of the modules and session delivery

This section provides an overview of the seven modules with their learning outcomes, summaries and key messages. A session-wise presentation of the modules contents and descriptions of the most appropriate training methods are provided. This will help the trainers implementing this curriculum in the most efficient way. The trainers will of course be required to refer to the Trainer's Guide on Participatory Training Methods for details of training methods. Lists of sources and references are provided for each module in this section itself.

Section 3: Facilitating development of media products

This section provides an overview of the relevance and process of developing media products by the participants taking the training course. The section also provides samples of the media products developed by the participants during trainings delivered in the past.

Section 4: Tools and handouts

This section provides detailed information to be used as resource both during and after the training. They include a comprehensive glossary, detailed case studies, handouts, simulation material, references and other material. The trainers can customize and take printouts for their own use or for the participants, as the case may be.

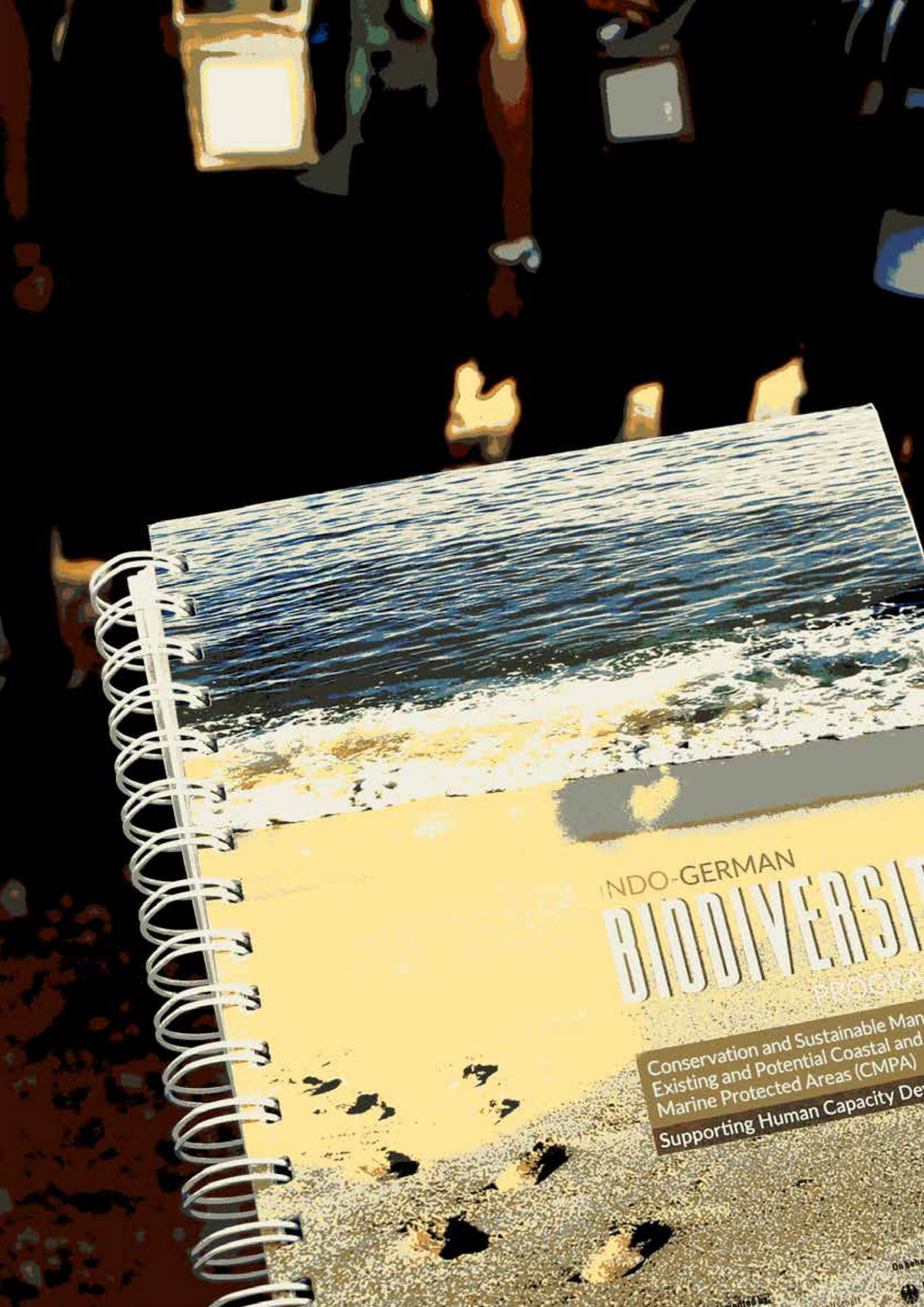
The trainers are, however, encouraged to try new methods and customize the existing methods as and when required to enhance the learning experience of the participants.

SECTION 1

About the curriculum and training resource material

This section provides an overview of the concept of capacity development, a brief history of the development of training material and the pilot testing.

The section also provides an understanding of the expected learning outcomes for different target groups, possible schedule of the training and trainers' profile.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Supporting Human Capacity De

1.1 Why develop a curriculum on coastal and marine biodiversity?

Capacity development for sustainable and effective management of coastal and marine biodiversity and protected areas

A major determinant of well-being and livelihood security of coastal communities is the availability of marine and coastal biodiversity resources and access to these resources. Loss of biodiversity and the resulting loss of ecosystem services, therefore, have far-reaching impacts on livelihoods and the overall well-being of coastal communities.

Effective engagement of the media is one of the important factors in achieving higher levels of public awareness and support for managing coastal and marine biodiversity. Facilitating holistic capacity development measures for media professionals as well as students is key in ensuring community participation in conservation efforts.

Capacity development is the process of developing capacities of individuals and shaping joint learning processes such that the individuals are enabled to achieve sustainable results within their own system of reference.
Capacity development facilitates change among people in three dimensions: knowledge, skills and values/attitudes. A combination of traditional and innovative capacity development measures is required to achieve the objective.

One of the most sustainable ways to implement capacity development for media on coastal and marine biodiversity is to develop an institutional system where the media training organizations integrate coastal and marine modules as part of their regular curriculum to deliver long term courses and short terms trainings for media professionals and students; the media institutes avail the thematic expertise from a nation-wide network of scientific experts as well as MPA managers; trainers and faculty implementing these courses and trainings are also equipped with and use participatory training approach and methods; and the participants are facilitated to undergo experiential learning via expeditions and development of media products on coastal and marine themes.

1.2 The process of curriculum development

1.2.1 Capacity needs assessment

The first step in supporting the capacity-development process of the stakeholders relevant to conservation and sustainable management of MPAs is to assess what key capacities already exist and what additional capacities might be required by specific stakeholders to contribute to the project objectives. The capacity needs assessment (CNA) was planned, organized and executed under the human capacity development (HCD) component of the project.

The process of CNA was truly participatory and cross-sector in its approach, with the involvement of three sectors key for MPAs in India, viz, the forest, fisheries and media sectors. Institutions as well as individual experts participated in the assessment, which was carried out to identify capacity needs at the organizational and individual levels. At the individual level, capacities were assessed in the knowledge, skills and values dimensions. A special focus of this assessment process was identifying capacity needs for enhancing cross-sector and cross-stakeholder cooperation. Three strategic goals and 12 activity areas were identified on the basis of the findings of the CNA by the project to implement its HCD measures.

A cross-sector brainstorming workshop brought about a common understanding of the forest, fisheries and media sectors regarding important issues in coastal and marine biodiversity conservation and management.

The study established that concepts and issues relevant to coastal and marine biodiversity, needs to be integrated into the existing curriculum of media students and included in training programmes conducted for media faculty members and trainers as well as practicing media professionals. This process will enhance the competence of existing and future media professionals in communicating coastal and marine issues within their areas of function.[1]

1 Khera, N., Mathur V. B., Sivakumar, K., Yadava, Y., D'monte, D., Warrier, S. G., Dave, S., Mukherjee, R., & Hariprakash, V. (2013). Capacity development needs for sustainable management of marine and coastal protected areas in India: a cross-sector assessment. In Sivakumar, K. (ed) Coastal and Marine Protected Areas in India: Challenges and Way Forward, ENVIS Bulletin: Wildlife & Protected Areas. Vol. 15. Wildlife Institute of India, Dehradun-248001, India. 264- 273 pp.]


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1.2.2 Curriculum development workshop

To develop a competence-based curriculum and training material for media students and practitioners and to identify suitable partners to deliver the course sustainably, the project organized a series of meetings and group discussions with key media experts and training organizations during 2013-14. A major milestone was the 2-day curriculum development workshop, on 23 and 24 July 2014 at Mumbai. The workshop addressed two objectives:

i. Deliberate the overall curriculum framework, broad contents and initial ideas relating to the coastal and marine biodiversity curriculum for media students and media professionals.

ii. Identify and recommend potential authors, developers of the training material and editorial group members.

The workshop was attended by 31 participants, who represented a good mixture of coastal and marine experts, fisheries experts, protected area managers, media professionals, media trainers, science faculty, forest department representatives, NGOs and capacity development experts. The workshop concluded capacity development efforts for media need to be focussed on graduation and post graduation students of different streams of media, practicing media professionals, and faculty and trainers of the media training organizations. The workshop participants also recommended to develop a detailed guide for trainers who will be expected to deliver the trainings on this topic.

A core team of authors and editors was identified among the workshop participants, and also other experts to elaborate the curriculum, identify sources and topics etc. It took five months for putting down the contents and structure of the training material, several rounds of review, editing, re-writing and then special editing to ensure cross-sector linkages. Special efforts were taken to work on the language of the scientific inputs to make it suitable for the media students. The first draft was then ready in December 2014 to be pilot tested.


Turtle Conservation Work

1.2.3 Pilot testing at Xavier Institute of Communications (XIC), Mumbai

The project partnered with the Xavier Institute of Communication (XIC) Mumbai for pilot testing of all the training resource material. GIZ and XIC together organized pilot testing of the material on the post-graduation students of the course "Communication for Development (C4D)" during December 2014-May 2015.

A phased approach was adopted to pilot test the curriculum, where the first three modules were in the first phase, two modules and field expedition was piloted. Modules 1 and 2 were organized with ample interactive sessions and a simulation game. Module 3 started with an interaction with a Marine Protected Area Manager at their workplace, followed by a coastal expedition to a coastal fishing community, a land-fill site, and infrastructure development project nearby a mangrove habitat.

The rest of the modules and the field learning journal were pilot tested at a winter school in February 2015. This winter school also served as a 'training of trainers' for faculty members and trainers of the media-training institutes from Maharashtra and Gujarat, who would be implementing the curriculum in the near future.

The pilot testing received a very positive response from the students, who found the training extremely beneficial in developing a strong knowledge base about coastal and marine biodiversity, leading to greater appreciation of the need for conservation.

After the training, the students were better equipped to communicate coastal and marine issues, as their understanding of the technical and scientific aspects of the issues were enhanced. The media products developed by the students were important outcomes of the pilot testing. These encapsulated their knowledge about the media as well as coastal and marine issues.

1.2.4 Training of Trainers

Six Training of Trainers (ToT) workshops were conducted during 2014-16 to facilitate a pool of about 45 trainers, who are in agreement with the course approach and are competent to deliver the contents using participatory training methods.

1.3 The curriculum and training resource material explained

1.3.1 About the curriculum

This curriculum is suitable for undergraduate and postgraduate media students at Indian media training organizations and universities, and for the media professionals.

This curriculum is designed to be a stand-alone course to be delivered over a semester or as an intensive 3-day training for the media professionals. Because of its modular structure and participatory training methods, it provides enough flexibility and can be customized for delivery as a module within an existing course at a training Institutes or as a dedicated session at a Media training workshop as well. The curriculum is also suitable for a field training expedition for the media professionals.

The curriculum is intended to develop a strong knowledge base about coastal and marine biodiversity and appreciation for conservation among media professionals.

1.3.2 An overview of the modularized curriculum

Module 1: Introduction to Biodiversity and Ecosystem Services

This module provides the basic introduction to the concept of biodiversity and the interconnectedness of human beings and biodiversity. Concept of ecosystems services is the central focus of this module. The module provides details of different facets of the concept of biodiversity and different examples of coastal and marine habitats and species. The module also touches upon the concept of conservation shortcuts such as keystone species, knowledge of which is a must for media processionals.

Module 2: Setting the context: Why are the coasts important?

This is the most comprehensive and time-intensive module of the course, and it sets the foundation of the issues of coastal and marine conservation for media. This module places the topic of coastal and marine biodiversity conservation into the overall development context, and looks into the interrelationship of conservation and economic development, the positive benefits that coastal and marine biodiversity brings to human societies via ecosystem services, the challenges in balancing conservation with the economic development, and a detailed understanding of the threats that the coastal and marine ecosystems are facing.

Module 3: Coastal and marine protected areas

This module provides the much needed information on marine protected areas (MPAs), the differences between MPAs and terrestrial protected areas, the categories and types of MPA, as well as their management systems and also an overview of the element of management effectiveness. The modules covers the key issues of fisheries and indigenous communities in the context of MPAs. Apart from providing information on different types of MPAs in India and their location, the module also elaborates on the benefits of and challenges for MPAs.

Module 4: Governance, law and policy framework for coastal and marine biodiversity

This module gives an outline and a brief history of the diverse governance, legal and policy frameworks for managing coastal and marine ecosystems, which have been presented in two sections. The first section deals with global conventions and guidelines that provide a framework to the maritime countries to draft national policies and legislation for conservation and management of coastal and marine habitats and species. The second section provides an overview of the major policies, law, rules and guidelines in India.

Module 5: Why do we not hear more about the coast?

This module will help media students and professionals in reflecting on the way media communicate coastal and marine conservation issues. Since conservation is not in the media priority and issues related to coastal and marine conservation come into news rarely and only when an event happens at the coast. The module will help the media professionals and students to understand how to integrate coastal and marine conservation issues into the mainstream media stories and products. The module is built around case studies, examples and information on successful cases where media has played a proactive and strong role in supporting coastal and marine conservation.

Module 6: Mainstreaming coastal and marine biodiversity into overall development and environmental planning

This module provides the conceptual background and introduction of mainstreaming biodiversity. To ensure that biodiversity-related issues and concerns become a part of the larger development planning process in the country, there is a need to incorporate it into policies, strategies and action plan. There is also a need to use science-based tools to understand the impact that projects can have on the environment and ensure that spatial planning incorporates measures for conservation of coastal and marine biodiversity. This module provides the basic concepts and examples of such tools knowledge of which is useful for the media professionals while they work on related stories.

Module 7: Interlinkages between coastal and marine biodiversity, climate change, natural disasters and coastal livelihoods

This modules provides important information on the two most pressing issues of our times: climate change and natural disasters- their basic science, vulnerability and impacts, management and risk reduction options. The issues are accompanied by relevant case studies for better clarity. The module also focuses on a very important aspect of climate change and disaster management, i.e. their interlinkages with coastal and marine biodiversity and ecosystem services. The module facilitates participants in exploring key synergies and trade-offs and possible way out to avoid the trade-offs.

1.3.3 Possible learning outcomes of the training courses based on this curriculum

Media Professionals

By the end of the course, the participants are able to:

- Interpret and appreciate the ecological basis of managing coastal and marine ecosystems
- Appraise the issues related to managing coastal and marine biodiversity and ecosystems
- Use and organize scientific information from different sources for developing media products on coastal and marine issues
- Appreciate the educational role of the media regarding coastal biodiversity management issues, challenges and conservation efforts.
- Develop a concrete action plan to bring coastal and marine issues to the forefront of their respective work domains.

Postgraduate students

By the end of the course, the participants are able to:

- Analyse concepts and issues related to managing coastal and marine biodiversity
- Use and organize scientific information from different sources for developing media products on coastal and marine issues
- Appreciate the role that the media plays in raising awareness and bringing policy change towards effective management of coastal and marine biodiversity and protected areas.

Senior-level undergraduate media students

By the end of the course, the participants are able to:

- Describe concepts and issues related to managing coastal and marine biodiversity
- Use and organize scientific information from different sources for developing media products on coastal and marine issues
- Appreciate the role that the media plays in raising awareness and bringing policy change towards effective management of coastal and marine biodiversity and protected areas.

Entry-level undergraduate media students

By the end of the course, the participants are able to:

- Outline concepts and issues related to managing coastal and marine biodiversity
- Appreciate the role that the media plays in raising awareness and bringing policy change towards effective management of coastal and marine biodiversity and protected areas.

1.3.4 Training approach and methodology for implementing the curriculum

The curriculum permits a mix of field-based and classroom training sessions to be used, in almost equal proportions, to facilitate the participants in applying theoretical information learnt in classroom sessions in field conditions and to absorb the experience of local ecological and human communities.

The course uses participatory training methods for classroom sessions and field exercises. Learning through the active involvement of the trainees is facilitated, and it is they who develop the answers.

The following are some examples of such methods:

- group work and presentations
- dialogue and brainstorming
- Knowledge Café
- role play
- simulation (case study simulation/video simulation)
- online games and mind maps
- case studies
- fishbowl
- icebreakers, energizers and team-building exercises
- nature walks and contemplation
- field excursions.

Further details on participatory training methods can be found in the “Trainer’s Guide: Participatory Methods of Training for Effective Content Delivery”

1.4 Profile of trainers

This guide can be used by an experienced trainer who understands and has knowledge of the fundamental concepts and practices of development, environment and biodiversity conservation; and has an appreciation for a participatory training approach. The trainer is willing to put in that extra effort to orient each module and exercise to maximize the participant's learning outcomes.

The basic assumption is that the trainer has been working on such issues in the field and will be able to draw on prior knowledge and experience to use and/or adapt the course material and guide the participants through the concepts and field methods of coastal and marine biodiversity.

This guide helps a media trainer at a University or Institute to deliver a course on coastal and marine biodiversity issues, with minimum external inputs by the subject experts in the form of special lectures. The trainer can tutor the students to use eLearning course as an additional support.

1.5 Sample training duration and schedules

The duration of the entire course, each module within the course, and each session within the module will vary, depending on the emphasis a trainer wishes to give to the material and on the participants' needs and interests. It is strongly recommended that the trainers conduct baselining session (refer to section 2 for details of this method) before finalizing the course schedule for a specific group of participants.

There can be several options for delivering this curriculum. We provide two samples here:

- Six months—to be delivered over one semester.
- One-week intensive workshop.
- Three-day training expedition for media professionals

Model agenda for implementing this curriculum as a full course over a semester for students of media courses

IMPORTANT: *It is strongly recommended to implement at least 50% of each session as a participatory activity with full engagement of students. Trainers must restrict the 'inputs' to only 30% of the session duration. Rest of time can be used by the participants for self study via the training resource material, or eLearning portal. Refer to the next section of this guide for details on the module delivery.*

Module	Session	Recommended session duration		Live Media assignment
		Min	Ideal	
Pre-modular sessions	Baselining expectations	30 min	1 hrs	
	Connectedness to nature	30 min	1 hrs	
Give a gap of atleast One day before the next session				
Module 1: Introduction to biodiversity and ecosystem services	Session 1: Basics of biodiversity and ecosystem services	4 hrs	4 hrs	
	Session 2 From landscape to seascape: what is coastal and marine biodiversity?	1 hr	2 hrs	
	Session 3 Reflection on the current situation	1 hr	2 hr	
Organize a visit to a coastal area [refer to the field-learning journal] OR Encourage students to use their time on the weekend to go over to a coastal area and interact with fishworkers and/or observe the development projects such as roads, ports, industrial units etc.				
Module 2: Setting the context: why are the coasts important?	Session 1: Overall development context and concept of sustainability	1 hr	4 hr	
Assignment to observe individual ecological footprint over the week				
Identification of the topics for media assignments				
	Session 2 Information and statistics on Indian coast and biodiversity	0 hr (handouts can be provided)	1hr	
	Session 3 The economic importance of Indian coasts	1 hr	4 hrs	
	Session 4: Threats to coastal and marine biodiversity and MPAs	2 hrs	5 hrs	
Field visit (linked to media assignment)				
	Overview of the Simulation-Bakul	1 hr	1 hr	
Gap of 1 week to understand Bakul				
	Assign roles to participants based on the simulation game	1 hr	1 hr	
Gap of 1 week to prepare for their roles				
	Session 5: Conduct Simulation exercise on Bakul	1 hr	5 hr	
Work on the media assignments				
Module 3: Marine and coastal protected areas	Session 1: What are Marine Protected Areas (MPAs)?	1 hr	3hr including time for online research	
	Session 2: How are Marine Protected Areas managed?	1 hr	2 hr	
Interaction with an MPA manager				
	Session 3: Sustainable fishing fisheries practices in and around MPAs	1 hr	2 hr	
Visit to a fishmarket/screen relevant videos from this module				

	Session 4: Effective management of Marine Protected Areas MPAs	1 hr	2 hrs including the MPA game	
Module 4: Governance, law and policy framework for coastal and marine biodiversity	Session 1: The global context and genesis of environmental conventions: Global governance of coastal and marine biodiversity	1 hr	3 hr	
	Session 2: Policies, law and guidelines at national level	2 hr	6 hr	
	Overview of the role play: Role play: Court room scene to simulate the enforcement of legislation	1 hr	1 hr	
Gap of one week for participants to understand the laws and their respective roles				
	Session 3: Role play: Court room scene to simulate the enforcement of legislation.	1 hr	3 hr including a detailed debriefing from an environmental law expert	
Module 5: Why we do we not hear more about the coast?	Session 1: The end of the horizon: Why is the media more interested in the land than in the sea and the coasts?	1 hr	2 hr Including the film by XIC students	
	Session 2: What are the coastal issues that interest the media?	1 hr	2 hrs including a desktop study on internet	
	Session 3: When does news from the coast attain national and international importance?	1 hr	2 hrs including a desktop study on internet	
	Session 4:			
Module 6: Mainstreaming biodiversity conservation into the development sector	Session 1: What is mainstreaming? Why mainstream?	1 hr	2 hr including the game	
	Session 2: What is Impact Assessment (EIA and SEA)	1 hr	2 hr	
Hand the EIA report and biodiversity criteria for the next session; give one week to participants to study and reflect				
	Session 3 Case study discussions: exercise to analyse an EIA report using a set of biodiversity criteria	1 hr	2 hr including a fishbowl on the case study	
	Session 4 Role play to highlight the stakeholder consultation process in the EIA process	0 hr	2 hrs	
Module 7: Coasts, climate change and natural disasters	Session 1 What is climate change? How does climate change impact coastal and marine ecosystems?	1 hr	6 hrs	
	Session 2 Disaster and disaster risk reduction	1 hr	3 hr	
	Session 3: The linkage between biodiversity, disasters, climate change and coastal livelihoods	1 hr	3 hrs	
Total		31 hrs	80 hrs	

Model agenda for implementing this curriculum as one-week intensive workshop[2]

Module	Day schedule	Sessions	Training Method
		DAY 1	
Pre-module sessions	Forenoon sessions	Registration and Tea/Coffee	
		Baselining expectations	
		Connectedness to nature	
Module 1		**Module 1: Introduction to biodiversity and ecosystem services** Session 1: Basics of biodiversity and ecosystem services Session 2: From landscape to seascape: what is coastal and marine biodiversity?	- Game on interconnectedness - Films - Guided reading from Module 1 - Reflection session
Module 2	Afternoon sessions	Discussion on ecological footprint after the film on 'ecological footprint'	
		Module 2: Setting the context: why are the coasts important? Session 1: Overall development context and concept of sustainability	- Film - Fishbowl discussion
		Session 2: The economic importance of Indian coasts and biodiversity valuable concept	- Handouts - Film
		End the day with a video from Module 2	
	Encourage participants to use their time in the evening to browse on Internet or watch the documentaries provided by the trainer (available from the Trainer's kit) for information about any known coastal area and/or observe the changes in development projects such as roads, ports, industrial units etc. They can write notes on their observations and solutions.		
		DAY 2	
Module 2	Forenoon sessions	Session 4: Threats to coastal and marine biodiversity and MPAs	Brief input provided by the trainer, followed by a short film and a fish-bowl discussion
		Lunch break	
Module 3	Afternoon sessions	**MODULE 3: Marine and coastal protected areas** Session 1: What are marine protected areas (MPAs)? Session 2: How are MPAs managed? Session 3: Sustainable fishing practices in and around MPAs Session 4: Effective management of MPAs	Game on MPA management followed by short input by the trainer, or a subject matter expert-moderated by the trainer
Module 4		**MODULE 4: Governance, law and policy framework for coastal and marine biodiversity**	- Role play: Courtroom scene to simulate the compliance and enforcement of legislation

2 For enhanced efficiency, encourage participants to glance through the module text the day before it is delivered

DAY 3			
Module 5	Forenoon sessions	**MODULE 5: Why do we not hear more about the coast? Overview**	End the day with the film on Media reporting
		Session 1: The end of the horizon: Why are the media more interested in the land than in the sea and the coasts? What are the coastal issues that interest the media? When does news from the coast attain national and international importance?	- a Live assignment - ask students to browse on internet and share the findings
		Session 2: Focusing beyond the immediate interest of media	
	Afternoon sessions	Group discussion Assignment to participants	- Interaction with an environmental journalist - followed by a group discussion
	In the evening, or next day (Day 4) early morning, a brief and focussed field visit can be organized		
DAY 4			
Module 6	Forenoon sessions	**MODULE 6: Mainstreaming biodiversity conservation into the development sector**	Start with the game, "Turtles on the beach"
		Session 1: What is mainstreaming? Why mainstream? Session 2: What is environment impact assessment (EIA)?	
		Session 3: Exercise to analyse an EIA report using a set of biodiversity criteria	- Case study
Module 7	Afternoon sessions	MODULE 7: Interlinkages between coastal and marine biodiversity, climate change, natural disasters and coastal livelihoods Session 1: What is climate change? How does climate change impact coastal and marine ecosystems? Session 2: Disaster and disaster risk reduction Session 3: The linkage between biodiversity, disasters, climate change and coastal Livelihoods	- Films
		Facilitate participant groups in identifying the type of media products they want to develop the next day, and the issues that they want to choose	- Brainstorming/ brain writing
DAY 5			
Concluding sessions		The participants work on their chosen topic to develop a media product / concept of media product in their respective group	
	Day 6		
	Forenoon sessions	Participants share their media products / concept of media product in a Knowledge Café setup	
	Afternoon sessions	Feedback and evaluation of the training	
		Participants work on 'Personal Learning review' and develop a future action plan	
		Certification distribution and end of the course	

Model agenda for a 3-day training expedition for media professionals

Training Expedition on
Coastal and Marine Biodiversity and Protected Area Management
For Media professionals

Date	Activity	Key Themes
09.30 – 10.00 AM	*Registration & Tea/Coffee*	
10.00 – 11.30 PM	Welcome, Introductions, Benchmarking experiences, Expected Outcomes, An overview of the schedule, Resource material and Approach of the training expedition, Thematic Champions	
11.30 AM- 6.00PM	Visit to a coastal area / coastal and marine protected area ***[issues to be observed and discussed –*** Overall development context and challenges in conserving coastal and marine biodiversity, *Coastal ecosystems, habitat and species diversity,* ecosystem services; *identification of key coastal and marine species, coastal and marine biodiversity in connection with climate change and disaster management, stakeholders for coastal and marine conservation, and role of science in management of MPAs,* concept of mainstreaming biodiversity into other sectors*]* Discussion (Fish–bowl)]	
07.00 – 8.00 PM	A short quiz *Briefing and distribution of roles and case study for a role play for next day*	Coastal and marine issues
08.00 PM onwards	*Dinner & Self–study and time to reflect and work on the learning journal, prepare for the role play for next day*	
	Day 2	
06.30 – 07.00 AM	Reflection on connectedness to nature	*At an open space coast*
07.00 – 08.00 AM	*Breakfast & Self–study and time to reflect and work on the learning journal*	
08.00- 09.30AM	Visit to a fish landing area, interaction with fish workers	
10.00 – 12.00 PM	Inputs and Discussion on the key issues and challenges in conserving coastal and marine biodiversity	Law and policies for coastal and marine biodiversity conservation, challenges and good practices in MPA management, managing tourism in coastal and marine areas, sustainable fisheries and community livelihoods
12.00 – 01.00 PM	Story ideas on coastal and marine species issues	
01.00 – 01.30 PM	*Lunch & Self–study and time to reflect and work on the learning journal*	
01.30 – 06.00 PM	Visit to a nearby coastal area	Adaptive and sustainable management of coastal and marine protected areas, biodiversity monitoring, tourism planning in coastal areas
7.00 PM onwards	*Briefing and distribution of information on Bakul- the simulation on ecosystem services to be played next day* *Dinner & Self–study and time to reflect and work on the learning journal, story ideas*	

Date	Activity	Key Themes
	Day 3	
06.00 – 06.30 AM	Reflection on connectedness to nature	
06.30- 07.30 AM	A walk in the nearby area to observe and understand biodiversity elements and variety of species	
09.00 – 01.00 PM	Simulation exercise (Bakul)	Participatory management of coastal and marine biodiversity, Communication between key stakeholders, cross–sector cooperation, assessment and monitoring of coastal and marine biodiversity elements, legal and policy frameworks for coastal and marine resources
01.00 – 02.00 PM	*Lunch*	
02.00 – 03.00 PM	*A dialogue on media reporting on coastal and marine biodiversity*	
03.00 - 04.00 PM	A game on communication among stake-holders	Communicating coastal and marine biodiversity to key stakeholders
04.15 - 5.15PM	*Knowledge Café* *[Participants discuss key issues on coastal and marine biodiversity conservation, in groups, based on their thematic championship]*	
05.30 – 06.30 PM	Feedback and evaluation, Discussion on competencies and future learning goals	
06.30 – 07.30 PM	Certificate Distribution	

SECTION 2

Overview of the modules and session delivery

This section provides an overview of the seven modules with their learning outcomes, summaries and key messages. A session-wise presentation of the modules contents and descriptions of the most appropriate training methods are provided. This will help the trainers implementing this curriculum in the most efficient way. The trainers will of course be required to refer to the Trainer's Guide on Participatory Training Methods for details of training methods. Lists of sources and references are provided for each module in this section itself.

The session plan detailed in this section is suitable for a semester-course. Though the general structure, training methods and resources can be used from this section, the session plan would need to be adapted for shorter trainings. Schedule for shorter courses is provided in the previous section.

2.1 Pre-module sessions

It is recommended that before starting each module, the trainers conduct a quick check on the level of existing knowledge of the participants on the issues and also assess their expectations from the course/ training/ module. In order to maintain a positive attitude and bring a perspective to the participants, the trainers are encourage to spend some time on the connectedness to nature session. Here, a sample of such beginning of the module is provided, which can be customized based on the time-availability and also the access to coastal or any natural area.

Session O: Baselining expectations: Creating the baseline of Experiences and expectations

Duration: 30 min /60 min

Details on conducting the above session are provided on the next pages

Session OO: Cross-checking learning outcomes and schedule

Duration: 30 min/ 60 min

Details on conducting the above session are provided on the next pages

Session OOO: Connectedness to nature

Duration: 30 minutes [Video/photo slide show with background music]

Half day [a visit to a nearby coast and reflection]

Details on conducting the above session are provided in Trainers Guide on Participatory training methods, available in the Trainer's Kit.

Baselining experiences and expectations

Duration: 30 minutes

Material required: Pin boards, cards, pens/PPT with discussion

2.1.1 What is the collective experience and expertise in this group?

A good way to take adult audiences seriously is to get information on the participants' experience and expertise on the first day. It is important to know details such as what the participants actually know on the topics to be taught during the course, their language skills and their interest areas in different streams of media. For this, trainers can use the "Living Chart method" as follow: the living chart method.

- Ask the participants to stand in a group in the middle of the room.
- Ask them, 'How many of you have taken any form of training on coastal and marine biodiversity?'

- Identify two opposite corners of the room as the two ends of an imaginary scale—one corner representing 'have attended a training before' and the other corner representing 'I have not attended any training on coastal and marine biodiversity.'
- Ask the participants to place themselves on this scale to give their answer. Those who have attended any training or course or this topic was part of their curriculum somewhere should stand at the first corner of the room, while those who have never been exposed to this topic in any form should stand at the second corner. Those participants who have attended some course on coastal and marine biodiversity should place themselves at an appropriate place on this scale in terms of e.g. duration of course. Encourage them to talk to each other to find out their relative placement on the scale.

You can register in your mind, or take a picture of, the relative positions of the participants on the scale or write down the names of participants who already have some experience on the topic and those who do not know anything. At the same time, encourage participants to share their experience (those who place themselves relatively high on the scale).

Now, ask the next question and let the participants change their positions according to the new question.

This method helps the trainer understand the general level of the class—whether all the participants already know something on the subject, their geographical origins (to help pitch the examples), their interest in specific media streams (print, film making, electronic, etc.) and their language skills. If the trainer finds out that four out of 20 participants in the class are not very comfortable in the language that is expected to be the mode of instruction, the trainer can identify among the participants a translator who can help participants translate the difficult portions of the training material during the breaks or as and when required. Similarly, the trainer can adapt the training methods and examples for the training to have the greatest impact.

2.1.2 Cross-checking learning outcomes and schedule

It is extremely important to proceed with the course/ training delivery as a participatory exercise, and therefore it is recommended to conduct a dedicated session on understanding the existing experiences among the participants, and to share the planned course delivery with them. While doing so, the trainer should already have a clear thinking in her/his head that there might be a need to do some adaptations in the planned training schedule based on the participant's feedback (without compromising the learning outcomes).

What are we going to learn from this course?

- Pin the cards with the learning outcomes of the overall course (one on each card) on the board.
- Ask for volunteers who will share their views about the learning outcomes.
- Facilitate a dialogue among the participants on any clarification on the learning outcomes that they may require.

How are we going to learn in this course?

- Place the schedule of each day/week/month on cards (four long cards). Place the contents of each module on cards (seven rectangular cards). Place the contents of each field visit on cards (three or four oval-shaped cards)
- Spread the cards on the floor and ask the participants to pick a card of their choice each.
- Start explaining the schedule and request the participants to explain what is planned for each day/week/module/field visit in turn.
- Ask the participants pin the cards on the board and request them to tell everyone what made them interested in their particular cards.
- Get the opinions of the participants on the overall schedule. Explain clearly the reason for any specific module/activity when a question is raised. Take a majority vote if a genuine problem in the schedule is hinted at, and see how it can be adapted. Involve the participants in adapting the schedule (e.g., if they are not comfortable with the schedule of a field visit. Then explain to them the arrangements and appointments that have already been made for the field visit, and ask for their support in modifying the plan. If they wish to add some new topics to the curriculum, ask them to identify a time slot in the schedule. Ask also if there is someone among the participants who can serve as a resource person to explain the topic to the fellow participants.

Alternatively, the development of the baseline can also be done via a PowerPoint presentation or flip charts and participants can contribute on the screen in case the time and resources do not allow the use of pin boards and cards. The Powerpoint and flipchart methods take approximately half the time that the pin board method takes.

2.2 MODULE 1

Introduction to biodiversity and ecosystem services

After completing this module, the participants will be able to

- explain the term 'biodiversity' and describe different aspects of the concept
- explain the term 'ecosystem services' and outline different types of ecosystem services
- express the difference between terrestrial and coastal marine ecosystems
- illustrate different types of coastal and marine habitats and summarize the threats that they face.

Summary

This module provides the basic introduction to the concept of biodiversity and it's interconnectedness with human beings. Concept of ecosystems services is the central focus of this module. The module provides details of different facets of the concept of biodiversity and different examples of coastal and marine habitats and species. It also touches upon the concept of conservation shortcuts such as keystone species, knowledge of which is a must for media processionals.

Key messages

1. 'Biological diversity or biodiversity refers to the diversity of life in all its forms and at all levels of organization.' The levels of biodiversity are the diversity within a species (genetic diversity), the diversity of species (species diversity) and the diversity of ecosystems (habitat or ecosystem diversity). Each of the three levels can be described further: What types of elements are there and in what numbers (compositional biodiversity), how they are arranged (structural biodiversity) and what role they play in the system (functional biodiversity).
2. Ecosystems provide a variety of benefits to people, including provisioning, regulating, cultural and supporting services, known as 'Ecosystem Services.'
3. Biodiversity is the foundation of resilient ecosystems supporting a vast array of 'functions.' Genetic, species (animal and plant) and habitat diversities have important roles to play in provision of ecosystem services.
4. Changes in biodiversity can influence all these functions (e.g., pollination, nutrient cycling) and the products arising out of these (e.g., food, medicinal plants).
5. When it comes to measuring and monitoring biodiversity, there are two ways of doing it: The first is to measure actual processes (functional biodiversity), e.g., regeneration rates and patterns, rates of productivity, species interaction. However, this would be difficult and time consuming. The second one is, therefore, the way out and uses surrogates (known as conservation shortcuts), which is simpler and based on certain assumptions that the conservation benefits of surrogate species extend to a larger set of species and/or habitats. Therefore, measuring a surrogate species would provide us an idea of how the ecosystem is doing. Some famous surrogates are Tigers, Turtles, Whale Sharks, etc.
6. There are several types of coastal ecosystems in India: inland freshwater wetlands, inland brackish water wetlands, estuarine wetlands, coastal mudflats, sand dunes, rocky shores, mangrove forests, coral reefs and other coastal and marine ecosystems.
7. Marine and terrestrial ecosystems are different with respect to the aquatic medium in which all marine organisms exist. There are no discrete boundaries in marine ecosystems as seen on land.

Key words

Biological diversity; genetic, species and ecosystem diversity; keystone, umbrella, indicator and flagship species; provisioning, regulating, supportive and cultural ecosystem services; mangroves, wetlands, seagrasses and coral reefs.

2.2.1 Session 1

Basics of biodiversity and ecosystem services

Topics to be discussed **Duration: 4 hours**

- The definition of biodiversity. Levels of biodiversity—genetic, species and habitat diversity. An overview of spatial and temporal relevance of biodiversity.
- How species diversity contributes to ecosystem resilience and resistance. How genetic diversity is the basis of food security. How habitat diversity maintains ecosystem services.
- Ecosystem services: provisioning, regulating, supporting and cultural ecosystem services.
- A game to demonstrate the elements of an ecosystem and their interdependence (described below in this box)

Methods: Game, discussion and Interactive lecture | **Material required:** PowerPoint presentation, a ball of wool for the game

The woollen string ball game to emphasise the interdependence of everyone in the web of life

Material required: Soft woollen ball. | **Participants:** Trainer and students.

Method

- The trainer instructs the students to come forward in the classroom where there is ample space. Space can be made by moving the seating arrangement for this game.
- The trainer instructs the participants to stand in a circle. Once the participants are settled in the circle.,the trainer also gives a brief of how we are all interconnected in nature in some way or the other.
- The trainer holds one end of the soft woollen string from the ball and says her name and something about herself in one line. She then tosses the woollen ball holding on to the end of the string in one finger connecting her to the person who now has the woollen ball.
- The person who receives the woollen ball wraps the string on his / her finger and says her name and one line about herself and tosses the woollen ball to the next person thus connecting the trainer herself and the new person who the ball is tossed to. This goes on for some time till all students have the woollen string wrapped around their finger and the woollen ball will either be exhausted or will be of a small size since the string is shared with all students forming a large web connecting each and everyone with this woollen string.
- The trainer now asks them to tug at the web formed between them. There will be sturdiness in the structure of the web.
- The trainer will explain how each and every species are connected to each other through this web of life. This web of life is maintained by Mother nature and has taken billions of years to perfect its self through evolution.
- Now the trainer will ask one student to remove the string from his/her finger and stay out of the group as an observer. Now the instructor will ask students to tug on the web. This time there will be some difference in the structure of the web.
- The trainer now asks more participants to leave the web by removing their finger from the string and staying out of the circle as an observer.
- This time when the trainer asks the participant to tug on the web, there is a drastic difference and the web starts to crumble. This chaos in nature is caused through unsustainable methods practised by humans is explained by the trainer.
- Thus the message is driven to the participants clearer driving the point into the long term memory.

The concept of sustainability and interconnectedness is thus delivered.

2.2.2 Session 2

From landscape to seascape: What is coastal and marine biodiversity?

Topics to be discussed **Duration:** 30 minutes

- The different coastal and marine habitats
- What are the interlinkages between the terrestrial ecosystems and coastal and marine ecosystems?
- What does species diversity in the coast and the sea mean?
- Why are diverse ecosystems in the coasts and seas important? How do they contribute to the stability of natural resources and economic activities?
- The dependence of local communities on the coast

Methods

Film, PPT, discussion

Material required

- PowerPoint presentation, video documentary (see box), Internet connection and projector (optional)

Mangroves: Guardians of the Coast

Guardians of our Coast showcases the fascinating web of life that surrounds these tidal forests. The movie highlights the unique collaboration between governments, regional and local institutions, NGOs and local communities, in efforts to save these vulnerable ecosystems and restore them to their former glory.

https://www.youtube.com/watch?v=4SY7X9zdZ-U

[Mangrove for the Future (MFF), IUCN]

2.2.3 Session 3

Reflection on the current situation

Topics to be discussed **Duration: 30 minutes**

This is an interactive session highlighting the importance of coastal and marine biodiversity for ecosystem services, which are required for overall human well-being

Methods

- The students are shown films on coastal and marine biodiversity and ecosystem services
- Then they reflect on the ideas versus the existing situation with respect to coastal and marine biodiversity and ecosystem services.
- Their reflections can be recorded on paper or the students can be encourage to place their reflections on their blog.
    - See one example of one such blog by a media student http://thenaturefans.blogspot.in/

Material required: Film (Cards and markers, chairs in two circles for Fishbowl discussion')

A film on ecosystem services

People all around the world have taken Mother Nature for granted. What we casually term air, water, food etc. are ecosystem services Mother Nature provides. This film's narrative delves into the services Mother Nature provides which we take for granted. This film also provides a hint of a dystopian period.

Nature is the biggest job recruiter, service provider and producer of the planet. The movie *Ecosystem Services* talks about the various services that Mother Earth provides to all her inhabitants for free. The dependence of every species for its survival on Earth is based largely on these services, which are taken for granted by the most invasive species of all— we humans. From the food that we eat to the water we drink, from the air we breathe to the fuel for our travel, from the dress we wear to the culture and religion we practice, it all depends and is made possible by the services and resources that Mother Earth provides. It is this species disregard for these, priceless services that hits back hard on them. The movie shows the exhaustion of the services and their availability in different time zones, 2050 and 2015, respectively, which brings in a conscious appreciation in the mind of the person who travels to these time zones. This fills her or his heart with appreciation and gratitude towards her or his source of survival and ONLY home.

Watch this film at: https://www.youtube.com/watch?v=8-CFg6s8kes

2.3 MODULE 2

Setting the context: Why are the coasts important?

Learning outcomes

After completing this module, the participants will be able to:

- outline the economic benefits that coastal and marine biodiversity provides to different sectors
- appraise different development activities on the coast and their relationship with the ecosystem
- appreciate the concept of sustainability
- describe different types of coastal and marine habitats and summarize the threats that they face
- analyse the environmental disputes along the coast from ecological and economic viewpoints.

Summary

This is the most comprehensive and time-intensive module of the course, and in a way it sets the foundation of the issues of coastal and marine conservation for media. This module places the topic of coastal and marine biodiversity conservation into the overall development context, and looks into the interrelationship of conservation and economic development, the positive benefits that coastal and marine biodiversity brings to human societies via ecosystem services, the challenges in balancing conservation with the economic development, and a detailed understanding of the threats that the coastal and marine ecosystems are facing. To make the learning easy for participants, this module comprises two very interesting training methods—ecological footprint game, and a simulation game on a fictitious country—Bakul.

Key messages

- The eight Millennium Development Goals (MDGs), which range from halving extreme poverty to halting the spread of HIV/AIDS and providing universal primary education, all by the target date of 2015—form a blueprint agreed to by all the countries and all the leading development institutions. They have galvanized unprecedented efforts to meet the needs of the world's poorest.

  The MDGs have been replaced by the Sustainable Development Goals from 2015.
- At the Rio+20 meeting, two decades after the Earth Summit in Rio de Janeiro in 1992, it was decided to institute Sustainable Development Goals (SDGs) from 2015. Targets for achieving these goals have been set for either 2020 or 2030. Eradicating poverty was, once again, seen as the greatest challenge to humankind. Changing unsustainable patterns of production and consumption and promoting sustainable ones were major priorities, and managing the natural resource base was seen as essential to achieving such sustainable practices.
- It is estimated that nearly 250 million people live within 50 km of the coastline in India and are dependent on the rich coastal and marine resources. Therefore, the ecological services of the marine and coastal ecosystems play a vital role in India's economic growth and the welfare of its citizens.
- Today, human activities are threatening the seas and coasts greatly through overfishing, destructive fishing practices, pollution and waste disposal, agricultural runoff, invasive alien species and habitat destruction. Global climate change will make matters worse. Sea levels will rise, water temperatures will increase, oceans will become acidified and there will be more storms and natural disasters.
- India is one of the 12 mega biodiversity countries and has a few of the 25 biodiversity hotspots, which are the richest eco-regions of the world. These hotspots are also highly endangered.
- Approximately 60 per cent (15 out of 24) of the ecosystem services evaluated in the Millennium Ecosystem Assessment (including 70 per cent of regulating and cultural services) are being degraded or used unsustainably. The loss of biodiversity at the habitat, species and genetic levels is enormous.

- The consequences of the biodiversity loss and resulting ecosystem services loss have a far-reaching impact on the livelihoods and overall well-being of human communities.
- Valuing ecosystem services will provide policymakers with a strong rationale to improve coastal and marine ecosystem management and invest in conservation for its risk management value and economic benefits. In order to fully leverage the ecological and economic knowledge of ecosystems and services, there is a need to generate and provide access to better data regarding ecosystem services.

Key terms

Millennium Development Goals; Sustainable Development Goals; threat to marine biodiversity; invasive species; coastal pollution; marine debris; economics, ecosystems and biodiversity sustainable development; ecosystem services; livelihood security; ecosystem valuation; coastal infrastructure development; threats to coastal and marine biodiversity.

2.3.1 Session 1

Overall development context and concept of sustainability

Topics to be discussed **Duration: 1 hr/ 4hr**

- Economic growth as development
- The MDGs and SDGs and sustainable development
- The concept of sustainability is discussed via the example of ecological footprint

Methods

- The session can begin with a small group of volunteers among students doing a skit based on this photo (in the material section), and the rest of the class can interpret what the meaning of this picture/skit is. This serves as a good exercise to get differing viewpoints from the group on their perceptions on the issue of conservation-development.

'STEADY AS SHE GOES'

- An interactive lecture using PPT
- During the lunch break, the students are given an interesting task: to observe carefully the food items that they consume.
  Once the students are back in the classroom for the next session, the class spends 30 minutes on the concept of ecological footprints, where the trainer can use the PPT on ecological footprint as base and discuss the resources being consumed by us on a daily basis and how these are linked to ecosystems.
- Students undertake the online test on their individual ecological footprint, as given in this section of their handbooks, and reflect on their connectedness to nature via their food.
- The ecological footprint activity can be repeated every day, reflecting on different consumables, such as clothes and stationery items, transportation and means of entertainment.

Material required

PowerPoint presentation, Picture for skit, film on ecological footprint

Films on ecological footprint

Green Ninja: Footprint Renovation
www.youtube.com/watch?v=UeYOZgbgG1Q

How much Nature do we have? How much do we use? | Mathis Wackernagel | TEDx-SanFrancisco
www.youtube.com/watch?v=3M29BY86bP4

2.3.2 Session 2

Information and statistics on Indian coast and biodiversity

Topics to be discussed **Duration: Handouts/1 hr**

- Biodiversity in India—some statistics describing the biodiversity and its contribution to food and livelihood security as well as the GDP in India
- The length of the Indian coast
- The ecosystems of the Indian Ocean, Bay of Bengal and Arabian Sea
- The states that have a coast
- The islands—the Andaman and Nicobar Islands and the Lakshwadweep Islands
- Coasts in Indian history
- India as a maritime nation

Methods

- Material shared via email/handouts

  OR
- This can be conducted as an interactive session with the specific Web sites projected and the students being shown the maps.

Material required

- Training handbook for the statistics and information to be read and discussed in the classroom session
- Projector, screen, Internet to view the maps of the coastal areas online or in google earth
- If a good Internet connection is not available, then trainer can use saved maps and graphs for class discussions

2.3.3 Session 3

The economic importance of Indian coasts

Topics to be discussed **Duration: 1 hr/ 4 hrs**

- Value of coastal marine biodiversity and ecosystem services for key production sectors
  - Background: the importance of coasts in the post-liberalization Indian economy; India's economic liberalization, which was launched in 1991—liberalization, privatization and globalization; the coasts come into the national imagination due to their links with infrastructure development.
  - Economic values of biodiversity and ecosystem services; valuation methods and techniques
- Coasts and key production sectors
  - Coastal industries: aquaculture, ship breaking, salt mining
  - Coastal cities: urban development; urban development near ports—the case of a new capital for the state of Andhra Pradesh, which will be located near the coast; the case of the Mumbai floods
  - Tourism
  - Fisheries
  - Other forms of infrastructure development along the coast: New power plant, Coastal highways and railways—the case of Konkan Railways, More trade, bigger ports needed, Special economic zones (SEZs) linked to ports (JNPT in Mumbai, Vallarpadam in Kochi)

Method

- Material shared via email/handouts few days before the session
- A class discussion using the training handbook and videos

Material required

- Training handbook
- PowerPoint presentation
- Videos

Put a Value on Nature! Pavan Sukhdev TED Talk

Every day, we use materials from the Earth without thinking, for free. But what if we had to pay for their true value, would it make us more careful about what we use and what we waste? Think of Pavan Sukhdev as nature's banker – assessing the value of the Earth's assets. Eye-opening charts will make you think differently about the cost of air, water, trees.teebweb.org TED Talk at TED Global 2011 - Filmed July 2011

http://www.youtube.com/watch?v=oU9G2E_RYJo

2.3.4 Session 4

Threats to coastal and marine biodiversity and MPAs

Topics to be discussed **Duration: 2 hrs/ 5 hrs**

- Status of ecosystems services -Millennium ecosystem assessment
- Understanding the context in DPSIR framework
- A detailed account of the threats to coastal and marine biodiversity
  - Overfishing
  - Tourism
  - Invasive species; including case study on ballast water management
  - Pollution
  - Climate change and extreme weather events (an overview only; detailed discussion in Module 7)
  - Coastal squeeze, erosion and accretion
  - Poaching and smuggling of species
  - Marine debris
- Relative risk of extinction
- Environmental disputes, including the case of fisheries
- The root cause of conflicts: Trade-offs between different ecosystem services

Methods

- Short (approx. 20 minutes) PowerPoint presentations for providing an overview of the issues
- Students are encouraged to conduct desktop research on their topics of interest among the threats
- Videos are helpful in projecting the issues of threats etc as it becomes easy for students to assimilate information and see it in a visually appealing way.
- A fishbowl discussion, using questions from the "food for thought" section in Module 2, will help participants in consolidating their views on the issue

Material required

- PowerPoint presentations
- Internet for student's desktop research
- Videos

LOREN LEGARDA: Philippine Marine Biodiversity Documentary

In a bid to raise awareness about the current condition of the country's marine life and underwater resources, Senator Loren Legarda, Chair of the Senate Committee on Environment and Natural Resources, launched a video documentary on Philippine marine biodiversity. This video documentary is the third collaboration between Legarda and internationally acclaimed director Brillante Mendoza, following "Buhos" and "Ligtas". Also featured are marine videos taken by underwater videographer Robert "Bobbit" Suntay. The project was executed in partnership with the Department of Environment and Natural Resources (DENR) and the Philippine Information Agency (PIA).

https://www.youtube.com/watch?v=8-D3z3t-0Dw

This film will also serve as a precursor to the next two modules – Module 3 and Module 4

Global Fishing Watch I Technology Illuminating the Global Fishing Fleet

Global Fishing Watch is a technology partnership between SkyTruth, Oceana and Google, designed to show all of the trackable fishing activity in the ocean. This prototype uses AIS (Automatic Identification System) data to visualize the movements of global commercial fishing fleet.

https://www.youtube.com/watch?v=fn2JXmCUo30

2.3.5 Session 5

Simulation exercise: Bakul/CEEBANO

Topics to be discussed **Duration: 3 hrs/ 7 hrs**

This is a simulation exercise involving the fictitious country of Bakul, where the Governor has called a meeting of the stakeholder groups for revising the 5-year development strategy. The preparation of the strategy involves a good understanding of the issues pertaining to ecological conservation, trade-offs between conservation and development, and looking at a balanced approach to conservation in a coastal area.

Methods

In this simulation, the participants play the roles of different stakeholders and are given time to prepare for their roles so that they are able to assimilate their knowledge on coastal and marine biodiversity issues and relate it to the real-life challenges of a developing country.

- The trainer provides an overview of the simulation in class-room sitting, and hands them the Part-A of the handout on general information on the fictitious country and the situation (the meeting called by the Chief Minister of the State) as well as information on the stakeholders (funding agency, different departments of the state government, chief minister etc) that are going to be present in the meeting
- The participants get a day or two to read and understand the country, state, situation and stakeholders
- In the next session, the participants are given the roles of different stakeholders, as per the simulation game. If the number of participants is more than the roles in the simulation game, then the trainer can make teams (i.e. 3 persons representing forest department. Let them chose their designations/ seniority levels)
- the trainer may use her/his discretion in assigning the roles based on the individual capabilities and personality, to make the simulation game more real-life like and interesting.
- After they choose game and everyone is convinced with the role they get, the trainer hands them the confidential instructions contained in Part-B of the Handout.
- The participants must be instructed not to share their confidential instructions with others, except their own team- if they are made into stakeholder teams.
- The next day of receiving the confidential instructions, the session is to be organized to play the actual game. A board room type setting with a formal atmosphere is good to get the best out of this game.
- The first set of game is played for 30 minutes. After 30 minutes, if no consensus is reached, then the chief minister (of the game) declares a 5 minutes break. The chief minister leaves and the trainer ask the stakeholder to negotiate and liaise with the other stakeholders of similar interest to reach a consensus.
- The meeting resumes after 5 minutes and the game continues in the new situation for another 15 minutes- the trainer declare the game over after 15 minutes or at the end of reaching a consensus whichever is earlier.
- Plenary discussion: The trainer asks participants to come out of their roles and sit together in a circle, in a place other than this board room setting *(This step is very important, as some participants might get attached to their roles and fail to discuss their observations objectively)*

The ultimate purpose of this game is to understand the other stakeholder's perspective in a conservation-development scenario. The trainer steer the plenary discussions in a way that all the participants are able to share:

- their perspective on the issue that was discussed and
- how they felt challenged by a different perspective

Then lead a discussion to converge various perspectives to the common agenda of human wellbeing and a balanced approach.

Material required:

Simulation handouts (towards the end of this guide)

Important: In such simulation games, there is no concluding remark by the trainer. The only objective to be achieved by the trainer is to steer the process in a way that the participants get to know the issues at hand, and everyone gets a chance to share their perspective in the plenary.

2.4 MODULE 3
Coastal and marine protected areas

Learning outcomes

After completing this module, the participants will be able to:

- explain the term 'protected area' and describe the different types of protected areas.
- differentiate between the key characteristics and factors governing a terrestrial PA and an MPA.
- describe different types of management models for MPAs and the challenges associated with each
- debate on the sustainability of fishing practices in and around MPAs.

Summary

This module provides much needed information about marine protected areas (MPAs), the differences between them and terrestrial protected areas, the categories and types of MPAs and their management systems and an overview of the elements of management effectiveness. This module covers the key issues of fisheries and indigenous communities in the context of MPAs. Apart from providing information on different types of MPAs in India and their locations, the module elaborates benefits of and challenges for MPAs.

Key messages

1. A clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, is mandatory to achieve the long-term conservation of nature with associated ecosystem services and cultural values.
2. One of the most effective means for protecting marine and coastal biodiversity is through the establishment and proper management of marine protected areas (MPAs). MPAs have many different types of protection. Some are 'no-take zones' or 'protected zones' that are essential to enable fish stocks to recover while others allow multiple use of their resources. MPAs protect key ecosystems such as coral reefs. Not only do they act as safe breeding ground for fish but they can also generate tourism, which in turn brings jobs. Creating more community managed MPAs would enhance the flow of benefits to local people.
3. India has designated four legal categories of PAs—national parks, wildlife sanctuaries, conservation reserves and community reserves. India has created a network of PAs representing all its 10 biogeographic regions. A total of 702 PAs have been established, comprising 103 national parks, 530 wildlife sanctuaries, 65 conservation reserves and 4 community reserves, and 26 wetlands have been designated Ramsar sites.
4. In India, PAs that fall–in whole or in part–within a swath of width 500 m along the high tide line are included in the MPA network. Based on this definition, there are 24 MPAs in peninsular India and more than 100 MPAs in its islands. The Gulf of Mannar Marine National Park, Sundarbans National Park, Gulf of Kachchh National Park, Bhitarkanika National Park, Coringa Wildlife Sanctuary and Chilika Wildlife Sanctuary have unique marine biodiversity and provide a range of services to local communities.
5. PA managers face a wide range of challenges, from lack of governmental funding and support to antagonism from local communities. With good communication and awareness programmes, this trend can be reversed. Involving the local communities in the management of MPAs would help generate sustainable livelihoods through revenue from fishing and tourism.

6. Under an Ecosystem Approach to Fisheries, the usual concern of fisheries managers – the sustainability of targeted species – is extended to address the sustainability of ecosystems upon which the fisheries depend, which include people and fish stocks.

7. Ecosystem Approach addresses both human and ecological well-being and merges two paradigms: protecting and conserving ecosystem structure and functioning; and fisheries management that focuses on providing food, income and livelihoods for humans.

8. The main challenges facing marine fisheries development in the country include development of sustainable technologies for capture fisheries, yield optimization, infrastructure for harvest and post-harvest operations, landing and berthing facilities for fishing vessels and uniform registration of fishing vessels.

9. Artisanal fishing (or small-scale fisheries), uses small inshore vessels and/or fixed gear (e.g., coastal traps, gill nets and cast nets) and whose purpose is to catch fish and other organisms for their won consumption and sale. Commercial fishing is the activity of catching fish and other seafood for commercial profit, mostly from wild fisheries. It provides a large quantity of food to many countries around the world, but those who practice it as an industry must often pursue fish far into the ocean under adverse conditions. Large-scale commercial fishing is also known as industrial fishing.

Key terms

Marine protected areas; participatory management; stakeholders' consultation; marine biodiversity.

2.4.1 Session 1

What are marine protected areas (MPAs)?

Topics to be discussed: **Duration: 1 hr/ 3 hrs**

- Why should media professionals know about the MPAs and their management? How does it help them in reporting about coastal and marine biodiversity and MPA issues?
- What are protected areas?
- Why are protected areas important? (biodiversity wealth, ecosystem services, the social and economic roles played by the MPAs)
- What are MPAs? MPAs in the overall context of coastal and marine ecosystem services, coastal livelihoods, climate change and disasters
- How are MPAs different from terrestrial protected areas? What are the various kinds of MPAs? Is managing the MPAs different from managing terrestrial protected areas? What are the conflicts that arise in MPAs? How are they different from the conflicts in terrestrial protected areas? What are the soft laws related to MPAs?

Methods

- Interactive lecture using PowerPoint presentation
- Group work using case studies as provided in the module

Material required

- PowerPoint presentation
- Video links
- Case studies

2.4.2 Session 2

How are MPAs managed?

Topics to be discussed **Duration: 1 hr/ 2 hrs**

- Where are the MPAs in India located? How much area do the MPAs cover? The history of MPAs in India, legally protected areas under national law (reserved forests, wildlife sanctuaries, national parks, community reserves, conservation reserves, new categories (biodiversity heritage sites, biosphere reserves), cultural landscapes (World Heritage sites, sacred groves)
- Some famous MPAs in other parts of the world
- An overview of the guidelines for MPAs
- General structure of the plan of an MPA (MPA management plan)
- Why inclusive management of MPAs is important and relevant
- Institutional setup for managing MPAs in India
- Examples of MPA management: the case of the Gulf of Mannar Marine National Park, the case of an urban MPA- Thane creek, in Mumbai

Methods

- Interactive lecture using the PowerPoint presentation
- Discussion based on film

Material required

PowerPoint presentation, video links

2.4.3 Session 3

Sustainable fishing practices in and around MPAs

Topics to be covered **Duration: 1 hr/ 2 hrs**

- How do the practices of fisheries affect coastal and marine biodiversity in general and the management of MPAs in particular?
- What are the methods used to monitor the fishing practices in and around MPAs?
- Global good practices on sustainable fishing

Methods

- Interactive lecture using the PowerPoint presentation
- Play the video of Global Fishing Watch: Global Fisheries Watch data Web site (http://www.globalfishingwatch.org/) and video (https://www.youtube.com/watch?v=fn2JXmCUo30)
- Global Fishing Watch is the product of a technology partnership between SkyTruth, Oceana and Google that is designed to show all the fishing activity in the ocean that can be tracked. This interactive Web tool—currently in the prototype stage—is being built to enable anyone to visualize the global fishing fleet in space and time. Global Fishing Watch will reveal the intensity of the fishing effort around the world, one of the stressors contributing to the precipitous decline of our fisheries.
- End the session with a Fishbowl for brainstorming about the ways and methods of fishing practices, their impacts, coastal livelihoods and other issues from different perspectives

Material required

- Training Handbook
- PowerPoint presentation
- Video links
- Instructions for Fishbowl

2.4.4 Session 4

Effective management of MPAs

Topics to be discussed **Duration: 1hr/2hrs**

- What is management effectiveness? The biophysical, socioecological and governance aspects of effectiveness
- Framework for evaluation of effectiveness
- Indicators for evaluation of effectiveness

Methods

- Interactive lecture using PowerPoint presentation to provide an overview
- A game to demonstrate an enabling environment for effective management of MPAs (as described on next page)

Game of MPA management

In this game two situations were created. In one situation the stakeholders of the MPA were given a set of instructions on their roles.

The first situation

The actors were the following:

1. MPA manager
2. Tourist
3. Industrialist
4. Representative of the local community
5. Fish workers
6. Researchers
7. Poachers

They were given these instructions

MPA manager

You are an MPA manager.

You have no scientific staff for carrying out a detailed assessment and monitoring of your MPA.

You have poor relations with the local community.

You think that people from the local community have no right in the MPA.

Tourist

You are a tourist. Go inside the MPA and enjoy yourself without caring for the ecosystem.

Industrialist

You are an industrialist.

You own a petrochemical plant at the periphery of the MPA.

Representative of the local community

You are a representative of the local community.

Talk to the MPA manager and ask for your traditional rights.

Fish workers

You are a fish worker, and you have been fishing inside the MPA for a long time.

Go inside the MPA and start fishing.

Researchers

You are a researcher.

You study corals inside the MPA.

You do not give data to the MPA manager.

Poacher

You are a poacher.

Go inside the MPA and steal corals and shells.

You can only steal by counting till 10, and only then can you walk away with your stolen items.

The second situation

The second situation had the following roles:

1. MPA manager
2. Tourists
3. Industrialist
4. Representative of a local community
5. Fish workers
6. Researchers
7. Poacher

They were given these instructions:

MPA manager

You are an MPA manager.

You have monitored data scientifically in your MPA.

You have a consensus on fishing rights with the local community.

You have been able to involve the local community in your MPA planning.

Tourists

You are a responsible tourist.

You care about the damage caused to the habitat because of your tourism activity.

You report to the MPA manager when you spot a poacher and any illegal activity.

Industrialist

You are an industrialist.

You own a petrochemical plant at the periphery of the MPA.

Your plant has a responsible environment plan and a strong CSR policy.

Representative of the local community

You are a representative of the local community representative.

You support this MPA as you are dependent on the ecosystem services for subsistence and your livelihood.

Fish workers

You are a fish worker, and you conduct fishing activities outside the boundary of the MPA.

You do not fish in the breeding season.

Researchers

You are a researcher, and you study corals inside the MPA.

You give data to the MPA manager for effective management.

Poacher

You are a poacher.

Go inside the MPA and steal corals and shells.

You can only steal by counting till 10, and only then you can walk away with your stolen items.

How to conduct this game

- The trainer asks for volunteers for each role. Each actor is given the instructions for the first scenario as confidential instructions, the roles being evident.
- The trainer creates the situation by identifying the MPA boundary in the room. These can be marked by a circle of chairs or a chalk mark on the floor.
- The trainer then asks the MPA manager to stand inside the MPA boundary, while all the others remain outside the MPA.
- The trainer begins the game, and each actor takes up his or her role after clearly understanding the part.
- Five minutes into the game, the trainer asks everyone to freeze in whatever position he or she is.
- The trainer then asks everyone to assess their positions and talk about their experience with the others. For example, the MPA manager explains to the observers and the trainers the activities of the different actors inside the MPA and how easy or difficult it was to deal with all those present.
- The trainer now gives the confidential instructions for the second situation to the same actors. The trainer repeats the game with these new instructions.
- The trainer then asks everyone to assess their positions and talk about their experience with everyone, explaining the difference between the first and second situations. For example, the MPA manager explains to the observers and the trainers how this role/attitude change affects the outcome and effectiveness of the MPA.

Additional information is provided to the trainer to ensure that there is a clear distinction between the two situations. In the first situation, the MPA manager is faced with challenges, and hence the management is not effective. In the second situation, the biophysical, socioeconomic and governance elements are in place, and therefore the MPA is effectively managed.

Material required

Training Handbook, PowerPoint presentation, video links, cards and pen

2.5 MODULE 4

Governance, law and policy framework for coastal and marine biodiversity

Learning outcomes

After completing this module, the participants will be able to:

- outline the global conventions and treaties relevant to coastal and marine biodiversity and trace their history
- illustrate the Indian legal and policy framework relevant to coastal and marine biodiversity
- appraise some real cases with coastal and marine issues.

Summary

This module gives an outline and a brief history of the diverse governance, legal and policy frameworks for managing coastal and marine ecosystems. The governance, policies and laws have been presented in two sections. The first section deals with global conventions and guidelines that provide a framework to the maritime countries to draft national policies and legislation for conservation and management of coastal and marine habitats and species. The second section provides an overview of the major policies, law, rules and guidelines in India.

Key messages

- A large number of global treaties, conventions, self-obligations and guidelines target coastal and marine environments, habitats and species, and provide a framework to the countries to frame their national policies and legislation.
- Despite a large body of global and national conventions, policies and laws, several aspects of coastal and marine habitats and species are not fully covered.
- Implementation, compliance and enforcement of these regulations remain a challenge.
- Involvement of local communities, civil society and media is crucial in implementation and compliance of the legal provisions.

Key terms

International conventions; treaties; multilateral environment agreements; Indian laws for the protection of coastal and marine biodiversity; protected areas under the Wildlife Protection Act; coastal regulation zone; and fisheries laws and rules.

2.5.1 Session 0

Role play: Courtroom scene to simulate the compliance and enforcement of legislation

Topics to be discussed **Duration: 1 hr/ 3 hr**

The participants are given a fictitious case where some environmental norms have been broken by an industry in a coastal area, as a background. Participants play the courtroom scene before sessions 1 and 2. After the trainer completes sessions 1 and 2 as described above, the courtroom scene is repeated. Now, participants have information on the laws and policies and they get time to prepare.

(Please refer to session 3 for further details on the role play).

If the trainer does not have sufficient time, then it is recommended to run the role play only once as session 3 only. However, it is strongly recommended to run it twice to experience the benefits that a good understanding of law and policies can bring to a media professional.

2.5.2 Session 1

The global context and genesis of environmental conventions: Global governance of coastal and marine biodiversity

Topics to be discussed **Duration: 1 h/ 3 hrs**

- Relevance of media professionals' understanding of global and national governance, policies and legislation
- The 1972 Stockholm Summit (United Nations Conference on the Human Environment), where Prime Minister Indira Gandhi was one of the two heads of state to participate
- The 1992 Rio Summit (United Nations Conference on Environment and Development) was the first major international conference on the environment. It was attended by 172 governments, including 116 heads of state. Two framework conventions that emerged from the Rio Summit have relevance to coastal and marine biodiversity. They are:
  - The Convention on Biological Diversity (CBD)
  - United Nations Framework Convention on Climate Change (UNFCCC)
  - UNCCD (United Nations Convention to Combat Desertification)
- The Rio+20 Summit was held in Rio de Janeiro in June 2012 to mark the 20th anniversary of the Rio Summit, with the theme of green economies in the context of sustainable development and poverty eradication.
- An overview of the key global conventions and treaties related to coastal ecosystems and biodiversity:
  - CBD
  - UNFCCC
  - The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
  - The Convention on Wetlands of International Importance (the Ramsar Convention)
  - The United Nations Convention on the Law of the Seas (UNCLOS)
  - Convention on the Conservation of Migratory Species of Wild Animals (CMS, or Bonn Convention)
  - The International Convention for the Prevention of Pollution from Ships (MARPOL)
  - FAO Code of Conduct for Responsible Fisheries
  - UNESCO World Heritage Convention
  - Hyogo Framework for Action
  - Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks
  - Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (The London Convention)
  - The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal
  - International Convention for the Regulation of Whaling (ICRW), 1946
- New and emerging issues such as "Areas beyond national jurisdiction (ABNJ)"
- Aichi Biodiversity Targets

Methods

- Start the session with a documentary on MPAs, underwater diversity, threats and solutions:
  - **LOREN LEGARDA: Philippine Marine Biodiversity Documentary:** In a bid to raise awareness on the current condition of the country's marine life and underwater resources, Senator Loren Legarda, Chair of the Senate Committee on Environment and Natural Resources, launched a video documentary on Philippine marine biodiversity. This video documentary is the third collaboration between Legarda and internationally acclaimed director Brillante Mendoza following "Buhos" and "Ligtas". Also featured are marine videos taken by underwater videographer Robert "Bobbit" Suntay. The project was done in partnership with the Department of Environment and Natural Resources (DENR) and the Philippine Information Agency (PIA).threats faced by coastal and marine ecosystems

    https://www.youtube.com/watch?v=8-D3z3t-0Dw

- Interactive session with PowerPoint presentation to cover the information on global conventions
- End the session with a Knowledge Café: the participants can be divided into four groups and given the same questions for discussion in Knowledge Café.
  - The question can be: How much do you think that a media professional will be benefited by knowledge about global conventions in their jobs—such as making films and documentaries and writing news reports and blogs?
  - Refer to Section 2 for details on how to conduct a Knowledge Café.

Material required

- Screen for showing the film
- PowerPoint presentation
- Handouts, pens, cards, and flipcharts for Knowledge Café

2.5.3 Session 2

Policies, law and guidelines at national level

Topics to be discussed **Duration: 2hr/ 6hr**

- An overview of the Indian policies and legislation relevant to coastal and marine biodiversity, ecosystems and protected areas:
  - Wildlife (Protection) Act, 1972 and MPAs
  - Environment Protection Act (1986) and MPAs
  - Ecosensitive Zones
  - Biological Diversity Act, 2002 and MPAs
  - Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006
  - Biosphere Reserves
  - The Water (Prevention and Control of Pollution) Act
  - Coastal Regulation Zone Notification, 2011
  - Wetlands (Conservation and Management) Rules, 2010
  - The Indian Fisheries Act
  - The National Action Plan on Climate Change
- Concept of territorial waters and the exclusive economic zone
- New developments in the legal coverage for MPAs (This will introduce the participants to the need for and availability of flexible legal mechanisms to engage local communities into conservation of coastal and marine biodiversity in India.)
  - Biodiversity Heritage Sites
  - State-level notifications
- Description of institutional framework for implementation, effecting compliance and enforcement of key laws and policies in coastal and marine areas
- Some important cases related to coastal and marine biodiversity:

Methods

- PowerPoint presentation with several beaks and interactions in between. A few minutes break is recommended for allowing the participants to absorb the information and reflect on it, after discussing each convention/law.
- Give time for private study to participants.
- After the break, organize a structured quiz, after dividing the participants into four groups.
  - The quiz will help the participants in remembering and retaining the overview information for each convention and law such as the full name, a bit of history and the scope. Retaining this information is very useful for the media professionals working on coastal and marine issues.

Material required

- PowerPoint presentation
- Flip charts, and seating arrangement for the quiz

2.5.4 Session 3

Role play: Courtroom scene to simulate the compliance and enforcement of legislation

Topics to be discussed **Duration: 1 hr/ 3 hr**

The participants are given a fictitious case where some environmental norms have been broken by an industry in a coastal area, as a background. Participants play the courtroom scene before session 1 and 2. After the trainer completes sessions 1 and 2 as described above, the courtroom scene is repeated. Now, participants have information on the laws and policies and they get time to prepare.

The courtroom scene will be played by the participants, preferably in presence of an environmental law expert.

The case as the background for the role play:

Water World is a large entertainment park that exists on an island and is owned by Bharti Industries. This water park is built on mangrove land belonging to the local indigenous community. The indigenous community were promised jobs and compensations but never received the full compensation and were provided menial jobs.

The community head approached an NGO for assistance. The NGO took their case and approached the courts. The NGO named Bharti Industries and the Municipal Corporation in their petition. The forest department assisted the NGO in their appeal. Present in the court were a political party leader, a marine scientist, an environment management consultant and the press. The courtroom was presided over by a three-member bench of judges.

The process

There are two situations in this simulation.

- In the first situation (Session 0), the students are given the case details and have to assume the various roles.
    - Half of the students are given the roles as described in the case above, viz. NGO representative, judges, Municipal corporation representatives etc.
    - Half of the class is given the role of various media professionals (viz., film makers, newspaper reporter from National as well as local papers, news channel- national and local, stringers, news agency etc) whose role is to report on the ongoing case.
    - They enact the court scene without sufficient knowledge about the various acts and conventions.
    - After the courtroom scene, the participants are given a few minutes to reflect on their own views, ideas and feelings on the case, their own performance, on other's performance etc, and to put it down on a piece of paper for their own reading. They don't need to share it with others or the trainer.
- The trainer delivers sessions 1 and 2 and organizes a quiz, in their respective time-frames
- After the trainer has completed sessions 1 and 2 and Quiz:
    - The courtroom scene is repeated with exactly the same set of persons playing the same role.
    - The trainer ensures that the participants playing the role of judges are proactive throughout and ask relevant questions to the clients specifically on the laws, acts and conventions they

are basing their arguments on. If required, the trainer can supply questions on small chits to the judges to ensure the effectiveness of this process.

- A fishbowl session is organized where the participants share their experiences on the case and their performance in an objective manner, and they also share how they felt- in the first vs third round.

The outcomes and learning

This role play helps media students associate relevant laws and policies with issues pertaining to coastal and marine areas that they come across. It helps them experience the benefits that a good understanding of law and policies can bring to a media professional

2.6 MODULE 5

Why do we not hear more about the coast?

Learning outcomes

After completing this module, the participants are able to:

- analyse the reason for less coverage of coastal and marine biodiversity issues in the popular media
- appreciate the relevance of coastal and marine issues as a topic for mainstream media coverage
- demonstrate mainstreaming of coastal and marine issues into popular media, by developing at least one example of a media product

Summary

This module will help media students and professionals in reflecting on the way media communicates coastal and marine conservation issues. Conservation is not in the media priority and therefore issues related to coastal and marine conservation come into news rarely and only when an event happens at the coast, the module will help the media professionals and students to understand how to integrate coastal and marine conservation issues into the mainstream media stories and products. The module is built around case studies, examples and information on successful cases where media has played a proactive and strong role in supporting coastal and marine biodiversity conservation.

Key messages

- The media has topics and a certain set style in which it covers news. Issues related to coastal and marine biodiversity conservation and marine protected areas (MPAs) usually do not get picked up by the media.
- A lot more needs to be reported and communicated to place the conservation issues on priority among decision-makers on one hand, and to make coastal and marine conservation a popular and common topic among the citizens, students, coastal communities and other key stakeholders.
- Only media has the potential of taking the message of conservation o coastal and marine biodiversity to the masses as well as the decision-makers.
- The media has strengths, but also limitations. The most important limitation is that the media works with catchwords. The second limitation is that there are only certain time periods when the media has interest on coastal issues
- Media is a key stakeholder of the conservation movement, its support is pivotal for saving the biological diversity. However, many a times it does not work the way it should be for the lack of information on coastal and marine issues among the media professional and for the inabilities of the protected area managers to engage with media in a more proactive way.

Key terms

Media priorities; reaching the public and policy makers through the media; media for outreach; print, electronic and online media; the Indian Readership Survey (IRS)/TRP ratings; mofussil or local reporting; editorial policies; no-go zones; pitching your story; varied presentation styles for different media; media campaigns; mainstreaming coastal and marine biodiversity conservation into media narrative.

2.6.1 Session 1

The end of the horizon: Why are the media more interested in the land than in the sea and the coasts?

Topics to be discussed **Duration: 1 hrs/ 2hrs**

- The coastal and marine stories that the media usually covers
- When does news from the coast attain national and international importance?-
  - A major natural disaster
  - International boundary dispute
  - Cross-boundary disputes among fish workers
  - Smuggling and trafficking of species
  - Major shipping accident, oil spill, etc.
  - Major discovery of petroleum resources - any other ?
- When should news from the coast attain national and international importance?

Methods

- A brief input by the trainer to introduce the topic
- Knowledge Cafe to discuss “When should news from the coast attain national and international importance?”

Materials

- Cases of recent coastal reporting in the form of print, electronic media, including films, social media clippings etc
- Internet connection, if possible, for participants to explore ideas during knowledge cafe
- cluster seating for knowledge cafe
- flipcharts, boards, markets and other stationary for knowledge cafe

2.6.2 Session 2

Focusing beyond the immediate interest of media

Topics to be discussed **Duration: 1 hr/ 3 hrs**

- The new perspective: Points to remember when reporting on coastal and marine biodiversity
- Examples of topics of interest to media as well as conservation managers:
  - Case studies from Module 5
- Identifying a peg to hang your story idea:
  - Economic context of coastal and marine conservation
  - Connecting the dots with reference to trade
  - Issues related to fisheries
  - Coastal tourism
  - Issues related to human-health in coastal areas
  - Issues related to natural disasters, urban flooding and climate change impacts in coastal areas
  - Identifying flagship species from coastal and marine ecosystems
- The role of coastal and marine habitats in sustainable development of coastal communities
- The benefits accruing to urban centres through the maintenance of coastal and marine biodiversity
- Understanding anecdotal and peer reviewed information
  - Good Practices: Specialized portals providing information on coastal and marine ecosystems
- Films and TV and their role in spreading awareness
- Resolving resource and cultural conflicts

Methods

- Group discussions with brief inputs for key discussion points:
- Flashlight method can be used to let all participants present their views

Field visit to a local coastal area

- A fishbowl discussion after returning from field visit.

Assignment

- Students create a blog, and each student/ groups write a 500-word blog article on why it is important to report on coastal and marine Issues and how we are all connected, with examples. This articles must have a balance between anecdotal evidence and peer reviewed research on coastal and marine issues.

Material

- for field visit, please refer to the sub-section on “organizing field expeditions”
- a circle of chairs, flipchart and markets for fish-bowl discussion

2.7 MODULE 6

Mainstreaming biodiversity conservation into the development sector

Learning outcomes

After completing this module, the participants will be able to:

- Explain the concept of mainstreaming biodiversity
- Outline key instruments for mainstreaming coastal and marine biodiversity
- Critically analyse the strategies, plan and programmes of key sectors with reference to their impact on coastal and marine biodiversity.

Summary

This module provides the conceptual background and introduces the tool for mainstreaming biodiversity. To ensure that biodiversity-related issues and concerns become a part of the larger development planning process in the country, there is a need to incorporate it into policies, strategies and action plan. There is also a need to use science-based tools to understand the impact that projects can have on the environment and ensure that spatial planning incorporates measures for conservation of coastal and marine biodiversity. This module provides the basic concepts and examples of such tools knowledge of which is useful for the media professionals while they work on related stories.

Key messages

- The structure and functioning of marine ecosystems is different from terrestrial ecosystems despite primary producers being at the bases of both types of ecosystems.
- Current knowledge on the main drivers of biodiversity loss leads to the conclusion that most often the drivers of biodiversity loss are situated in the sectors outside the 'green sector'. Therefore, identifying and measuring the impact of these drivers at the national, regional, and global level will assist with mainstreaming biodiversity into all sectors
- At the core of the concept of 'mainstreaming' lies the fact that like any relationship, the interlinkage between biodiversity and other sectors and processes is also a two-way process, where biodiversity affects the activities of the other sectors and/or is affected by the activities of a particular sector. Whether the relationship will be positive or negative, depends on the degree to which the activities are carried out, keeping biodiversity in mind.
- Ideally, biodiversity policy should not be seen as independent of sectoral policies, but rather sectoral policies should be seen as an instrument to implement national biodiversity goals.
- To ensure that development is planned and implemented with biodiversity in mind, impact assessment is being used as an important tool. This include EIA, which is already a mandatory requirement in India supported by law, and SEA, which is still in its infancy and purely voluntary. These two differ in scales and objectives.
- There is a need to enhance the focus on developing impact prediction tools for biodiversity, which will not only standardize the impact prediction process for biodiversity but will also help the decision makers in making accurate decisions on the impacts of projects on biodiversity.
- Marine spatial planning (MSP) is a practical way to create and establish a more rational organization of the use of marine space and the interactions between its uses, to balance demands for development with the need to protect marine ecosystems, and to achieve social and economic objectives in an open and planned way.

Key terms

Mainstreaming biodiversity, Environmental Impact Assessment (EIA) Strategic Environmental Assessment (SEA), Marine Spatial Planning (MSP).

2.7.1 Session 1

What is mainstreaming? Why mainstream?

Topics to be discussed **Duration: 30 minutes**

- What is mean by the term 'mainstreaming?' Why is mainstreaming required?
- How does mainstreaming takes place?
- The 'ecosystem approach' or 'inclusive approach'

Material required

- PowerPoint presentation
- Instructions for the game

Methods

- Start with a game: 'Turtles on a Beach.'

The process

The instructor separates the students into two groups. Group 1 plays the role of turtles and forms 70 per cent of the class, while the remaining 30 per cent plays the role of obstacles. Members of Group 1, playing the role of turtles, are given the task of slowly stepping toward one end of the room, each holding in front a single pen in one hand. Group 2 is instructed to take away the pens from Group 1 or stand in their path or both, making the turtles slowly turn away and then continue their journey toward one end of the room. Once the students of Group 1 have their pens taken away from them, they slow step to get another pen and repeat the process for some time.

Once the game begins, the instructor will notice some of the students grabbing more pens or even not allowing other students to pass at all in the excitement. The instructor reassures the students about their roles, and the game continues. The instructor should only stop the game when some amount of frustration is noticed in Group 1 or when the game reaches a tipping point.

At this point the instructor should ask the students to stop briefly, reflect on the situation and narrate their experience. Typically the students come up with their personal experience of frustration during the game. The instructor then relates the game to the real-world situation and helps students reflect on the challenges faced by the protected area manager/conservation manager, who is responsible for conservation of turtles but has little or no control over the threats faced by the turtles. These threats are pollution, physical obstacles and strangling in fishing nets and are due to some activities of various sectors, e.g., the fisheries, shipping, tourism and coastal afforestation.

The game resumes with new roles assigned by the instructor. Some of the inhibitors turn protectors, and they help the turtles reach their destination.

The outcomes and learnings

The participants are able to relate to the real-world situation and reflect on the challenges faced by the protected area manager/conservation manager. The last part of the game helps students understand the importance of mainstreaming biodiversity.

The game is followed by an interactive lecture, with a PowerPoint presentation being used to provide information on the basic concepts of mainstreaming.

2.7.2 Session 2

What is environment impact assessment (EIA)?

Topics to be discussed **Duration: 1 hr/ 2 hrs**

- What is EIA, and why is it important?
- When is an EIA required?
- The legal basis of EIA: The EIA notification within the Environment Protection Act
- The process of EIA: screening, scoping, impact assessment, stakeholder consultation, environment management plan
- How is the environmental impact of a project on the coast assessed?
- What are the special assessments that have to be carried out for coastal and marine projects?
- Strategic environment assessment (SEA)
- Marine spatial planning (MSP)

Methods

- Interactive lecture using the PowerPoint presentation

Material required

- PowerPoint presentation

2.7.3 Session 3

Exercise to analyse an EIA report using a set of biodiversity criteria

Topics to be discussed **Duration: 1 hr/ 2 hrs**

- What does an EIA report looks like? What are the different sections of an EIA report?
- To what extent is biodiversity included in the EIA process in India?

Method (case study analysis)

- The participants come prepared in the session, as they were given the EIA report and the biodiversity criteria handout after the session 3 of this Module, and they had enough time to read it.
- The participants are divided into groups.
- Each group analyses the information in the EIA report and points out the relevance, efficiency and context of the report.
- The participants then make a case for or against the report in a brief presentation with regard to the inclusiveness of biodiversity.

Material required

- An EIA report from an area known to the trainer (preferably).
- The Handout providing a checklist of biodiversity inclusiveness indicators that will be used by the participants to analyse the EIA report.[3]

3 Neeraj Khera and Ajay Kumar (**2010**) Inclusion of biodiversity in environmental impact assessments (EIA): a case study of selected EIA reports in India. *Impact Assessment and Project Appraisal*. 28 (3): 189-200.

2.7.4 Session 4

Role play to highlight the stakeholder consultation process in the EIA process

Topic to be discussed **Duration: 0 hrs/ 2 hrs**

EIA process and role-interest of various stakeholders in it

Methods

A role play will be conducted as follows:

- The trainer provides students with a handout, showing a fictitious case of an island called Texel, marked on a map. The map also has details of the zonation plan of the island, indicating the protected areas, human settlements and other geographic details.
- The trainer divides the class into five groups:
  - The EIA consultant group (state-level EIA agency)
  - The state and district administration
  - The Ministry of Environment, Forests and Climate Change and the state-level national parks division
  - The local community and NGOs
  - An infrastructure development group that is preparing for a major port project that will cover half the island
- The groups work on the following activities.
  - The local community looks for potential areas for their activities, such as fishing, drying, agriculture, shrimp farming, constructing residences, repairing boats repairing boats, and demarcates these on their map.
  - The infrastructure development group plots on the map the areas of development that will potentially be most profitable, e.g., coastal roads, highways, ports and residential towers.
  - The administration group have 5-year plans and chart land use: schools, hospitals, roads, jetties and transport and communication networks.
  - The Ministry of Environment, Forests and Climate Change and the state-level national parks division identify and demarcate MPAs on the basis of the biodiversity of the area.
  - The EIA agency prepares the reports for the infrastructure development group for their activities.
- After the group work, the trainer calls for a 10-minutes break. During this break, the members of the EIA group the consult the rest of the groups to understand the potential impacts of the proposed infrastructure projects on the ecology and the socioeconomic condition of the local community.
- The EIA group then finalizes its report.
- All the groups are invited to a stakeholder workshop that is to take place in the district collector's office. They enact the scene at the meeting\.
  - The EIA consultants present the EIA report and seek comments from the stakeholders present. Apart from the groups mentioned, the stakeholders at the meeting include:
  - Representatives of the gram panchayat
  - school teachers
  - fish workers
  - boat owners

- health workers.
- The EIA agency presents the report, and the stakeholders discuss it.
- The stakeholders seek more information on the possible impacts and the mitigation plan of the project. The trainer gives 15–20 minutes for this discussion.

Expected Outcome

The project will only go forward if it is signed by 50 per cent of those present. The trainer encourages the participants to take an informed decision on the basis of all the parameters mentioned in the foregoing.

Material required

- Case study discussions and role play instructions handouts
- Maps—The trainer should make four prints of this map on an A3 size sheet.

Alternate method to conduct Session 4

Duration: 0 hrs/ 2 hrs

Material required

Three EIA reports for case studies, flip chart, marker pens, etc.

Method

World Café will be conducted as follows:

- The trainer divides the class into three groups.
- Each group is assigned one table in the café.
- Each table has one EIA report to be discussed on the basis of a publication on biodiversity inclusion.
- Each group is given 10–15 minutes to discuss the key points and note them on a flip chart placed on the table.
- The trainer then rotates the groups such that each table has one permanent anchor and the rest of the members move to other tables.
- The participants talk about their experience with differential understanding of the EIA reports at a plenary session (5 minutes).

A film on traditional knowledge of indigenous communities and how it can be useful for designing climate change adaptation strategies

The shifting patterns of the environment not only pose a challenge for the world at large, but also looking for solutions is another task altogether. This film tries to understand indigenous people's adaptation to climate change.

https://www.youtube.com/watch?v=FzBQZwpRhI0

2.8 MODULE 7
Coasts, climate change and natural disasters

Learning outcomes

After completing this module, the participants will be able to:

- summarize the basic science of climate change and disasters
- illustrate the key vulnerable areas and major impacts of climate change and natural disasters
- demonstrate, with at least one real example, interlinkages between climate change, coastal and marine biodiversity and natural disasters
- critically analyse the synergies and trade-offs between measures taken towards climate change adaptation, disaster risk reduction, coastal livelihood promotion and coastal marine biodiversity conservation.

Summary

This modules provides important information on the two most pressing issues of our times: climate change and natural disasters- their basic science, vulnerability and impacts, management and risk reduction options. The issues are accompanied by relevant case studies for better clarity. The module also focuses on a very important aspect of climate change and disaster management, i.e. their interlinkages with coastal and marine biodiversity and livelihoods of local communities. The module facilitates participants in exploring key synergies and trade-offs and possible way out to avoid the trade-offs.

Key messages

- 'Climate change' refers to a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean global temperatures and/or the variability of its properties and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcing factors such as modulations of the solar cycles, volcanic eruptions and persistent anthropogenic changes in the composition of the atmosphere or in land use.
- The livelihoods of the rural poor are affected, in one way or the other, by three major factors, viz, climate change, disruption/loss of ecosystem services and disasters.
- The goal of climate change adaptation (CCA) planning is to find local or locally adapted sustainable solutions for robust and diversified livelihood options, especially in climate-sensitive sectors such as agriculture, forestry and tourism.
- Though the objective of both CCA and disaster risk reduction is reducing the vulnerability of the local communities, some CCA and disaster risk interventions may unintentionally leave people even more vulnerable than before to the impacts of natural disasters and vice versa.
- Many marine and coastal ecosystems no longer deliver the full suite of ecosystem services that humans have come to rely upon due to the existence of trade-offs between the activities of different sectors.
- Trade-offs can be minimized if the primary goal of all the activities in the marine and coastal ecosystems is maintaining a sustainable flow of ecosystem services.

Key terms

Hazard; exposure; vulnerability; impact; mitigation; adaptation; REDD; disaster risk reduction.

2.8.1 Session 1

What is climate change? How does climate change impact coastal and marine ecosystems?

Topics to be discussed **Duration: 1 hr/6 hrs**

- What climate variability and climate change are
- Overview of the science of climate change—greenhouse gases, emissions, etc.
- Potential impacts of climate change, with special focus on and details of
  - the impact of climate change on fish species, their movements along the coast, the availability of fish and the associated livelihoods
  - extreme events
  - the impact on ecosystem services
  - the Indian coast and its vulnerability to climate change.
- Concepts of exposure, sensitivity, impacts, adaptive capacity and vulnerability; differential vulnerability
- Statistics of climate change, impacts on different ecosystems and communities
- Climate change management—concepts of mitigation and adaptation, potential and residual impacts, different types of adaptation (spontaneous, planned, anticipatory)
- Role of traditional knowledge in climate change adaptation
- Examples of possible adaptation activities, e.g., policy-based, behavioural, management
- Concept of ecosystem-based adaptation

Methods

- Interactive session using PowerPoint presentation,
- Play a doodle film on climate change adaptation
- Use a case study and organize a Fishbowl on the case, to further engage the students in discussions

Material

- PowerPoint presentation
- Doodle film of GIZ (Bonn perspectives: 'It's time for decisions now')
  http://www.youtube.com/watch?v=I-oAECOCk9Q
- Case study

2.8.2 Session 2

Disaster and disaster risk reduction

Topics to be discussed **Duration: 1 hr/ 3 hrs**

- Natural vs man-made disasters
- The disaster continuum—disaster management cycle and the role of MPAs
- Overview of and statistics about the natural and human-induced disasters affecting the coasts
- Governance issues in disaster management—early warning, evacuation, natural disaster risk reduction, disaster-proof constructions, relief and rehabilitation
- Natural disasters and climate change
- Disaster reporting: some experiences and discussion about how to link disasters with coastal and marine biodiversity during media coverage

Methods

- Interactive session using PowerPoint presentation
- Video on Mumbai floods
- Fishbowl method to discuss the ways and means of integrating coastal and marine biodiversity and disaster stories into the mainstream media

Or

- Role play to understand the integration of disaster stories into the mainstream media

Material

- PowerPoint presentation
- Video on the Mumbai floods, which killed more than 2000 people. Show cause and effects.
- Role play on the reporting by the media of the Mumbai floods (from GIZ DRR training handbook)
  - Handout
  - Role play instructions

2.8.3 Session 3

The linkage between biodiversity, disasters, climate change and coastal livelihoods

Topics to be discussed **Duration: 1 hr/ 3 hrs**

- Coastal livelihoods, concept of sustainability of livelihoods and ecosystem services
- Trade-offs with MPAs and coastal marine biodiversity to adapt to climate change
  - Seawalls
  - Aquaculture as livelihood strategy under CCA
  - Casuarina plantations as bioshield
  - Synergies: communities and their preparedness for natural disasters
  - Examples: the Asian tsunami and cyclone, storm surges; lessons learnt from previous natural disasters—linkagaes to mangroves as bioshield

Methods

- Interactive lecture using PowerPoint presentation
- Participants write a blog on the issues covered in this module.

Material

- PowerPoint presentation

SECTION 3

Facilitating development of media products

This section provides an overview of the relevance and process of developing media products by the participants taking the training course. The section also provides samples of the media products developed by the participants during trainings delivered in the past.

3.1 Why Media products?

Media products or assignments demonstrate the achievement of learning outcomes of the curriculum, viz., and integration of relevant knowledge, skills and values on coastal and marine biodiversity into the learnings of the media students.

The media assignments, together with the feedback of students and trainers, can constitute the key evaluation criteria of achievement of the learning outcomes of the curriculum.

3.2 What is an ideal media product?

The student's media assignments should ideally be:

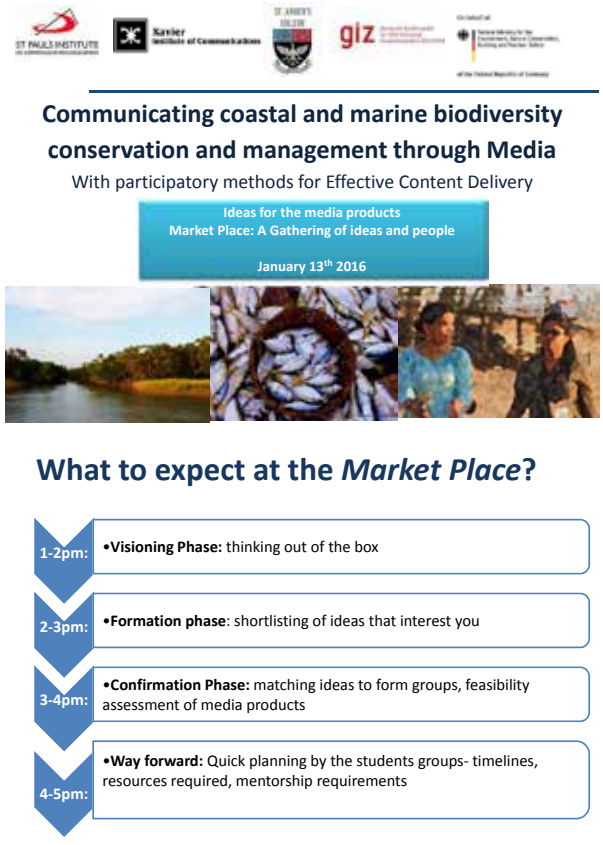
- in accordance with the learning outcomes of the curriculum,
- based on strong field-based research and
- based on interaction with a variety of stakeholders, with a cross-sector perspective.

3.3 Process for selecting topics and form of a media products for the participants groups:

The faculty member/ trainer can contact few coastal and marine experts, environmental journalists, editors, protected area managers, other trainers and experts, and seek their ideas on the key topics in coastal and marine biodiversity conservation that these experts think that media should cover. This helps in a large pool of issues and topics available to the participants, which are real issues being faced by coastal communities and ecosystems and where urgent media attention is demanded. This is a big motivating factor for the students to be able to contribute to the issue where their help is sought by experts.

The trainer can organize a 'Market Place' to let students brainstorm over the ideas and possibly guided by the subject experts and practitioners on their choice of topics.

The students can further conduct secondary research on the topics within the scope of the curriculum and narrow down the focus to specific issues. The students then share their ideas in the form of a brief concept note (max 1 page) (preferably in a group) with their trainers/ external experts to finalize.



3.4 Possible criteria for evaluation of student's assignments

- Contents, presentation and intent of the messages contained in the multimedia products is in accordance with the learning outcomes of the course.

- The language and examples contained in the media assignments is gender-community-religion sensitive, and take a constructive and balanced approach when discussing issues and challenges in coastal and marine ecosystems.

- All media assignments are based on sound research, with a balance of field and desk research. The documentation clearly segregates the data coming from field and desk research. All the data, facts and statements contained in the assignments are evidence-based.

Example of media products developed by students as part of this course:

Fisherwomen of Gujarat:

Documentary film 'Fisherwomen' depicts the life of fisherwomen and their work. They perform most of the post-fishing activities after fishermen bring dish from sea. Their work and contribution is ignored most of the time in fishing industry. They face many problems in day to day life, they too are ignored. If they were not in these activities fishing industry may fail in providing any products related to fish and other marine species. They are involved in peeling squids, trimming shrimps and carrying out more yield from unfinished products to finished products. They do retail business in local markets with special entrepreneur skills and earn livelihood. Their Net weaving skills are famous in Gujarat and they also sew flags for boats and ships. This film is shot in Veraval, Somnath, Sutrapada, Dhamlej, Mangrol and Chorvad. Which is the fishing hub of Gujarat. Fisherfolk community is mentioned as Fishermen community where term 'Fisherwomen' gets remains unnoticed. When men go for the marine catch. Women are busy in earning livelihood in their absence. Fisherwomen are more in preservation of marine animals and they are also equally concerned about under numbering marine animals. Their fishery skills are their strength. They should come on participatory platform of decision making.

https://www.youtube.com/watch?v=gAgDZj_1in4

A film on Ecosystem Services

Nature is the biggest job recruiter, service provider and producer of the planet. This short film talks about the various services that Mother Earth provides to all her inhabitants for free. The dependence of every specie for its survival on Earth is based largely on these services that are taken for granted by the most invasive species of all- we Humans. From the food that we eat, to the water we drink, from the air we breathe to the fuel for our travel, from the dress we wear to the culture and religion we aspire, it all depends and is made possible by the services and resources that Mother Earth provides. It is this specie's disregard to the exhaustive, priceless services that hits back hard on them. The movie shows the exhaustion of the services and their availability in different time zones; 2050 and 2015 respectively which brings in a conscience appreciation in the mind of the person who travels to these time zones that fills her heart with appreciation and gratitude towards her source of survival and her ONLY home.

https://www.youtube.com/watch?v=8-CFg6s8kes

A film on MEDIA reporting on coastal and marine biodiversity:

Media is a powerful entity on earth because they influence minds of the masses. However, despite the dependency of a major proportion of our population on coastal and marine resources, media reports so far have not been able t influence people's minds on this interlinkage and interdependence. This short film alks about the issue and tries to find a way out.

https://www.youtube.com/watch?v=vrUN0qnglxo

SECTION 4

Tools and handouts

This section provides detailed information to be used as resource both during and after the training. They include a comprehensive glossary, detailed case studies, handouts, simulation material, references and other material.

The trainers can customize and take printouts for their own use or for the participants, as the case may be. The trainers are, however, encouraged to try new methods and customize the existing methods as and when required to enhance the learning experience of the participants.

4.1 Daily reflection

Participant feedback

Handout on reflections: Formats for participants to capture experiences

Session	What is easy for me?	What is challenging for me?	What do I want to change in training methods/ daily schedule/ etc.*	Conclusions – what do I want to do with my insights?

* “No sessions after lunch” is not a valid option ☺

4.2 End of the course Feedback

Participant feedback

Dear participant,

Thank you for your participation in the course on “Communicating Coastal and Marine Biodiversity Conservation and management through the Media”.

We request your support in contributing to further improvement of the curriculum, and Training material. To help us further enhance the alignment of such course with your needs and the needs of the future course participants, we would request you to participate in this survey and share your experience and any suggestions you might have for improvements.

Please read the following statements and indicate your level of agreement by marking the appropriate box.

You have six possible answers ranging from “totally disagree” to “totally agree”.

If you cannot answer or do not wish to, please tick the “no answer” box.

Thank you for your help and support!

Your trainer

1. Self-Assessment: (How far you think that you have achieved the learning outcomes of course?)

Learning outcomes	Degree of achievement				
	Perfectly	Easily	To some extent	Not so well	cannot
I am able to:					
Interpret and appreciate the ecological basis of managing coastal and marine ecosystems					
Appraise the issues related to managing coastal and marine biodiversity and ecosystems					
Use and organize scientific information from different sources for developing media products on coastal and marine issues					
Appreciate the educational role of the media regarding coastal biodiversity management issues, challenges and conservation efforts.					
Develop a concrete action plan to bring coastal and marine issues to the forefront of your respective work domains.					

2. How far you agree:

	Degree of agreement				
	Totally agree	Somewhat agree	Agree	disagree	Totally disagree
The topics and content are important for my current understanding					
The training and learning methods were appropriate and suitably varied.					
I will use the learnings from this training for my work in future					

Following topics/sites were not covered in this training, but would have been important for my learning:

.....

.....

.....

.....

Following training methods/ sessions were especially liked by me:

.....

.....

.....

.....

3. Any other suggestion that you would like to provide to enhance the learning experience of the next batches:

.....

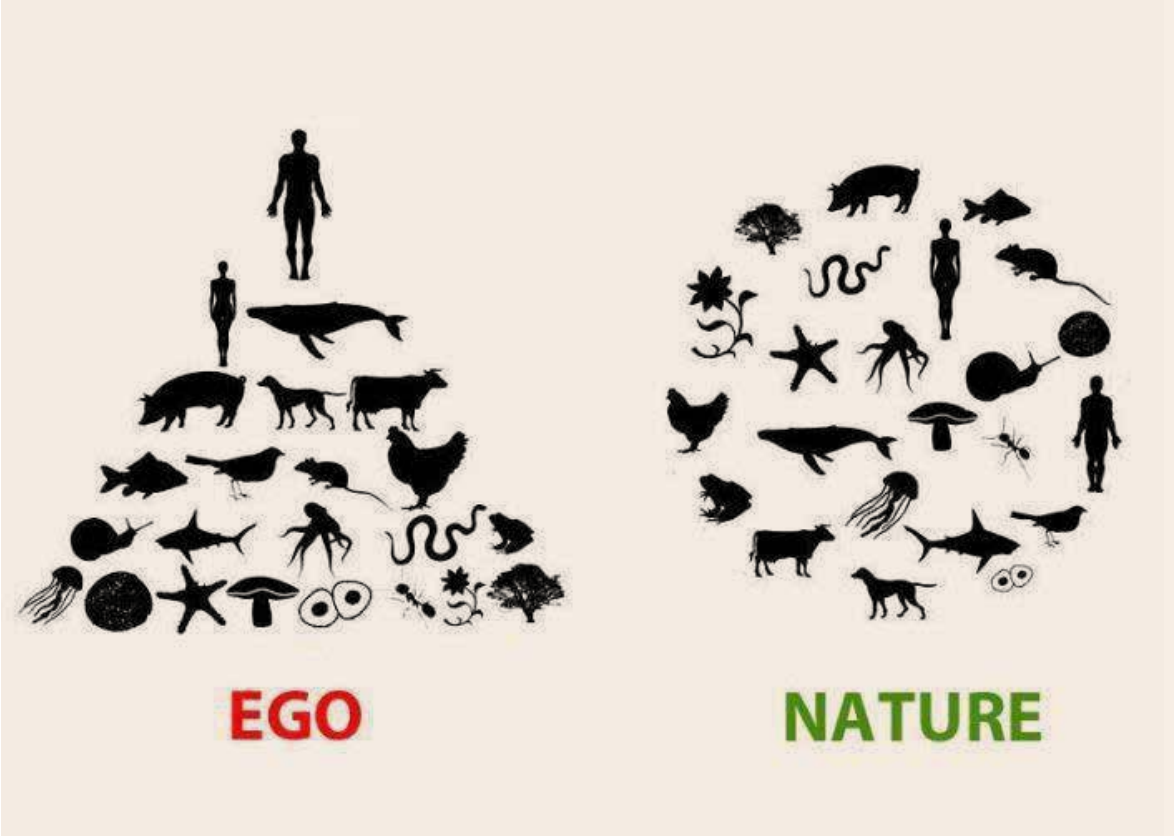
.....

.....

.....

4.3 Module-wise handouts

Handout 1: Sheet for reflecting on your understanding of the existing scenario (Module 1)



Handout 2: Discussion topics for Knowledge Cafe (Module 3)

- What are the special assessments that have to be carried out for coastal and marine projects?
- What are the existing efforts and status of achievement in our country for mainstreaming biodiversity concerns into sectoral and cross- sectoral strategies, plans and programmes?
- In how many States, biodiversity is being taught in the school and university curriculum?
- In how many States, the television and radio channels have a pro-biodiversity outlook and telecast dedicated programs on biodiversity conservation?
- If you were asked to prioritize, which sectors do you consider the most important for mainstreaming marine and coastal biodiversity concerns in your state/ range/ MPA?
- Do you know of good examples, where you can see the successful efforts towards main- streaming biodiversity?

Handout 3: Checklist of biodiversity inclusiveness indicators (Module 6)

Source: Adapted from Neeraj Khera and Ajay Kumar (2010) Inclusion of biodiversity in environmental impact assessments (EIA): a case study of selected EIA reports in India. Impact Assessment and Project Appraisal. 28 (3): 189-200

Criteria		Attribute/Indicator
Enough information on the impact area vis-à-vis biodiversity has been gathered	1	Is the location map showing known biodiversity area, urban area, other industrial establishments and projects and distance from coastal area/surface water bodies/ecologically sensitive areas, etc. available?
	2	Has the impact area been described keeping in mind the biodiversity impacts, wherever biodiversity impacts are likely to occur over a larger area?
Baseline study is comprehensive enough to provide a basis for correct impact prediction	3	Have the components of the biodiversity likely to be affected by the project been identified and described sufficiently for the prediction of impacts?
	4	Does the information include listings of endemic and endangered species present within the proposed project area?
	5	Where applicable, does the baseline data identify and enumerate flora and fauna including seasonal variables, e.g. species, migration routes, spawning and breeding grounds?
	6	Has the importance of biodiversity elements present in the impact area been assessed and described?
	7	Were biodiversity experts involved in conducting the study?
	8	Does the method of collection of primary biodiversity data conform to the guidelines of MoEF?
	9	Have sources of secondary data been referred to?
	10	Are gaps and limitations of the baseline biodiversity data indicated and means to deal with them explained?
All the possible impacts on all components of biodiversity are predicted	11	In order to effectively address biodiversity impacts, it is imperative that biodiversity impacts are not merged within the broader category of ecological impacts, or merely as impact on flora and fauna. Therefore, it was a matter of concern if the biodiversity impacts were described in a separate section.
	12	Are direct biodiversity impacts described appropriately?
	13	Are indirect, secondary and cumulative biodiversity impacts described appropriately?
	14	Are short-term/long-term impacts on biodiversity due to air, noise or water pollution described?
	15	Has the significance of the impacts been assessed?
	16	Does the impact on biodiversity cover all the three levels, viz. ecosystem, species and genetic level?
	17	Are the biodiversity impacts predicted in quantitative terms?
	18	Are the biodiversity impacts predicted in qualitative terms?
	19	Are the methods/approaches used to identify the impacts and the rationale for using them described?
An effort is made to effectively involve stakeholders in decision making	20	Were vulnerable stakeholders of the project identified?
	21	Were effective measures taken to inform stakeholders for participation in the discussion?
	22	Were current and potential ecological services provided by the affected ecosystem discussed appropriately with the stakeholders to determine the values these services represent for society?
	23	Were concerns of public regarding biodiversity impacts adequately addressed in the mitigation plan?
Alternatives with least biodiversity damage are available	24	Have biodiversity impacts of the alternative solutions/sites been described and compared with the proposed development and with the likely future conditions in zero-option development?

Criteria		Attribute/Indicator
Effective mitigation measures for the predicted impacts are proposed	25	Is mitigation a part of the project design from the start of the development of the project?
	26	Are mitigation measures proposed to address the biodiversity impacts at all levels, i.e. genetic/species/landscape and all structures trees/shrubs/herbs as well as temporal biodiversity?
	27	Is effectiveness of the mitigation measures addressed and gaps identified?
An effective biodiversity monitoring plan is in place	28	Is a monitoring plan for biodiversity impact proposed?
	29	Are details of the criteria and indicators to be used during the monitoring available in the report?
	30	Have the limitations in monitoring biodiversity been identified and addressed?

Handout 4: General Instructions for the simulation exercise (Module 7)

Simulation exercise – Prioritizing climate change adaptation measures

Development planning in the state of Ceebano[4]

Part A[5]

General instructions

[to be handed over to the participants a week or two before the simulation exercise is to be conducted]

4 This simulation exorcise is adapted from "Climate Change Negotiation Role-Play: Prioritizing Climate Change Adaptation Measures- Agricultural Planning in the Bien Gio River Delta" developed by Elizabeth Fierman under the supervision of David Fairman, David Plumb, Lawrence Susskind, Philip Angell, and Kelly Levin, for the the Harvard Law School teaching materials & publications available at https://www.pon.harvard.edu/shop/prioritizing-climate-change-adaptation-measures/

5 Please see the methods section in the relevant session of the Module 7 to see the relevance of Part A and Part B of this simulation handout.

Simulation instructions

Dear participants,

We are going to play this simulation game on the Development Planning in the fictitious state of Ceebano for PRIORITIZING CLIMATE CHANGE ADAPTATION MEASURES.

Where am I?

You are in the state of Ceebano!

On the next pages, you will see detailed description of the state of Ceebano, its economy, agriculture, environment and all the relevant information that you would require to get to know Ceebano. Please familiarize yourself with Ceebano.

What is the situation?

The simulation situation

Meeting Participants with the Chief Minister

The Chief Minister has asked representatives of eight department and organizations to participate in this consultative priority setting process. S/he has hired a professional facilitator to ensure the discussions are productive and to help the group reach agreement. Brief introductions to the participants are provided below:

Planning and Development Department – The state government authority with broad influence on all matters related to development. This department is considered one of the most powerful government agencies.

Environment and forest department – The state government authority on all matters relating to the environment, biodiversity and natural resources, including climate change. This agency was in charge of producing the State Climate Change Report.

Agriculture, fisheries and Rural Affairs department– The state government authority on all matters relating to rural affairs, including agriculture and fisheries. This department has a strong presence throughout Ceebano via its local offices.

Kiew Mountain Provinces Coalition – A coalition of the six provincial governments representing different districts of Ceebano. Provincial governments are charged with implementing state policies within their provinces. They have some autonomy in adapting state policies to local realities, but cannot deviate from state mandates.

University of Thoy Bat (UTB) Hydrology and Meteorology Research Institute – A highly respected scientific institute focusing on Ceebano's water resources and weather patterns. One of its programs focuses specifically on climate change impacts in the state.

Ceebano National University (RNU) Agriculture and Fisheries Research Institute – A highly respected scientific institute focusing on agriculture and fisheries technologies. Technical experts from this institute often work with farmers in Ceebano.

Ceebano Farmers Union – An organization representing farmers in Ceebano, including both rice and fish farmers. Its mandate is primarily to communicate relevant government policies to farmers,

although when possible it strives to convey farmer concerns and perspectives to government authorities as well.

Secretariat, Global Fund for Climate Change Adaptation – The Secretariat is in charge of managing day-to-day operations at the Global Fund, including mobilizing resources and managing donations. The Global Fund is eager to see Ceebano receive the $500 million.

Professional Facilitator – The facilitator has been hired to help participants prioritize the various adaptation approaches, and has no influence or stake in the decisions taken today.

What am I supposed to do?

You will be assigned to one of the roles introduced in the second section of this handout. You will also receive confidential instructions (after assignment of your role) that provide a more thorough introduction to the role you are playing, including your interests and initial positions. **You should not contradict what is in your confidential instructions, but feel free to improvise beyond them as the process evolves. In fact, improvisation is encouraged.**

You will not tell or show your confidential instructions to anyone else except other members of your own small group.

Please review your confidential instructions and reflect upon the role you will play, including how it will shape your perspective on the issues at hand. If you have any questions or concerns, please feel free to raise them. The group will then convene for to discuss how to prioritize the donated funds.

Tasks before the Chief Minister and her/his team of ministers/ experts/NGOs

The group must discuss the following adaptation strategies and identify which ones enjoy the widest support:

- Man-Made Protective Infrastructure
- Forest Restoration
- New Agricultural Technologies and Techniques
- Development of Non-Agricultural Sectors
- Resettlement

When discussing each of these adaptation strategies, consider the following criteria:

- What are the long-term and short-term implications of these approaches for Ceebano?
- How do these approaches address the main climate change problems, i.e. erratic rainfall as well as flood and landslide threats to Ceebano?

Important

- You will likely have your own opinions on the questions this exercise raises, but you are urged to stay true to your roles as described in your confidential instructions.
- One goal of an exercise like this is to allow participants the chance to think beyond their usual biases and experiences, and put themselves in “the shoes of” other stakeholders.
- The debrief at the end of the exercise will provide you an opportunity to step out of your ‘simulation’ character and relate the lessons you learned to the actual everyday situations you face.

About Ceebano

Introduction and background

Ceebano is a state in a developing country called *Taxum* in South Asia with a rapidly growing agriculture-oriented economy. The country's most important livelihood activities are agricultural, especially rice, Fisheries products, especially fresh-water fish, and handicraft items. *Ceebano* is now the fifth biggest rice producer and third biggest chillies exporter in the world; currently, approximately 70% of rice produced in *Ceebano* is sold for export. This represents a striking change from three decades ago, when *Ceebano* experienced widespread food shortages and was a net importer of food.

Despite a sharp decline in poverty rates in recent years, rural areas remain poorer and less developed than urban areas. Many rural population, especially young people, are moving to *Taxum*'s metro cities and pursuing work in non-agricultural sectors. The state government has begun setting policies aimed at shifting the economy's base from pure agriculture to diversified agriculture and power generation from hydro resources, both to alleviate rural poverty and to make the state more competitive nationally and globally. Under these policies, rice and chillies exports are expected to remain important for Ceebano's economy, but industrial exports are expected to eventually surpass rice exports in value. More rice will be sold on the domestic market to protect national food security, which remains a government priority. Last year agriculture contributed 50% to the state GDP.

The Kiew mountain range

The Kiew is a major mountain range in the North part of the country and a global biodiversity hotspot. This region is home to almost 20 million people, or about 25% of Taxum's population. The region, commonly referred to as the North Mountain, is composed of ten primarily rural provinces. The state of Ceebano lies in the middle of this region. Major city in the state, Thoy Bat City, is becoming an increasingly important industrial, distribution, and commercial center.

Ceebano lies at medium to high elevation – much of it lies at more than 1500 meter above sea level. Land in the mountain range is heavily utilized for agriculture and, increasingly, plantations for carbon sequestration. Mining, landslides, and earthquake are adding to the vulnerability of the natural ecosystems in the state.

Over 60% of the crop area in Ceebano is under rainfed agriculture. Rice is the most important crop grown in the state, although chilly farming and fisheries has been gaining importance, in part because fish is a more lucrative product for the farmers. The natural resources of the state are subjected to degradation and loss due to deforestation, unsustainable agricultural practices, fragmentation and degradation which ultimately impact the biodiversity as well as critical ecosystem services. Increase in human and livestock population, increased extraction of fuel wood, lack of land ownership rights, conversion of natural forests into plantations for horticultural crops, mining, overgrazing, and forest fire are the major causes of deforestation in the state. Many agriculture and horticulture fields have been created through the removal of moist deciduous and evergreen forests of the state as well as filling up of the wetlands; an estimated 200,000 hectares of forests have been removed for agriculture alone. Due to the hilly terrain, cultivation of crops along the slopes and overgrazing by livestock, the soil resources of the region are subjected to erosion and loss.

Approximately 100,000 additional hectares of wetlands have been removed for other purposes, including road and a new Halley pad construction and the creation of agricultural land, leaving approximately 15% of the original forest remaining in the state today.

Climate conditions in the state do pose challenges to food production. Like the rest of Taxun, the state has two seasons: a rainy season and a dry season. Rain fall is critical for the crops, although intense

rains and storm systems can cause major floods that destroy crops, homes, and infrastructure. By contrast, during the dry season water scarcity in the state poses significant challenge for not only for agriculture but also for hydroelectric power production as well as overall activities of the population, specifically drinking water. It is widely agreed in the State and by the international scientific community that the Ceebano state is one of the areas most vulnerable to climate change, especially the impacts of erratic rainfall and extreme events.

The state is expected to face increased frequency and magnitude of natural disasters like landslides and flash floods, as well as GLOF (Glacial Lake Outburst) in some of the higher areas of the state.

State Climate Change report

Recently, the government released the State Climate Change Report, which highlights the serious risks posed by climate change impacts on Ceebanoa. The report outlines various scenarios for temperature change, precipitation change, and sea level rise, based on high, medium and low greenhouse gas emissions trajectories for the rest of the 21st century. The government has selected the medium emissions scenarios for use as the basis for creating climate change adaptation policies and plans. Nevertheless, the government recognizes that these are simply scenarios; the future will depend on a variety of critical determinants, such as future emissions reductions.

The report confirms that extreme events of landslide and flash floods as well as drought are the most dramatic threat to Ceebano, although temperature and precipitation changes will have significant impacts on the state as well. Cold waves, snow storms and avalanches are also likely to increase with higher precipitation in the North region. Apart from the climate-induced extreme event, earthquake is one of the most significant threats to the state, especially in the South region, which fall under the most vulnerable category as per the national classification.

The report confirms that the climate models predict 1.5-3.0^{0}C increase in temperature; and 250-500mm increase in precipitation in the North region, while a decline of 300-400mm rainfall is predicted for certain pockets of the South region.

The report shows that Climate variability and climate change could impact agriculture, water resources and forest sectors.

The Global Fund for Climate Change Adaptation

A large multilateral organization has established a Global Fund for Climate Change Adaptation. The Global Fund will invest in activities that make developing countries more resilient and prepared for climate change. Given the vulnerability of Ceebano to climate change rise, as described in the National Climate Change Report**,** the Secretariat has decided to allocate US$500 million specifically for use in the Ceebano state. The centre has also decided to match up equal funding for the state Ceebano for adapting to climate change.

Payments from the Fund are conditioned on recipient governments setting priorities for how the funds will be allocated. This priority-setting process must include consultations with various parties, including implementing state government authorities, scientists, and citizens groups, such as farmer representatives. The Global Fund has said it will prefer to support initiatives that have the widest support among the different parties being consulted.

The Global Fund is ready to disburse the funds as soon as Ceebano's government conducts its consultation process and develops its priorities. It has also indicated that it is not likely to make a second donation to Ceebano in the near future.

The question: What should the priorities be for allocating the donated funds?

Ceebano's Chief Minister has asked a group of representatives from relevant government line departments, traditional governance structures, the scientific community, and the farmers union to meet and discuss recommendations for prioritizing the donated funds.

The Chief Minister wants to know where the group can find areas of agreement. He is asking the group to focus its discussion on the implications and potential outcomes of each approach. He is not asking the group to set specific funding levels for each priority, as he plans to make those decisions. He wants the recommendations by the end of today's meeting.

In preparation for the meeting, the Planning and Development department of the state of Ceebano has outlined five categories of adaptation approaches for the group to consider; these approaches are described below. They can be prioritized as meeting participants see fit. Other options can be presented as well. The Planning and Development department estimated how much each option would cost to make a meaningful investment.

A) Man-Made Protective Infrastructure: Dams, dykes, levees and embankments and boulder netting on road-sides

Funds can be used to invest in protective infrastructure, such as dams, dykes, levees and embankments and boulder-netting on road sides. These types of infrastructure can protect existing land, homes, farms, and businesses from floods and landslides by creating a defense against the flood water and material from landslide.

Protective infrastructure requires regular maintenance, and can be breeched or destroyed during major landslides or floods. In fact, some argue that building this type of infrastructure can decrease disaster preparedness by providing a false sense of security. There are already over 350 kilometers of dykes, levees and embankments in the Kiew Mountain range, most of which require at least some degree of repair and/or improvement; improvements include strengthening and, in some cases, increasing height.

There is ongoing discussion among scientists about the environmental impacts of protective infrastructure. There is evidence that this type of infrastructure can increase erosion and damage ecosystems and habitats. However, there is uncertainty regarding extent of these effects.

Cost Estimate for a Meaningful Investment: At least $250 million.

B) Natural Protective Infrastructure: Forest restoration

Funds can be used to restore evergreen and deciduous forests, which used to grow across much of the Ceebano's geographical area. Forests provide natural protection against floods and landslides, and provide habitat to many species, including the endemic species that are flagship to the Ceebano being a global biodiversity hotspot.

Many scientists emphasize that unlike man-made infrastructure like dikes and embankments, forests both provide protection and are beneficial to the environment. Nevertheless, researchers are currently studying the magnitude of floods and landslides Ceebano's forests could tolerate before losing their ability to perform their natural functions and eventually becoming uprooted.

Over three quarters of Ceebano's forests have been destroyed, in large part to make room for agriculture and infrastructure. Replanting forests would therefore mean finding solutions for required agri-

culture production, and also putting in place effective environmental impact assessment guidelines to avoid further loss of forests.

Cost Estimate for a Meaningful Investment: At least $150 million.

C) New Agricultural Technologies and Techniques

Funds can be used to invest in the development of new agricultural technologies and techniques. These technologies and techniques could help protect food security and farmers' livelihoods by helping adapt mountain agriculture to changing climate conditions. The Planning and Development department has recommended focusing on biotechnology, water management technologies, and crop integration techniques.

Research suggests that biotechnology can be used to develop rice varieties that tolerate higher salinity and water levels while still producing high yields. There are also technologies being developed to better utilize water resources, such as improved water harvesting and well design methods. Research on new agricultural technologies has slowly begun in Taxum, and is moving more quickly in some other parts of the country. If these technologies were developed elsewhere, there is no guarantee that they would be quickly or cheaply transferred to Ceebano, therefore it is important to develop these technologies in Ceebano itself.

While there is some evidence of direct negative environmental impacts of genetically modified foods, some have suggested that consumers might also resist purchasing genetically modified foods because of perceived health and environmental issues. This could lower the profitability of crops as well acceptance levels among local communities and limit Ceebano's food security programme. Crop integration techniques are already being used in the state. In particular, some farmers now use integrated fish-rice farming systems, as well as System of Rice Intensification (SRI). Bringing this and other techniques to scale in the state could help farmers in certain areas adapt to changing rainfall and temperatures, allowing them to increase their incomes and protect against risks to one crop or the other.

Abandoning intensive rice cultivation would, however, decrease overall annual yields in the short term. Research is still being conducted on the environmental impacts of this type of crop integration, although the current research suggests that when done correctly, it is ecologically sustainable. Bringing crop integration to scale in the state would involve constructing necessary infrastructure, such as fish farms and buffer zones to separate crops, and would in many cases require training for farmers.

These technologies and techniques could help protect agriculture, allowing food production in the state to continue, but only in areas not expected to be submerged or heavily flooded. They would not, however, protect population themselves from direct climate impacts like landslides, floods, and droughts.

Cost Estimate for a Meaningful Investment: At least $250 million.

D) Development of Non-Agricultural Sectors

Funds can be used to diversify rural livelihoods by investing in the development of nonagricultural industries. This strategy would allow development in the state to continue and could protect jobs in the long term, compensating for large losses of agricultural land and jobs from climate change.

Development of non-agricultural industries is expected to reduce food production by diverting land and resources away from agriculture. On the other hand, alternative industries would provide non-agricultural jobs that could increase local incomes, create jobs, and potentially entice young people to remain in the state. This approach would involve capital investments, investments in training and education

for population, and investments in transportation infrastructure like road, rail, airport and bridges. Some population would need to be relocated for construction of industrial and commercial zones and supporting infrastructure.

The Planning and Development department has recommended including funds for a comprehensive land use plan, to ensure that new developments are sited in viable areas. Still, some argue that there is little value in developing industrial zones and related infrastructure in the state because of increasing vulnerability from intense floods and landslides.

Others have expressed concern that existing industries and urban areas are already causing major habitat loss and pollution, particularly in water used downstream for drinking and agriculture. They caution against creating more pollution that could harm remaining agricultural areas and the environment.

Cost Estimate for a Meaningful Investment: At least $350 million.

E) Resettlement

Funds could be used to resettle population away from areas predicted to experience intense flooding or extremely vulnerable to landslides. This approach would help prepare for the abandonment of the areas most vulnerable to climate change, leaving adaptation efforts to focus on areas that can be "saved."

This investment would involve helping population in targeted areas move and find livelihoods in new areas, as well as an education campaign to inform them about the need to relocate. Investing in relocation now could make the resettlement of millions of population more orderly. It would also help the government prepare for consequences related to relocation, such as higher infectious disease incidence due to increased population density.

Many population are not prepared to abandon their land and farms, and would regard the intangible costs of this approach as very high. Many government officials have expressed concern about the political difficulties of asking people to leave their homes and land without an imminent, pressing threat to their safety.

Cost Estimate for a Meaningful Investment: At least $150 million.

Handout 5: Confidential instructions for the simulation exercise

Simulation exercise: Prioritizing climate change adaptation measures

Development Planning in the state of Ceebano

Part B[6]

Confidential instructions for each group

[to be handed over to the participants a one or two days before the simulation exercise is to be conducted]

6 Please see the methods section in the relevant session of the Module 7 to see the relevance of Part A and Part B of this simulation handout.

Agriculture, Fisheries, and Rural Affairs Ministry: Confidential instructions

You are the Principal Secretary of Agriculture, Fisheries and Rural Affairs, the state government Department with authority on all matters relating to agriculture and rural issues. You are trained as an agronomist.

You often work closely with the Ceebano provinces, both through the Department's provincial offices and by collaborating directly with provincial leaders. You also collaborate often with international donors interested in agriculture and rural development. You are originally from Ceebano, where your parents were once farmers.

While you have many concerns about the impacts of climate change on Ceebano, **the following is most important to you:**

- Your top interests are to protect agricultural jobs and food security

Given these interests, your initial thought is that the top priorities are:

1. Investment in protective infrastructure
2. Investment in new agricultural technologies and techniques

Below are some additional thoughts:

You believe that farming is vital for Ceebano. Today, Ceebano relies on agriculture and fisheries for both domestic food security and for export income, and the majority of Ceebano population depend on agriculture for their livelihoods. Given these current needs, you think it is clear that this group must prioritize protecting food production, especially in the short-term but also in the long-term.

You support making a large investment in protective infrastructure for the following key reasons:

- Infrastructure is a proven way of providing protection. It is therefore logical to build and repair the infrastructure necessary to protect existing hills, land and farms.
- Ceebano population will appreciate government efforts to protect them. It is unconscionable to ask them to simply abandon their land.
- The government has explicitly recognized that the Climate Change Report scenarios are uncertain. The possibility that areas predicted to be affected by erratic rainfall, floods and landslides could actually remain viable for population and for agriculture and fisheries means they should be protected, not abandoned.
- Environmental impacts associated with man-made infrastructure are of less concern than the potential for climate change to cause devastating losses in life, widespread hunger, and major damage to Ceebano's economy.
- Forests aid siltation and mitigate the effects of storms and surges, but man-made infrastructure is a better defense against landslides and floods.

You think investing in new agricultural technologies and techniques is an important way to protect agriculture itself in the long-term, especially because:

- If farmers are to adapt over time to changes like increased flooding and temperature variations without sacrificing food security and their traditional livelihoods, new agricultural technologies and techniques are necessary.
- It is an added benefit that crop integration, especially integrated rice and SRI can increase farmers' incomes.

You would not necessarily oppose development of non-agricultural sectors, particularly if you could be convinced that this would benefit farmers and raise their incomes, but this option is not your preference.

Similarly, you realize that resettlement may become necessary, but you would prefer to focus on protecting existing homes and farms first.

Today you plan to constructively discuss all strategies with your colleagues, while clearly expressing your core interests and initial priorities.

Development planning in the state of Ceebano

Ceebano National University Agriculture and Fisheries Research Institute: Confidential instructions

You are the Director of the Agriculture and Fisheries Research Institute at Ceebano National University (RNU).

You are trained in agricultural engineering, and you have expertise in irrigation systems and plant breeding.

You have been working to make the institute a leader in agricultural research and technology development.

You are originally from the northern hills of Taxum, but you did your doctoral work in Ceebano and you often work with farmers there.

While you have many concerns about the impacts of climate change on the state, **the following is most important to you:**

- Your top interest is to protect food production in the state in the long-term.
- Your second most important interest is to ensure that the group is careful to protect the environment, especially since the long-term viability of agriculture depends on high quality water and soil.

Given these interests, your initial thought is that the top priorities are:

1. Investment in new agricultural technologies and techniques
2. Investment in forest restoration, particularly as an alternative to man-made infrastructure

Below are some additional thoughts:

You believe that agriculture in the state is vital for Ceebano's food security and economy, and you also know how important it is to the existing way of life in the state.

You view new agricultural technologies and techniques as a good strategy for adapting agriculture to changing climate conditions in the long-term, and believe this approach would have the following key benefits:

- The proposed technologies and techniques can help farmers adapt to changing salinity and water levels, hopefully while still producing high yields. This would allow farmers to feed themselves and the rest of Ceebano despite climate change impacts.
- Crop integration can protect against risks to one crop or the other and boost farmers' incomes.
- Your institute is already developing the proposed technologies, and with funding could certainly speed up its work.
- Developing technologies in Ceebano could avoid costly technology transfer issues.

You realize that infrastructure is necessary to protect state population and farms, but you are concerned about the environmental impacts of man-made infrastructure. You know it is not realistic to oppose all efforts to construct infrastructure, but you would rather see the group focus on forest restoration as a protective measure.

You are even more concerned about the possibility of developing non-agricultural industries that would pollute water and land in the state and ultimately harm agriculture as a result.

While you understand that resettlement of mountain population will probably be necessary, you have trouble accepting the idea of simply abandoning pieces of the state. You are quite sure that most of the farmers you work with feel the same way.

Today you plan to constructively discuss all strategies with your colleagues, while clearly expressing your core interests and initial priorities.

Development planning in the state of Ceebano

Environment and forest department: Confidential instructions

You are the Principal Secretary of the Environment and forest department and are in charge of climate change policy matters. You hold degrees in ecology and environmental management. Although you are originally from the Western part of Ceebano, you did your academic work at the University of Thoy Bat and maintain a strong professional relationship with research institutions there.

While you have many concerns about the impacts of climate change in Ceebano, **the following is most important to you:**

- Your top interest is to ensure that efforts to adapt to climate change do not cause further damage to the environment.
- Your second most important interest is to protect agriculture and food security in a sustainable way.

Given these interests, your initial thought is that the top priorities are:

1. Forest restoration
2. Resettlement for the most vulnerable population
3. Investment in agricultural technologies and techniques, as long as research on their environmental impacts is also funded.

Below are some additional thoughts:

While you agree that it is important to protect land, population and farms where possible, you are worried that building extensive man-made infrastructure will harm the environment. You prefer focusing on forest restoration and resettlement for the following key reasons:

- Man-made infrastructure can damage eco-systems, particularly due to the negative environmental impacts due to trade-off with other ecosystem services, pollution due to construction material and process. It damages soil fertility and harms habitats, in turn endangering a variety of species (and also harming agriculture).
- By contrast, forests are a natural protection mechanism, and provide habitat to many species, and conservation of other habitats such as wetlands supporting fisheries activities, which means they are a more sustainable alternative to existing fisheries activities.
- Science clearly predicts that ultimately, some areas of the state will be severly affected by erratic rainfall, floods and landslides. Constructing infrastructure in these areas is not a viable long-term adaptation approach and could ultimately put population even more at risk.
- By planning for resettlement early, the government can mitigate environmental risks, like increased demand on wastewater treatment systems, associated with increased population density elsewhere.

In sum, forests would provide some short/medium-term protection for the population of state, while resettling the most at-risk populations is the best long-term protection plan.

With regard to protecting agriculture and food security in a sustainable way, you are pleased that the current research suggests that the new technologies and techniques being discussed today do not cause environmental damage. You will encourage funding this approach, as long as research on related environmental impacts is also funded.

You are concerned about the potential environmental damage from building new infrastructure and developing non-agricultural industries. You would want the group to find ways to address these environmental concerns before agreeing to infrastructure and non-agricultural industries as options.

Today you plan to constructively discuss all strategies with your colleagues, while clearly expressing your core interests and initial priorities.

Development planning in the state of Ceebano

Ceebano Farmer's Union: Confidential instructions

You are the Director of the Ceebano Farmer's Union. Your family has been farming for generations in one of the Ceebano provinces that the government predicts will be heavily affected by floods and landslides. Your farm primarily produces rice, which you both sell to exporters and use to feed your own family. You also grow a variety of fruits. You are considering moving to fish farming, however, especially because last year flood damaged almost half of your rice and fruit crops.

This is the first time you have been invited to present the union's views directly to government officials; more often, you present government views to your members. So, you feel the need to be careful not to upset the government when presenting your ideas.

While you have many concerns about the impacts of sea level rise on the state, **the following is most important to you:**

- Your primary interest is to protect agricultural jobs, farmers' land and homes, and your traditional way of life.

Given this interest, your initial thought is that the top priorities are:

1. Investment in man-made protective infrastructure
2. Investments in new agricultural technologies and techniques

Below are some additional thoughts:

Like the other farmers in the union, you are extremely worried about losing your source of livelihood and way of life. You know that the children of many farmers want to move to cities, but most of the farmers you know do not want to leave their land or move to industrial jobs.

You think investing in man-made protective infrastructure and new agricultural technologies and techniques would provide the following key benefits:

- Infrastructure is a proven way to protect farmers from flooding and landslides, as you have seen in your own experience. Since climate change will make these problems worse, it makes sense to invest in more infrastructure.
- Many union members would be willing to give up limited amounts of land for protective measures.
- Forest restoration may be another good protection strategy, but your fish farming members have major concerns about having to relocate to make room for forests. You would need to ensure that farmers would be compensated for any relocation costs.
- New technologies and techniques will help farmers like you deal with changing temperatures and rainfall as well as new pests and diseases. In the long-term, these strategies are necessary if agriculture is to adapt to climate change.
- Many farmers already want to integrate their crops, but don't have enough money to make the necessary land conversions or get the training they need to adopt SRI.

The proposed technologies all sound important to you, although you do want to make sure that new technologies do not increase farmers' input costs.

You have serious concerns about resettlement and development of non-agricultural sectors, since these seem like strategies for abandoning agriculture in the state. Your key concerns are:

- Most farmers you know do not want to move or give up their land.
- Even the government recognizes that the Climate Change Report scenarios are uncertain. Why force farmers to abandon their land for something that might not happen?
- Development of non-agricultural sectors might be a good idea in principle, but farmers are tired of being asked to give up their land for industrial development, especially for industries that pollute land and water.

Today you plan to constructively discuss all strategies with your colleagues, while clearly expressing your core interests and initial priorities.

Development planning in the state of Ceebano

Global Fund for Climate Change Adaptation Secretariat: Confidential instructions

You are the Deputy Executive Director of the Global Fund Secretariat.

The Secretariat manages the Global Fund's day-to-day operations, including mobilizing resources and managing donations.

You are not from Ceebano, but many years ago you were Ceebano state project director for a large multilateral organization.

You have a firm understanding of the Global Fund's internal politics and priorities, but you are also familiar with the needs and challenges in Ceebano. You have a degree in development economics.

Today's meeting is extremely important to your office because if it goes smoothly, it will lead to the first payment from the Fund. You and the Executive Director do not want to see any delays or mistakes that could put future donations at risk.

While you have many concerns about the impacts of climate change on the state, **the following is most important to you:**

- You want to ensure that Ceebano complies with the Global Fund consultation requirements by listening to all voices at today's meeting, and identifying priorities that have the greatest level of agreement.
- You want to ensure that protecting against risks to agricultural production and ensuring long-term food security are core priorities.

Given these interests, your initial thought is that Ceebano's top priorities should include:

1. Investment in new agricultural technologies and techniques.

Below are some additional thoughts:

It is natural that some parties will have more influence than others. If, however, you see that any participants and/or their opinions are completely ignored at today's meeting, you will have to report to the Executive Director that Ceebano did not comply with the Global Fund rules and is ineligible for the donation. You will push for the group to reach consensus on its priorities.

One of the key reasons for the creation of the Global Fund is donor countries' concern about threats to international food security from climate change. Therefore, it is vital to the future of the Fund that long-term food security be a focus of today's discussion (this is also beneficial for Ceebano, since you know food security is a big domestic concern there).

You believe that investing in new agricultural technologies and techniques is the best strategy for protecting food security for the following key reasons:

- The proposed technologies and techniques all sound like promising methods for adapting agriculture in the state to changing climate conditions. In the long-term, this type of adaptation will be vital for protecting food production.
- Keeping food production as high as possible in the face of climate change increases the likelihood that Ceebano can feed itself and still export to other states.

- You particularly think support developing rice varieties that can tolerate erratic rainfall and higher temperatures while still producing high yield, since rice is one of the most widely consumed foods in the world.
- Using the Global Fund donation for cutting edge research on how to make agriculture more sustainable would boost the reputation of Ceebano's scientists and intellectual community (as well as the Fund!). This, in turn, could lead to further investment in the country's development.

You will not take a strong stand on the other adaptation approaches that Ceebano's government has outlined, although personally you think infrastructure and forests could be very important for protecting farms and farmers, and therefore food security.

Today you plan to constructively discuss all strategies with your colleagues, while clearly expressing your core interests and initial priorities.

However, if you are not satisfied that the recommendations go far enough to protect food security, you will have no choice but to recommend to the Executive Director that the donation offer be rescinded.

Development planning in the state of Ceebano

Planning and Development Department: Confidential instructions

You are Principal Secretary of Planning and Development, the state authority with broad influence on all matters related to development. You have a close relationship with the Minister of Planning and Development, who has sent you to represent him at today's meeting. You are trained as an economist, and much of your work at the department relates to development in Ceebano.

While you have many concerns about the impacts of erratic rainfall on increased flood and landslide events in Ceebano, **the following is most important to you:**

- Your top interest is to ensure continued development, modernization, and poverty reduction in the state over the long term.
- Your second most important interest is to protect existing land, farms and population, as well as future development.
- One of your interests in protecting land is to ensure long-term food security for Ceebano.
- It is also important to you to meet the donor's requirements and provide the Chief Secretary with recommendations that enjoy wide support from this group.

Given these interests, your initial thought is that the top priorities are:

1. Development of non-agricultural sectors
2. Investment in protective infrastructure

Below are some additional thoughts:

In your view, investing in the development of non-agricultural sectors would have the following key benefits:

- It is a long-term strategy to compensate for the eventual loss of agricultural land and jobs due to climate change
- Young workers could be enticed to stay in the state. This would reverse current trends and help keep the state productive in the long run.
- Industrial and service sector jobs can be up to 2.5 times more lucrative than agricultural jobs.
- Comprehensive land use planning can help ensure that new industries and related infrastructure are sited in areas that are not expected to be affected by floods and landslides.
- This approach would complement existing national development plans, which already emphasize shifting Ceebano's economic base from agriculture to industry.

You know that some farmers would need to be relocated for the construction of industrial and commercial zones, but you regard this as a necessary short-term sacrifice.

With regard to protective infrastructure, you understand that some areas of the state will eventually be affected, but you think it would be politically difficult to justify abandoning parts of the state before the need to do so is very clear. Therefore, you think that:

- Limited funds should be invested in protecting highly vulnerable areas in the short-term, primarily by improving existing protective infrastructure.
- More funds should be invested in infrastructure to protect areas predicted to be viable in the long-term, to protect land for food production, as well as for future industrial and
- commercial zones.

You have more faith in man-made infrastructure, but you would not oppose forest restoration if you were convinced this would be an effective protection strategy.

Today you plan to constructively discuss all strategies with your colleagues, while clearly expressing your core interests and initial priorities. You are eager to see the group find areas of agreement to present to the Global Fund, and are genuinely interested to know what other people around the table think about appropriate priorities.

Development planning in the state of Ceebano

Ceebano Provinces Coalition: Confidential instructions

You are the Chief of Thoy Bat Province, and are currently the Chairman of the Ceebano Provinces Coalition (the chair rotates among the 10 provinces every two years).

During your four years as Chief of Thoy Bat Province, your main priority has been developing the province into an agriculture marketing center. You are trained in business administration, and have lived in Thoy Bat Province for your entire life.

Today you must balance your role as Chief of Thoy Bat Province with the overall perspective of the Provinces Coalition. Thoy Bat Province is the most rapidly developing province in the state, and is also one of the provinces least vulnerable to climate change. As Chief of Thoy Bat Province, you want to push forward with development. Other provinces, however, have other key concerns.

While the provinces have many concerns about the impacts of climate change on Ceebano, they agree that **the following is most important:**

- Your top interest is to prepare for economic and job losses due to sea level rise.
- Your second most important interest is to provide immediate protection to at-risk areas and population.

Given these interests, your initial thought is that the top priorities are:

1. Development of non-agricultural sectors
2. Investing in protective infrastructure and mangrove restoration
3. Improving Ceebano's warning and forecasting systems

Below are some additional thoughts:

Erratic rainfall and extreme events are expected to damage agriculture in all of the provinces.

Loss of agricultural land and jobs would mean increased poverty rates and decreased revenues.

The provinces support developing non-agricultural sectors as a strategy for mitigating these impacts, for the following key reasons:

- Industrial and service sector jobs can be up to 2.5 times more lucrative than agricultural jobs.
- Diversifying livelihoods would give state population the option of continuing with traditional farming practices where possible or moving to different livelihoods without necessarily needing to leave the state altogether.
- Young people could be enticed to stay in the state, which would keep families closer together and keep the region productive in the long-term.
- Provinces do not have the resources to begin this type of development process.
- Improved transportation infrastructure would be an important additional benefit in terms of developing and modernizing the state.

The provinces also feel strongly that their population must be kept as safe as possible as quickly as possible. Protective infrastructure, including mangroves, and improved warning and forecasting systems would provide the following key benefits:

- Both man-made and natural protective infrastructure is proven to provide protection. Some infrastructure could be constructed/repaired quickly for short-term protection.
- Focusing on protective infrastructure will buy time for the government to consider alternative adaptation approaches.
- Improving Ceebano's warning and forecasting systems would ensure that state population is quickly and easily informed of weather events like storm surges, which will get worse with climate change.

Today you plan to constructively discuss all strategies with your colleagues, while clearly expressing the Provinces' core interests and initial priorities.

Development planning in the state of Ceebano

University of Thoy Bat Hydrology and Meteorology Research Institute: Confidential instructions

You are the Director of the Hydrology and Meteorology Research Institute at the University of Thoy Bat.

You have degrees in hydrology and mountain engineering.

Your institute has often collaborated with the Environment and forest department, including by providing technical advice on the recent State Climate Change Report. Your institute has been observing hydrological processes and weather data for years now, and you have personally observed a decline 1 meter water table and drying up of springs in the past decade.

While you have many concerns about the impacts of climate change on the state and on Ceebano, **the following is most important to you:**

- Your top interest is to ensure that the parties are realistic and pragmatic about dealing with the impacts of sea level rise, especially by considering the short, medium and longterm effects of both sea level rise and strategies to adapt to it.
- Your second most important interest is to find ways to protect state population from harm in the short, medium and long-term.

Given these interests, your initial thought is that the top priorities are:

- Improving the government forecasting and warning systems as a short-term protection mechanism
- Investing in protective infrastructure and forest restoration as medium-term protection strategies
- Resettlement for the most at-risk mountain populations as a long-term protection strategy

Below are some additional thoughts:

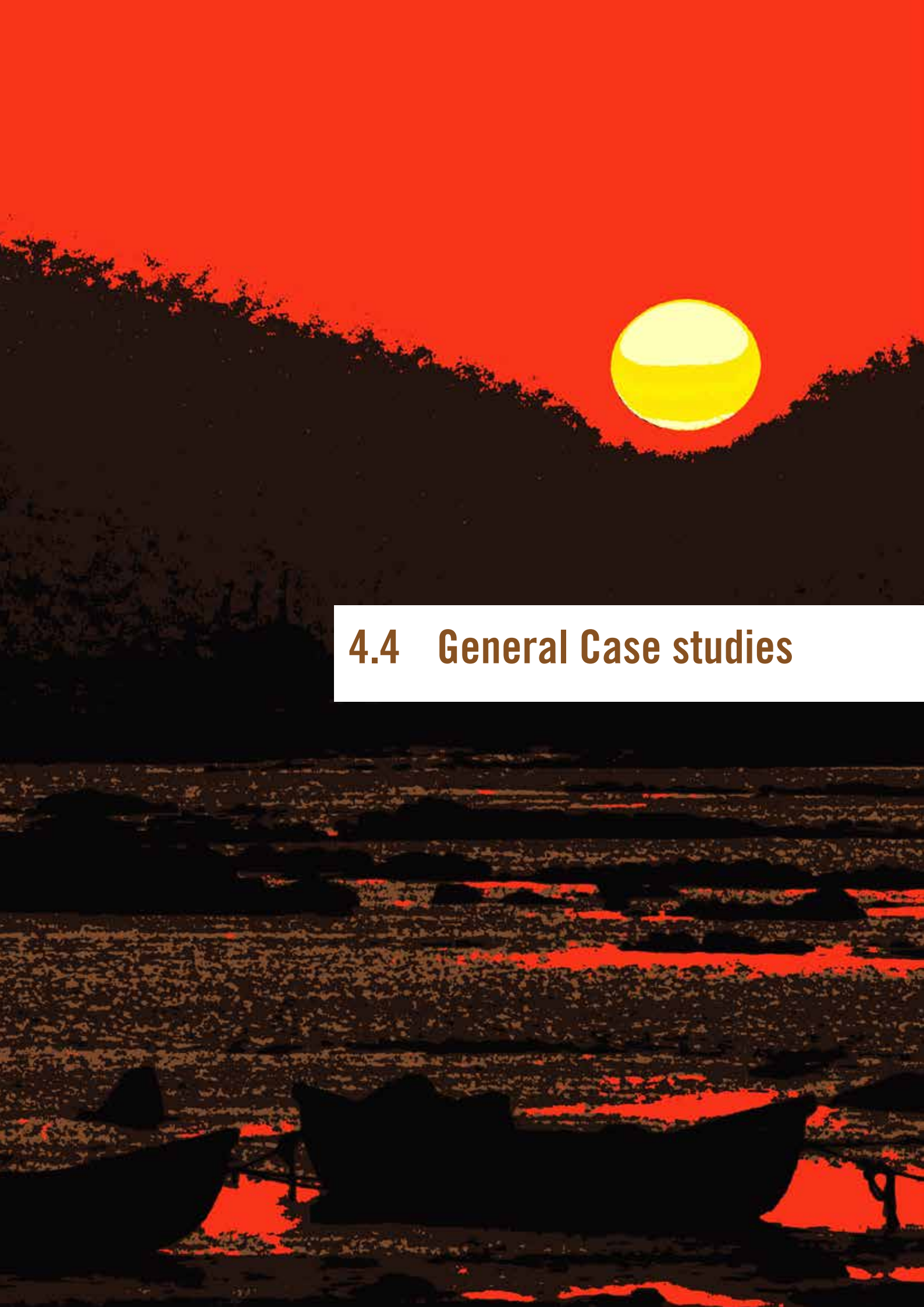
You believe it is vital that the group thinks about climate change impacts – and strategies for dealing with it - in terms of short-term, medium-term, and long-term needs and impacts. You think the three above priorities are an example of this, for the following key reasons:

- *Short-term protection*: *forecasting and warning systems*
    - Forecasting and warning systems provide short-term protection by quickly and effectively warning population about climate events like floods and landslides, which are likely to worsen with climate change induced erratic rainfall.
    - Ceebano's hydro-meteorological centers have improved greatly in recent years, but you believe that further improvements would save many lives in the short-term, even while other adaptation strategies are pursued.
    - You think that effective improvements could be quickly made for $50 million.
- *Medium-term protection: man-made infrastructure and forests*
    - These types of infrastructure are proven to provide protection, and could be constructed/ grown in the short and medium term.
    - However, it is not clear that infrastructure and forests can survive increasingly intense climate change impacts, including landslides and floods, so these may not be viable long-term strategies.
    - You believe strongly that the scope of any investment in man-made infrastructure must be limited. It is not pragmatic to erect infrastructure that will be destroyed within a few decades.

- *Long-term protection: resettlement*
    - Resettlement is the most realistic long-term strategy for protecting at-risk mountain populations. It is clear that some areas of the state will be so overwhelmed by floods and landslides that they are not worth protecting.
    - You realize this is hard for many population and officials to accept, but there is no avoiding this reality. The longer the government waits to invest in resettlement, the less orderly and more dangerous it will become.

You will not oppose the other proposed strategies as long as you are convinced that investments in them are pragmatic.

Today you plan to constructively discuss all strategies with your colleagues, while clearly expressing your core interests and initial priorities.



4.4 General Case studies

Case study:

Campaigning to save the Whale Shark along the coastline of Gujarat

Wildlife Trust of India's (WTI) whale shark campaign in 2004 called "Vali" – motivated fishers across the Saurashtra-Veraval-Jamnagar coast for protecting Whale Sharks; stop illegal hunting; finning and illegal trade practices. The campaign influenced the Government of Gujarat to adopt the Whale Shark as its mascot and being able to effectively conserve the Whale Sharks along the Gujarat coast.

1. Background information

Gujarat coast is host to the largest fish in the world – The Whale Shark which migrates from Australia and South East Asia. This fish visits the coast of Gujarat to breed. In 2001 Mr. Mike Pandey's film "Shores of Silence bought to light the fact that whale sharks we killed in large numbers along the coast of Gujarat, mainly because to harvest their livers which were used for waterproofing the fishing boats. These whale sharks were not protected since a lot about them was still unknown. WTI along with Mike Pandey subsequently lobbied with the MoEF for the whale shark to be brought under the Schedule I of the Wildlife (Protection) Act of India in 2001—the highest level of protection to a species. In the year 2002 due to the efforts by India and Philippines, the fish was included in Appendix II of the CITES (Convention on International Trade in Endangered Species). A campaign to save the whale shark was thus launched in 2004 to build awareness on its protected status and illegal killings among the local fishing community in order to stop the killings and to urge the general public of Gujarat to protect it. The Save the Whale Shark Campaign was launched as a multi-pronged campaign with support from two corporate houses in Gujarat that had manufacturing units on the coast. The campaign adopted a strategy of soliciting the support of a popular religious leader –Morari Bapu, who equated the fish to an incarnation of a Hindu deity and accorded it a status of a beloved daughter coming home. A life-sized inflatable model, a street play in the local language, theme-based painting competitions in schools, fetes with the whale shark conservation theme, an educational film and public events all worked together to take the campaign from an awareness campaign to a Pride campaign. A series of adoptions of the whale shark as the city mascot by municipal corporations saw the involvement of decision makers and government bodies. Awareness among the fishing community built up to a level where hunters turned protectors and instances were recorded where fishermen cut their fishing nets to release trapped whale sharks.

2. General description of project/initiative/effort

Purpose/objectives :

- Conservation of Whale Shark
- Awareness Campaign regarding conservation of whale shark among coastal as well mainland communities

Implementing entity / partners

- Wildlife Trust of India (WTI), Tata Chemical Limited (TCL), International Fund for Animal Welfare (IFAW) and Gujarat State Forest Department
- Project/initiative duration
- Phase I : 2004 -2008 Phase II 2008 onwards

3. Process of implementation

The fishing community was involved in the process through a mass awareness campaign with the help of local religious leader preaching regarding Save the Whale Shark. Both the quantitative and qualitative analysis was carried out as baseline survey to get an understanding of the awareness levels of whale shark amongst citizens both urban and coastal. The survey was carried our in three levels Children (8 -14 year of age), Young adults (15-24 years) and Adults (24 -55 years). Amongst the fishermen, Boat / Trawler Owners, Fishermen and Labourers who cut / clean the fish were all surveyed to get an overview of their understanding / awareness of whale shark. This initial survey revealed that citizens of Gujarat State had limited knowledge of fundamental aspects of the whale shark, calling for a vigorous campaign.

The baseline survey revealed that a multi-pronged campaign aimed at generating pride among the inland urban centres regarding whale shark – the world biggest fish, building awareness on the protected status of the shark and ban on hunting among coastal fishing communities would be effective. The pre campaign visits revealed that most of the fishermen along the coast of veraval –mangrol were Kolis and Kharwas who were non-Muslims. Thus it was decided to involve a Hindu religious leader, saint, preacher, and social reformer – Shri Morari Bapu to campaign for the conservation of these species. Shree Morari Bapu with over more than 600 kathas (religious discourses) to his credit on Lord Rama, Krishna and the Scriptures championed the cause of conservation of the Whale Shark in his own inimitable style. This evoked great media interest, and made people sit up take notice when he talked about saving the Whale Shark. Two corporate houses Tata Chemical Limited and Gujarat Heavy Metals Limited funded the campaign. TCL also got completely involved in providing manpower, money and logistical support to conduct the campaign.

Various tools like a series of painting competitions amongst the children on the theme of SAVE the WHALE SHARK, was conducted after disseminating information in schools on the species and need for its protection. A street play in Gujarati, was scripted with the message of Morari Bapu forming the basic storyline of the play. Morari Bapu compared the Whale Share to “Vhali” (beloved) here in the context of beloved daughter who comes to parents place to deliver a child. He said when a daughter comes to her parents place to deliver a child, she is given utmost care. Similarly Whale Shark comes to the coast to give birth to the children, hence she is like the daughter who has come to her parents place for childbirth and utmost care should be given to her and she should be protected and not hunted. This message created a huge impact on the local fishermen and instead of hunting they started protecting this endangered species.

To reach out to the masses and connect them with the whale shark, a 40ft life size inflatable model that looked exactly like a whale shark, in form feature, colour shape and size was ordered to be fabricated. This model was used as backdrop for street play in various locations and it drew huge crowds. This inflatable model turned out to be a huge success in reaching out to the masses and passing on the message of whale shark conservation.

While the campaign by a religious leader, the inflatable whale shark and other community awareness programs succeeded in most places, in some places like Rupen they did not go down well and drew mixed responses. The fisheries department thought that the message conveyed by the street play may not have been in the interest of the fishermen as it would affect their livelihood. The ban on whale shark fisheries had affected the fishing community because whale shark used to fetch them a lot of money. Fishermen to save the whale shark at times had to incur losses upto Rs. 40,000/ because they had to cut the nets completely to save this gigantic fish. At times small boats got damaged due the sheer size of this gigantic fish, but the impending penalty made the fishermen incur losses and fishing community was not conserving the species voluntarily.

The whale shark has been adopted by many cities as the city's mascot, including Porbandar, Diu, Ahmedabad etc. This was just the raise awareness amongst one and all regarding the importance of this endangered species

After the campaign the first fisherman who cut his net to save the whale shark was honored publicly by Shri Morari Bapu in one of his kathas. Tata Chemicals Limited also rewarded some fishermen with cash prizes as compensation for cutting their nets and saving the whale shark.

Altough the fishermen were motivated enough to cut the nets and suffer monetary loss incurred in releasing the trapped fish, the lure of easy cash in poaching could be deterrent in whale shark conservation. Thus a proposal for compensating the fishermen whose livelihood depended on their nets was forwarded by the Forest Department in May 2006 and accepted by the Government in December 2006. A compensation of Rs. 25,000 has been fixed for each fishing net that was damaged while saving the whale shark.

4. Outputs and outcomes

The campaign has produced the following impacts:

- Whale Shark hunting completely stopped along the Gujarat coast.
- The fisher community has accepted the importance of conserving Whale Sharks and how their efforts towards its conservation are valued by society, government and religious leaders. They feel valued and therefore motivated to continue conserving Whale Sharks, event hough this may be a income loss for them.
- Government has become highly sensitized to fishers needs and proactive to adopt novel techniques of campaigning by adopting Whale Shark mascots along the coastal districts and providing full support to the NGOs and environmentalists campaign movement.
- Religious leaders have been able to influence the citizens to draw their attention to Whale Shark conservation and use the positive emotions, faith towards protecting marine biodiversity and wildlife.
- Demonstration about the behaviour and characteristics of the Whale Shark through life-size models helped in drawing mass attention to unique features of marine life and perceiving connection of humans and impact on whale sharks. Such models had huge impact in communicating the conservation message and having a multiplier effect. This was an innovative part of the campaign.
- Media coverage could be drawn towards marine biodiversity conservation and other issues of the fishers, which also helped in creating debates across various levels of the society and therefore generate more public interest and engagement for conservation issues.

5. Discussion

The campaign worked effectively due to initial ground survey and assessment of perception of various stakeholders, particularly fishers towards the whale shark conservation and other marine biodiversity utilization issues. This helped to segregate stakeholders and bring out customized messages that were relevant to the specific coastal area and stakeholder. A key triggering factor for the success was the involvement of the religious leaders to talk about whale shark conservation. This immensely attracted mass attention and channelized their good faith towards conservation efforts. The Government also was a key actor towards the campaigns success, particularly in announcing compensation packages for fishers who lost nets while saving whale sharks and valuing fishers efforts by publicly acknowledging their efforts and rewarding them for it. This increased confidence amongst the fishers and the perceived their efforts for the larger good of the society and whale shark. The positive response of the citizens from the society in valuing fishers as important part of their society and particularly for conser-

vation of whale shark, helped create mass positive ambience and good will for whale shark conservation. This is important to sustain the campaign movement and not depend only on legal provisions to enforce conservation laws. The entire campaign was successful as it could sustain the motivation of citizens to volunteer actively and debate on whale shark conservation. The public attention and keeping the topic under constant debate in the media was instrumental in strengthening the fishers and government efforts towards the whale shark conservation.

6. Recommendations/conclusions

The support and physical presence of the revered spiritual leader Shri Morari Bapu, proved to be most effective in catalyzing media hits and bringing the stakeholders community state government officials and enforcement agencies under a common umbrella, all working towards the cause of saving the whale shark.Considering the large faith following of several religious leaders in India and along the coast, it may be a good strategy to involve religious leaders in marine biodiversity conservation and campaigns.

References

Discussions with Rupa Gandhi Chaudhary, Dhiresh Joshi, Aniruddha Mookerjee, Vivek Talwar and Vivek Menon – from WTI, Gujarat.

http://www.mangrovesforthefuture.org/grants/small-grant-facilities/india/an-assessment-of-the-past-and-present-distribution-status-of-the-whale-shark-rhincodon-typus-along-the-west-coast-of-india-2/

Case study:

Urban Flooding in Mumbai - July 2005[7]

Source: This case study is reproduced here from the document, "Reporting Disaster and Disaster Preparedness – A Training Handbook"

TRAINING METHODS	
Training technique:	Group work
Resources required:	Paper, pen, flip charts, white board, bold marker audio-visual equipment, projector, screen

STEPS

Divide trainees into groups and assign a case study (Sikkim earthquake, Mumbai floods, Jaitapur nuclear power plant) to each group. Introduce briefly each case study and assess how much trainees know about the mentioned bases. Also, briefly touch upon the coverage of disasters in the media. Give trainees the material to read overnight and ask each group to present case study in the next session on the following points:

- Introducing the case study
- Facts and figures
- Losses – human, economic, infrastructure etc
- Relief and rescue
- Coverage of disaster in the media – pre, during and post
- Do's and Don't's Best practices

In the next session, ask each of the groups to present their case study and be a facilitator to further focus group discussion. End of each case study, ensure that the trainees understand Dos and Don'ts of reporting disaster.

7 Harpreet Kaur, N. Firdaus, P. Chatterjee (Authors), D. Asendorpf, J. Gupta, N. Khera, P. Bank (Editors) (2012): Reporting Disaster and Disaster Preparedness – A Training Handbook; 133 pages, published by GIZ. Available on-line from http://www.igep.in/live/hrdpmp/hrdpmaster/igep/content/e48745/e50194/e51519/Media_and_DRR_Training_Handbook_GIZ_2012.pdf

Introduction and Context

Flooding in urban areas can be caused by flash floods, or coastal floods, or river floods, but there is also a specific flood type that is called urban flooding, caused by lack of drainage. As there is little open soil in a city that can be used for water storage nearly all the precipitation needs to be transported to surface water bodies or the sewage system. High intensity rainfall can cause flooding when the city sewage system and draining canals do not have the necessary capacity to drain away the water. Water may even enter the sewage system in one place and then get deposited somewhere else in the city on the streets (http://www.floodsite.net/juniorfloodsite/html/en/student/thingstoknow/hydrology/urbanfloods.html)

Urbanisation is rapidly increasing throughout the world, and India is not an exception (UNESCAP, 2009). There is large scale migration to cities and towns. In India, in 1901 there were 1,827 urban agglomerations with a population of 25.85 million which was 10.84 per cent of the then total population, whereas as per 2001 census there were 3,768 urban agglomerations covering a population of 285.4 million which works out to about 27.8 per cent of the country's population. As per the same census the cities (population of one million and above) account for 37.8 per cent of the total urban population of the country. There are now 35 metropolitan cities with a population of one million or more each as compared to 12 such cities in 1981. These 35 cities account for roughly one-tenth of country's total population. There are six mega cities with a population of five million or more each. This clearly indicates shift from rural areas to urban areas. It is estimated that by year 2050 about 60-70 per cent of population will migrate to cities. With increasing urbanisation, the problems associated with it are more visible. One such challenging problem is urban flooding and urban floods (UNESCAP, 2009 http://www.unescap.org/idd/events/2009_EGM-DRR/India-Apte-Innovative-ways-of-managing-Urban-Floods-comments-final.pdf). Though urban flooding has been experienced over decades in India but sufficient attention was not given to plan specific efforts to deal with it (NDMA, 2010). In the past, any strategy on flood disaster management largely focused on riverine floods affecting large extents of rural areas. Mumbai floods of July 2005 turned out to be an eye-opener. Realising that the causes of urban flooding are different and so also are the strategies to deal with them, NDMA has for the first time decided to address urban flooding as a separate disaster delinking it from floods. NDMA commenced its efforts to formulate the Flood Guidelines in 2006 and released them in 2008. Even while the Flood Guidelines were under preparation, efforts commenced to formulate these Urban Flood Guidelines in August 2007.

(http://ndma.gov.in/ndma/guidelines/Management_Urban_Flooding.pdf)

Floods in Mumbai

The monsoon often wreaks havoc in Mumbai, bringing with it potential for floods. When particularly heavy rainfall coincides with a high tide on the Arabian Sea, the water has nowhere to go and the entire city floods. This happens about one to three times a year. Even a normal monsoon shower can cause mayhem in Mumbai (Win, 2010). This was especially highlighted when Mumbai, a teeming city of more than 15 million people, was brought to a standstill on 26 July 2005. The city experienced the eighth heaviest recorded 24-hour rainfall figure of 994 mm and the rain intermittently continued the next day. 644 mm was received within the 12-hour period between

Lakhs of commuters had a harrowing experience as they either took an inordinate amount of time reaching their homes or, in many cases, had to stay put in their offices due to non-availability of public transport, including the lifeline – suburban railway's western, central and harbour lines. Roads in the city were choca-bloc with thousands of vehicles stuck at various points. Not just the BEST buses, thousands of cars and other vehicles were also submerged in water at various places across the city, prompting the drivers to abandon them on the spot for the night.

PTI
27 July 2005
http://www.expressindia.com/news/fullstory.php?newsid=51561

8 am and 8 pm. Macabre tales of death and deprivation slowly emerged from Mumbai's water world as stranded people attempted dramatic long walks home and families waited to hear from loved ones who left for work (Indian Express, 2005). The rains slackened between 28 and 30 July but picked up in intensity on 31 July. Other places to be severely affected were Raigad, Chiplun, Khed, Ratnagiri and Kalyan in Maharashtra and the state of Goa.

This is so common that many don't even count it as flooding.

"When it's small, you say waterlogging. When it rises to your chest, head, you call it flooding," said Mumbai-based environmentalist Girish Raut.

Hanna Win

23 June 2010

http://www.globalpost.com/dispatch/india/100622/mumbai-rains-floods-monsoon-season-urban-disaster-management

The floods were caused by incessant rains coupled with high tide. Several low-lying areas and large portions of suburban railway tracks in the metropolis were inundated (PTI, 2005). Flooding in the June-September monsoon season is common in Mumbai, which is surrounded on three sides by sea, but July 2005's rains highlighted the vulnerability of the city's infrastructure. The floods that occurred in Mumbai on July 26, 2005 were aggravated by three main factors. The first was the poor and inadequate drainage system of Mumbai, which was not capable of carrying even half the amount of water on the day the disaster took place in the city. The second factor that had an adverse impact on the situation was the rapid growth and development of the northern suburbs which lacked proper control and planning on the part of the city's municipal authorities. Third, the mangroves that existed along the banks of the River Mithi and the Mahim Creek had been destroyed indiscriminately to make way for the construction of new buildings (Blurtit), so there was nowhere to absorb the excess water.

The flood shut down Mumbai, snapped communication lines, closed airports and marooned thousands of people. At least 87 people were killed in two days and another 130 were feared buried in landslides, according to authorities and news reports (breakingnews.ie, 2005). India's then Home Minister Shivraj Patil, on 27 July 2005, told Parliament that "about 5.6 million people in 16,000 villages had been hit by the heavy seasonal rains that had washed away tens of thousands of homes, along with roads, railway tracks and bridges. More than 76,000 farm animals have perished and more than 1.72 million acres of crops had been destroyed by the swirling flood waters."

Meanwhile, a senior relief official, Krishna Vats, said the number of casualties might rise again as bodies buried by landslides are still being recovered.

"We need to restore the water supply and electricity supply and telecommunications and we need to disinfect water — so the hygiene and sanitation are some of the important considerations right now in terms of restoring the situation," he said.

With the heavy rainfall, the sewage system overflew - contaminating water lines. There were concerns that large amounts of debris and animal carcasses might lead to outbreaks of disease. Reports in the media warned of the threat of waterborne diseases, and hospitals and health centres geared up to distribute free medicines to check any outbreak. Losses to the state and private business in the city in July were estimated at more than 20 billion rupees (Reuters, 2010).

The financial ramifications of the Mumbai floods were felt in other parts of India as well. The Surat based diamond and textile industry, which has close trade links with Mumbai, was dealt a severe blow as disruption of transport hit domestic trading and exports consignments with estimated losses of around Rs 300 crore. "Non-fulfilment of commitments and blocked payments on business deals has badly affected the diamond trade, which is heavily dependent on Mumbai," said Pravin Nanavati of Gujarat Hira Bourse (TNN, 2005).

The Government response was seen with the deployment of 5,000 personnel of the armed forces for relief and rescue work in areas like Badalpur, Ambarnath, Ulhasnagar, Kalyan and Dombivili areas in the neighbouring Thane district. These operations were being supervised by Chief Minister Vilasrao Deshmukh (breakingnews.ie, 2005). Mumbai's Police Commissioner A.N. Roy stated, "Never before in Mumbai's history has this happened, our first priority is to rescue people stranded in the floods" (Tribune, 2005). A fire-fighter undertaking rescue operations in northern Mumbai narrated, "It was terrible to pull out little babies from under boulders and mud. The very young and the old just didn't make it" (BBC, 2005).

Prime Minister Manmohan Singh undertook an aerial survey of affected districts like Thane, Raigarh etc. After touring the rain ravaged areas he announced emergency aid totalling Rs 700 crore for the Maharashtra government (AFP, 2005).

In the post-flood scenario the Prime Minister stated, "Mumbai deserves more attention" (Reuters, Calls for better government echo in flood-hit Mumbai, 2005). The Chitale Committee, a fact finding team, was appointed to study the deluge of 2005 and it recommended a contour mapping exercise for the city that could be used to aid the Brihanmumbai Municipal Corporation's (BMC) planned flood modelling system which would help the civic body predict and plan for future flood situations. However, Madhav Chitale, chief of the fact finding committee, lambasted the BMC for failing to learn lessons from the 2005 deluge. Calling the efforts taken by the civic administration "inadequate", Chitale said that safety of the people of Mumbai cannot be guaranteed as the civic body doesn't have basic topographical survey maps (Desai, 2008) .

> …the efforts taken by the civic body to tackle the floods in the city during monsoon are inadequate. "'We're not prepared to cope with floods in future and at an extremely nascent stage," he said.
>
> Shweta Desai, Indian Express
>
> 28 September 2008
> http://www.expressindia.com/latest-news/two-years-on-civic-body-yet-to-implement-chitale-committee-recommendations/366615/

The state government also allocated over Rs 1,600 crore for cleaning up the Mithi river and widening its banks for the purpose of controlling floods. "We have increased the capacity 2-2.5 times. There is siltation that keeps taking place, so we have to keep desilting," said Rahul Asthana, Metropolitan Commissioner, MMRD (Limaye, 2011).

Coverage of urban floods in the media – before/during/after

The July 2005 Mumbai floods were covered widely by both national and regional media. News reports varied from causes of floods, how it was a mix of natural and man-made disaster (unplanned city) to impact of floods on people, business, city etc., how people suffered and struggled to reach their destinations, government's response to the floods and how city responded, (lack of) preparedness for such disasters. In this context, examples of news/media reports are illustrated from the point of view of good reporting or bad reporting.

Angles to look for:

- Overall loss – human life and resources
- Disease outbreak
- Economic dimension
- Education

It is very important to note that urban floods have different aspects and they can be covered from various possible angles. There are certain factors essential to cause a flood – these can be incessant rains, breach in a dam, unplanned city drainage and sanitation system. And once a flood maroons an area, the dangers don't end with the receding of the flood waters. There is loss of life and property; always a danger of epidemic and spread of communicable diseases and the possible blockage of the existing drainage system. As such it is a job of the reporter to look for the various possible angles before, during and after the floods.

Before a flood is caused, a reporter can focus on stories pertaining to unplanned and unorganized cities, the flawed drainage and sanitation system. For example:

City floods due to poor planning

http://vietnamnews.vnagency.com.vn/Social-Isssues/212243/City-floods-due-to-poor-planning.html

Urban experts have rejected suggestions that the worsening of HCM City's chronic flood situation is due to climate change, blaming it instead on rapid urban development and unplanned construction.

… This was due to rapid urban development which caused an encroachment into drainage systems and prevented rainwater from seeping into the soil due to the extensive cementing around the city.

…"The only way to effectively resolve the flooding is by good urban management," former member of the city People's Council, Dang Van Khoa, said.

Unplanned urbanization of Dhaka city: increase of rainfall induced flood vulnerability

http://dspace.bracu.ac.bd/handle/10361/223

…In recent years Dhaka City is facing extensive water logging during the monsoon (May to October) as a common and regular problem of the city like water pollution, traffic congestion, air and noise pollution, solid waste disposal, black smoke etc.

… Management of drainage system of Dhaka City is presently a challenge for the urban authorities because of rapid growth of population and unplanned development activities. Therefore, a close coordination among urban authorities and agencies and collaboration between public and private sectors is needed for effective management and sustainable operation of urban drainage system. It ascertain the inherent causes of such water logging and its effects on the city life from the perception of authorities of different development organizations, experts and people living in different parts of Dhaka City.

Preparing hospitals for disaster management

http://www.thehindu.com/news/cities/Thiruvananthapuram/article2683623.ece

Workshop being held in five disaster-prone cities in country

There was hardly any audience in the hall when the workshop on preparing hospitals for disaster management began at the Peroorkada District Hospital on Friday morning.

But the doctors and paramedical staff who started trickling in about half-an-hour later remained glued to their seats till 1.30 p.m. when the technical session ended.

"Till date, disaster management did not hold any meaning for us. We are now very conscious about the need for an emergency plan and the level of preparedness that we should have as hospital staff," one of the participants said.

"Hospitals are the lifelines where people would be brought in huge numbers when a disaster – floods, earthquakes, major fire, landslips, terrorist attacks or tsunami – strikes. Hospitals should be structurally safe to withstand a disaster such as earthquake, but more importantly, a hospital should be able to function even after a disaster," pointed out Hari Kumar, president, Geo Hazards Society.

The workshop on hospital safety, first of a series of workshops for hospitals being held in five Indian cities, was organised at the behest of the WHO, by the Institute of Land and Disaster Management in collaboration with the Geo Hazards Society, a global partner of WHO.

After a flood, the reporter must watch out for effects like spread of communicable diseases, sanitation and health in the flood-hit areas, or problems faced by the people. For example:

Bangkok floods lead to disease fears

http://www.theaustralian.com.au/news/world/bangkok-floods-lead-to-disease-fears/story-e6frg6so-1226191691063

But health officials warn against a spread of disease, even as the waters recede.

Rekha Hanvesakul, a doctor at BNH Hospital in Bangkok, says Thailand's health system is facing a major test to cope with the floods' aftermath.

"It's definitely a big challenge because of the quantity or mass of water that's coming through. I don't think we've ever had to deal with such large amounts of water," Dr Rekha told AAP.

"If it's one or two days people can manage to deal with this. (But) because the quantity of or mass of water is so huge and a lot of people are living under these conditions for long periods of time disease becomes a real issue," she said.

Doctors are already warning people, especially women, of the dangers of infection from water contaminated by animal urine that can lead to leptospirosis, with symptoms of fever, headache, nausea and vomiting. Other causes of concern include cholera and gastrointestinal diseases, such as typhoid. BNH also warns of poisonous snakes, scorpions and centipedes in the water.

"Of course things like typhoid, which again comes from salmonella bacteria, unclean food, water, unhygienic methods, not washing your hands after going to the bathroom or defecating in flood waters just because there are no toilets," she said.

Will Thailand's Floods Bring Disease?

http://thaifinancialpost.com/2011/11/16/will-thailands-floods-bring-disease/

Thai health authorities are on alert for outbreaks of disease as massive floods across the central plains show signs of receding. Medical specialists are especially concerned for communities inundated over several weeks, raising concerns of outbreaks of dengue fever, cholera and typhoid.

Mopping up in Mumbai

http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(05)67196-6/fulltext

…Devastating floods and a death toll exceeding 1000 have made sanitation–and Mumbai's decrepit drainage system–a political issue in India. As waterborne diseases continue to claim lives a month after the deluge,

…A month after unprecedented rains lashed the teeming metropolis of Mumbai, killing more than 1000 and paralysing India's commercial and entertainment capital, policy-makers are, at long last, making the link between drains and disaster.

Big rain brings urban flooding

http://www.nation.com.pk/pakistan-news-newspaper-daily-english-online/Regional/Lahore/24-Jul-2011/Big-rain-brings-urban-flooding

The City received another heavy downpour on Saturday, putting the routine life to a standstill by causing urban flooding. The experts have forecast more rains during the next couple of days.

Short bursts of heavy downpour at noon submerged roads and streets in many localities into knee-deep water. It took the WASA employees hours to drain out the rainwater. Massive traffic jams were witnessed on a number of important arteries till the evening.

The Lahorites witnessed its worst gridlock – from Shah Alam Market to Chungi Amir Sidhu – and many smaller traffic jams on several of its other roads on Saturday as heavy down-pours lashed the City yet again. The commuters on the main road into the City waited for hours for the traffic mess to clear.

…The premier sanitation agency WASA failed to clear inundated rainwater from roads and streets even hours after stoppage of rains. The situation was worst at Liberty Market, Centre Point, Firdous Market, Shadman, Qartaba Chowk,

Bangkok after the floods

http://www.bangkokpost.com/news/local/263713/bangkok-after-the-floods

It is strange but true that despite repeated warnings, there are still residents of Bangkok's inner city who remain in denial about the watery woes threatening to engulf them. They say they have stayed dry before, so see no cause for concern. By contrast, others have emptied the shelves of supermarkets in panic-buying sprees and then retreated to high ground or fled the capital. A third group has behaved more rationally by taking the necessary precautions and adopting a commendably far sighted approach. In their view, every disaster brings an opportunity and, on this occasion, it is to metaphorically wash away the sins, clutter and mistakes of the past and make all 1,570 square kilometres of Bangkok a better place to live in future.

Journalists can also follow-up to check whether governments have learned any lessons after a flood and what their plans to prevent such floods in future are.

Lessons to be learned from SE Asia floods

"The UN secretary general, Ban Ki-moon, visiting Thailand, said he had, "emphasized the importance of learning lessons from this mega flooding". Ban was en route to the Durban climate change conference where he is calling for a $100bn fund to help developing countries mitigate the impact of global warming.

While individual events such as the flooding in south-east Asia can't be causally linked to climate change, they do demonstrate the impact that an increased frequency of weather extremes will have on countries in the region. With sea level rises also likely to present a serious risk of urban flooding around the world, Bangkok's experience could serve as a template for future disaster management.

Unicef's Thomas said so far he'd been impressed by the government's response. "Given the amount of water, the authorities have done a pretty good job," he said. However, the real test will begin when the flood waters start to recede and those displaced have to return home"

Did Mumbai learn nothing from 2005?

http://infochangeindia.org/Urban-India/Cityscapes/Did-Mumbai-learn-nothing-from-2005.html

Although the realisation that Mumbai's mangroves have to be preserved has sunk in after the disastrous floods of 2005, nothing concrete has been done about it. Now there are plans to build a new airport that, environmentalists say, will result in an estimated 170 hectares of mangroves being destroyed. And the diversion of two rivers.

When the rains set in, people in cities like Mumbai and Kolkata worry every day about the prospect of wading through flooded streets. They ask themselves whether they will get through another monsoon without experiencing the kind of disaster Mumbai faced in 2005. Have any lessons been learned?

A crucial message that came through a disaster like the one in 2005 – forced by nature but compounded by human folly – was the importance of allowing nature to play the role it always has in mediating between large quantities of water and the ability of the soil to absorb it. Urbanisation inevitably forces the paving over of open spaces and dirt stretches. As a result, an important method of absorption of rainwater and its runoff is destroyed.

The other natural 'drain' that cities, particularly those located near the sea, have are mangroves – unique wetlands that act as a check for excess water from rising seas encroaching landwards, while draining out excess rainwater even during heavy showers. Yet urbanisation is increasingly killing this valuable resource.

Its value, of course, goes beyond its function as a natural drain. Mangroves are repositories of important biodiversity, both flora and fauna. They attract birds and insects, as well as aquatic life. They spawn vegetation that is unique and sturdy as it is able to withstand strong tides and denudation. They survive in a unique combination of saline and fresh water.

Although the realisation has sunk in, particularly in the case of Mumbai, following the 2005 flooding, that mangroves must be protected, the reality is that nothing is being done about it. 'Protection' is an aim, a desire that is not backed by concrete plans, by vigilance that would ensure that the wetlands survive urbanisation's onslaught.

To remain on lookout for such stories, a reporter needs to rely on different sources of information. For example, after the floods recede, the reporter can watch out for the people admitted in the hospital and check from the doctors or hospital administration whether there has been any sudden increase in inflow of a particular type of patient.

As far as the floods are concerned or for that matter any other disaster, one of the major challenges for a reporter is to get the facts right. Though the official sources are seen as reliable but in case of floods, it is possible that the government officials may try a cover-up or downplay the gravity of the situation. In such circumstances, a journalist has to make extra effort to be accurate while reporting about the floods. He can rely on several sources both official and unofficial. These include the government officials, hospital administration or doctors, the credible NGOs that have a wide network of volunteers and professionals, police and the victims. But since there is always a possibility of conflicting figures from different sources, it is essential for a reporter to give the information provided by different sources but with proper attribution.

Example 1:
Facts are sacred, and so is balance

Record rains in Mumbai, death toll is 8
AP WEDNESDAY, JULY 27, 2005

The reporter has started the news report with a clear beginning and established the context

"The strongest rain ever recorded in India shut down the financial hub Mumbai, snapped communication lines, closed airports and marooned thousands of people, officials said on Wednesday. At least 87 people were killed in two days of crippling rains and another 130 were feared buried in landslides, according to authorities and news reports."

The reporter has relied on different sources of information to ensure accuracy and explains the extent of damage caused and relief and response measures taken up by the government and state authorities. The director of the meteorological department was interviewed to bring in expert's comments, while the Home Minister (official source) was interviewed to comprehend the damage caused and response measures taken up by the government. General public was interviewed to explain the suffering of people, while state level officers were quoted to illustrate the measures taken up by the local administration for relief and rescue operations.

India's Home Minister Shivraj Patil… said about 5.6 million people in 16,000 villages had been hit by the heavy seasonal rains that had washed away tens of thousands of homes, along with roads, railway tracks and bridges. More than 76,000 farm animals have perished and over 1.72 million acres of crops had been destroyed by the swirling flood waters, Patil said.

"We were stuck in a bus all through the night with nothing to eat or drink. It was impossible to get out because there was water all around," said government employee Yamini Patil

Example II:
Using personal story to tell about bigger events

Wading all night through Mumbai
http://news.bbc.co.uk/2/hi/south_asia/4724245.stm

The reporter here has used the personal account of Anjali Krishnan, a Mumbai based advertising professional, describing her night-long trek home through neck-deep water in the flooded city. Though the news report primarily focused on how floods impacted Anjali Krishnan and her efforts to reach home amidst difficult circumstances, it is also the story of millions of people living in the city. Some excerpts:

…I had driven out of home for a business meeting in Mumbai on an overcast rainy afternoon on Tuesday… I was on the way to Bandra when I joined a queue of cars, and instantly realised that the rain had thrown the traffic out of gear… No big deal, I thought. It happens every monsoon. …It was half past four in the afternoon. I had already spent an hour and a half trying to negotiate through the traffic. For the next 10 hours, till two in the morning on Wednesday, I was stranded in my car.

… As the hours passed, I realised that I had gotten myself in a big mess – Mumbai had been inundated, everything had come to a halt, there were power outages

…The rain was slapping ferociously on the wind screen, the sky was inky black, there was darkness all around, and the city's cheery FM stations spewed romantic Bollywood rain songs on the car radio. They had seen us in the car and were offering some snacks….We were famished and took up the offer. They took us to half constructed building nearby and fed us….There was a school bus packed with children nearby – the men had dropped some snacks for the trapped students. ..Around three in the morning, we decided to finally begin our long march home through the swirling, near neck-deep water. …It was still pouring, and we couldn't hold our umbrellas in the gale. There were broken bottles floating all around. I saw two Mercedes Benz cars and a Toyota Lexus floating in the water…We crossed dark homes, and shops and police stations. We met a lot of friendly firemen trying to keep order, but not a single policeman on the way –

…Soon, it became a long, happy, wet trek as can only happen in Mumbai….Our fellow travellers, boys and girls, men and women, young and old, chanted hymns, sang songs, cracked jokes. ..Others cracked the night's best silly jokes – whenever they would come across a car floating in the middle of the road, they would shout: "No parking! No parking please! This is a traffic offence!" …"Don't feel ashamed, madam. Hold my hand. Bindaas pakro (Hold me coolly)," said a young man in the queue lending a helping hand to a girl.

Example III: Statistical detail with clarity

Mumbai begins to count losses from rains
http://www.expressindia.com/news/fullstory.php?newsid=51995

This news report explains the impact of floods on various aspects including animals, human beings, business etc. A lot of statistical detail has been incorporated in this news report, but the reporter has managed to stay away from generalizations and has provided accurate information (at least according to the official sources). Some excerpts:

…Heavy rains and floods in Maharashtra last week have caused losses of at least 150 billion rupees ($3.5 billion), early government estimates say.

Accuracy is the key here. The reporter has quoted official sources of information but also use the word 'early' leaving scope of further additions/deletions based on accurate information.

Small businesses have lost an estimated 10 billion rupees, an industry body said. Pfizer Ltd, the Indian unit of the world's largest drug maker, estimated its flood losses at 1 billion rupees.

Note the use of terms such as 'estimated' and the substantiating example from Pfizer.

At least 942 people drowned, died in landslides or were electrocuted in floodwater in Maharashtra, including 429 in Mumbai. Union Home Minister Shivraj Patil said on Tuesday some 100 people were missing. About 300 cases of cholera, gastroenteritis and dysentery have been reported in the state. Hundreds of medical teams have been deployed across Maharashtra to treat the injured, distribute chlorine tablets for contaminated water and cremate the dead. Patil said 1,200 buffalos and 15,000 sheep and goats died in the floods in Mumbai.

The statistics used are clear, with official figures in exact numbers. That makes the report clear.

Example IV: A good example of a follow-up story

Disease fears after India monsoon
http://news.bbc.co.uk/2/hi/south_asia/4726645.stm

This is a perfect example of kind of follow-up stories that can be done immediately after a disaster. The reporter has explained the impact of floods and how people suffered on the first 2-3 days, and efforts put in by the government agencies to tackle the situation. Also, the news report presents problems that could follow after the disaster has hit. It therefore, becomes a warning to the general public to take care so that they don't get caught by the diseases due to contaminated water.

…Authorities in India are racing against time to prevent epidemics as the death toll from a monsoon reaches 800 in Mumbai (Bombay) and surrounding areas. There are concerns that large amounts of debris and animal carcasses might lead to outbreaks of disease.

Example V: Going beyond the obvious

Mumbai: Everybody loves a good flood
http://www.expressindia.com/ews/fullstory.php?newsid=52222

This news report is a creative critique of the response of politicians in the field of relief work after the Mumbai floods. It analyses how actual relief work on the ground gets sidelined by politicians. The politics of flood work are effectively revealed. The headline is a reference to the famous book by P. Sainath Everybody Loves a Good Drought which exposes the politics of drought relief. It is an innovatively used headline. An illustrative excerpt from the report:

...Having sniffed a never-again opportunity, politicians of every hue have jumped into Torrential Tuesday's relief operations. And what better way to begin than to claim credit for free wheat, rice and kerosene sent by the state government. In Kherwadi's shanty colonies in Bandra (East), those picking up their apportioned relief also had a receipt thrust into their hands, with their name and address scrawled in. "From Govt of Maharashtra, arranged by Prof J C Chandurkar (MLA)," it said.

US NRIs collect funds for Mumbai flood victims
http://www.hindustantimes.com/US-NRIs-collect-funds-for-Mumbai-flood-victims/Article1-34883.aspx

This is again an example of a good follow up story after a disaster However, this story could have been written in a better way to show how Maharashtrians living in the US are concerned about the situation back home. And being thousands of kilometres away, how they have joined hands to help their families and communities in Mumbai. The reporter could have taken a case study that would have made this report far more interesting.

Example VI: Disaster preparedness

Now, a mock drill on flood preparedness
http://www.indianexpress.com/news/now-a-mock-drill-on-flood-preparedness/580105/

This is a good example of both – a report on disaster preparedness and a follow-up report. Even though five years have passed since 2005 Mumbai floods, the reporter has taken that story as a base to explain the mock drill that the government is planning in Mumbai.

Learning Outcome:

At the end of each case study, the participants,

- will have an in-depth understanding of the type of media coverage that has taken place in some disasters in India
- will be able to appreciate the good practices on role of media in pre, during and post- disaster coverage.

Acronyms

ABNJ	Areas beyond national jurisdiction
ASC	Aquaculture Stewardship Council
BMT	Bohol Marine Triangle
CBD	Convention on Biological Diversity
CBOs	Community-based organizations
CBRN	Chemical, biological, radiological and nuclear
CCAMLR	Commission on the Conservation of Antarctic Marine Living Resources
CCMNC	Cabinet Committee on Management of Natural Calamities
CCRF	Code of Conduct for Responsible Fisheries
CCS	Cabinet Committee on Security
CDV	Civil Defence Volunteer
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMFRI	Central Marine Fisheries Research Institute
CMPAs	Coastal and marine protected areas
CMS	Convention on Migratory Species
COP	Conference of the Parties
CRF	Calamity Relief Fund
CRZ	Coastal Regulation Zone
CSO	Central Statistical Organization
CSR	Corporate social responsibility
CWC	Central Water Commission
CWDS	Cyclone Warning Dissemination System
CWS	Cyclone Warning Centres
CZMA	Coastal Zone Management Authorities
DDMA	District Disaster Management Authority
DEOC	District Emergency Operation Centre
DM	Disaster management
DMS	Department of Merchant Shipping
DOD	Department of Ocean Development
DR	Disaster risk
DRDO	Defence Research and Development Organization
DRS	Disaster reduction strategies
DRR	Disaster risk reduction
DTEPA	Dahanu Taluka Environment Protection Authority
EEZ	Exclusive Economic Zone
EIA	Environmental impact assessment
EMP	Environment Management Plan
ENVIS	Environmental Information System

EoH	Enhancing Our Heritage project
EPA	Environment Protection Act
ERSST	Extended reconstructed sea surface temperature
ESA	Ecologically sensitive area
ESF	Emergency Support Function
FAO	Food and Agriculture Organization
FRA	Forest Rights Act
FSI	Forest Survey of India
GCBA	Generational cost benefit analysis
GEC	Gujarat Ecology Commission
GEF	Global Environment Facility
GIS	Geographic Information System
GISP	Global Invasive Species Programme
GoI	Government of India
GOM	Gulf of Mannar
GOMNP	Gulf of Mannar National Park
GPS	Global Positioning System
GSI	Geological Survey of India
HFL	Highest flood level
HLC	High-level committee
HPC	High-powered committee
IBA	Important Bird Area
ICCAs	Indigenous peoples and community-conserved territories and areas
ICMAM	Integrated coastal and marine area management
ICMBA	Important Coastal and Marine Biodiversity Areas
ICRW	International Convention for the Regulation of Whaling
ICS	Incident Command System
ICT	Incident Command Team
ICZM	Integrated coastal zone management
IDKN	India Disaster Knowledge Network
IDRN	India Disaster Resource Network
IMC	Inter-ministerial Committee
IMCAM	Integrated marine and coastal area management
IMD	India Meterological Department
IMG	Inter-ministerial Group
INCOIS	Indian National Centre for Ocean Information Services
IOC	Integrated Operations Centre
IPCC	Intergovernmental Panel on Climate Change
IT	Information technology
ITK	Indigenous technical knowledge
ITPGR	International Treaty on Plant Genetic Resources for Food and Agriculture
IUCN	International Union for Conservation of Nature
LMMA	Locally managed marine area

MCPAs	Marine and coastal protected areas
MEA	Millennium Ecosystem Assessment
MFRA	Marine Fishing Regulation Act
MHA	Ministry of Home Affairs
MMS	Malvan Marine Sanctuary
MoES	Ministry of Earth Sciences
MPA	Marine protected area
MTHL	Mumbai Trans Harbour Link
NBAP	National Biodiversity Action Plan
NCC	National Cadet Corps
NCCF	National Calamity Contingency Fund
NCMC	National Crisis Management Committee
NCSCM	National Centre for Sustainable Coastal Management
NDEM	National Database for Emergency Management
NDMA	National Disaster Management Authority
NDMF	National Disaster Mitigation Fund
NDRF	National Disaster Response Force
NEC	National Executive Committee
NEOC	National Emergency Operation Centre
NEP	National Environment Policy
NGOs	Non-governmental organizations
NIDM	National Institute of Disaster Management
NITs	National Institutes of Technology
NOAA	National Oceanic and Atmospheric Administration
NSDI	National Spatial Data Infrastructure
NSS	National Service Scheme
NYKS	Nehru Yuva Kendra Sangathan
PA	Protected area
PPP	Public-private partnership
PRIs	Panchayati Raj Institutions
QRT	Quick Response Team
R&D	Research and development
RAPPAM	Rapid Assessment and Prioritization of Protected Area Management
REDD	Reduced Emissions from Deforestation and Forest Degradation
RRC	Regional Response Centre
SAC	Space Applications Centre
SAR	Search and rescue
SASE	Snow and Avalanche Study Establishment
SBSTTA	Subsidiary Body on Scientific, Technical and Technological Advice
SCME	Sindhudurg Coastal and Marine Ecosystem
SDGs	Sustainable Development Goals
SDMA	State Disaster Management Authority
SDRF	State Disaster Response Force

SEA	Strategic Environmental Assessment
SEC	State Executive Committee
SEOC	State Emergency Operation Centre
SEZA	Special Economic Zones Act
SLEIAA	State Level Environmental Impact Assessment Authority
SOPs	Standard operating procedures
SSC	Species Survival Commission
TEV	Total Economic Value
TILCEPA	Theme on Indigenous and Local Communities, Equity and Protected Areas (of IUCN)
TNC	The Nature Conservancy
ULBs	Urban local bodies
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNCLOS	United Nations Convention on the Law of the Sea
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNISDR	United Nations International Strategy for Disaster Reduction
UT	Union territory
WCMC	World Conservation Monitoring Centre
WCPA	World Commission on Protected Areas (of IUCN)
WDPA	World Database on Protected Areas
WHC	World Heritage Convention
WII	Wildlife Institute of India
WMO	World Meteorological Organization
WWF	Worldwide Fund for Nature

Glossary

A geographic information system (GIS)

is a computer system designed to capture, store, manipulate, analyse, manage and present all types of spatial or geographical data.

Access to genetic resources and benefit sharing (ABS)

The fair and equitable sharing of the benefits arising out of the utilization of genetic resources is one of the three objectives of the Convention on Biological Diversity. The Conference of the Parties to the Convention on Biologi-cal Diversity adopted The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity at its tenth meeting on 29 Oc-tober 2010 in Nagoya, Japan. The objective is to share the benefits arising from the utilization of genetic re-sources in a fair and equitable way, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding, thereby contributing to the conservation of biological diversity and the sustainable use of its components.

Biocapacity

is shorthand for renewable biological capacity, the ability of an ecosystem to regenerate useful biological re-sources and absorb wastes generated by humans. It is measured in global hectares.

Biodiversity

The variability among living organisms from all sources including terrestrial, marine and other aquatic ecosys-tems, and the ecological complexes of which they are part; this includes diversity within spe-cies, between spe-cies, and of ecosystems.

Biodiversity can be described as “the diversity of life on Earth” and is essential for the functioning of ecosystems that underpin the provisioning of ecosystem services that ultimately affect human well be-ing.

Capacity development

Capacity Development is a process, which enables individuals, organizations and societies as a whole to shape their own development sustainably and adapt to changing conditions. In order to trigger sustainable changes in social systems, capacity development always addresses three levels – the individual, the systems of reference, and the systemic level. Systems of reference denote the individual’s immediate sphere of influence, and can be an organization, a company, a network or an informal community. Systemic level refers to the enabling environ-ment where the individuals and systems of reference interact and grow.

Coastal and marine biodiversity

The oceans cover 70% of the planet’s surface area, and marine and coastal environments contain diverse habi-tats 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. Some examples of marine and coastal habitats include mangrove forests; coral reefs; sea grass beds;

estuaries in coastal areas; hydrothermal vents; and seamounts and soft sediments on the ocean floor a few kilometres below the surface.

Coastal Regulation Zone (CRZ)

Under the Environment Protection Act, 1986 a notification was issued in February, 1991, for regulation of activi-ties in the coastal area by the Ministry of Environment and Forests (MoEF). As per the notification, the coastal land up to 500m from the High Tide Line (HTL) and a stage of 100m along banks of creeks, estuaries, backwater and rivers subject to tidal fluctuations, is called the Coastal Regulation Zone(CRZ). CRZ along the country has been placed in four categories. The above notification includes only the inter-tidal zone and land part of the coastal area and does not include the ocean part. The notification imposed restriction on the setting up and ex-pansion of industries or processing plaits etc. in the said CRZ.

Coastal resources

Any physical or virtual entity of limited availability that provides a benefit.

Coastal Zone Management

A continuous and dynamic process by which decisions are made for the sustainable use, development and pro-tection of coastal and marine areas and resources. ICM acknowledges the interrelationships that exist among coastal and ocean uses and the environments they potentially affect

Conference of the Parties (COP) to the Convention on Biological Diversity

The Conference of the Parties is the governing body of the Convention, and advances implementation of the Convention through the decisions it takes at its periodic meetings. To date the Conference of the Parties has held 11 ordinary meetings, and one extraordinary meeting (the latter, to adopt the Biosafety Protocol, was held in two parts). From 1994 to 1996, the Conference of the Parties held its ordinary meetings annually. Since then these meetings have been held somewhat less frequently and, following a change in the rules of procedure in 2000, will now be held every two years. The Eleventh meeting of the Conference of the Parties to the Convention on Biological Diversity was be held in Hyderabad, India (18 - 20 October 2012). The Twelfth meeting of the Con-ference of the Parties will take place in Pyeongchang, Republic of Korea (6 - 17 October 2014).

Critical habitat

Defined under the Endangered Species Act, critical habitat is “the specific areas within the geographic area oc-cupied by a species on which are found those physical and biological features essential to the conservation of the species, and that may require special management considerations or protection; and specific areas outside the geographic area occupied by a species at the time it is listed, upon determination that such areas are essen-tial for the conservation of the species.”

Ecological footprint

measures the amount of biologically productive land and sea area required to produce all the resources a popu-lation consumes and to absorb its waste. The ecological footprint takes every year’s technological advances into account.

Ecosystem management/environment management

An approach to maintaining or restoring the composition, structure, function, and delivery of services of natural and modified ecosystems for the goal of achieving sustainability. It is based on an adaptive, collaboratively de-veloped vision of desired future conditions that integrates ecological, socioeconomic, and institutional perspec-tives, applied within a geographic framework, and defined primarily by natural ecological boundaries. (MA, 2005a)

Ecosystem services

The direct and indirect contributions of ecosystems to human wellbeing. The concept "ecosystem goods and services" is synonymous with ecosystem services.

Ecosystem services are processes by which the environment produces benefits useful to people, akin to eco-nomic services.

Ecosystem(s)

A dynamic complex of plant, animal, and microorganism communities and their non-living environment interact-ing as a functional unit. (MA, 2005a) For practical purposes it is important to define the spatial dimensions of concern.

Environmental impact assessment (EIA)

is the process of identifying, predicting, evaluating and mitigating the biophysical, social and other relevant ef-fects of development proposals prior to major decisions being taken and commitments made.

Geographic Information System (GIS)

A system of hardware, software, and procedures designed to support the capture, management, manipulation, analysis, modeling, and display of spatially referenced data for solving complex planning and management prob-lems.

Global hectares

are hectares of biologically productive land and sea area with world average bioproductivity. The ecological foot-print is measured in global hectares. A hectare is about 2.5 acres.

Governance (of ecosystems)

The process of regulating human behavior in accordance with shared ecosystem objectives. The term includes both governmental and nongovernmental mechanisms.

Integrated coastal zone management

ICZM is a dynamic, multidisciplinary and iterative process to promote sustainable management of coastal zones. It covers the full cycle of information collection, planning (in its broadest sense), decision making, management and monitoring of implementation. ICZM uses the informed participation and cooperation of all stakeholders to assess the societal goals in a given coastal area, and to take actions towards meeting these objectives. ICZM seeks, over the long-term, to balance environmental, economic, social, cultural and recreational objectives, all within the limits set by natural dynamics. 'Integrated' in ICZM refers to the integration of objectives and also to the integration of the many instruments needed to meet these objectives. It means integration of all relevant policy areas, sectors, and

levels of administration. It means integration of the terrestrial and marine components of the target territory, in both time and space.

Invasive species

Invasive species are those that are introduced—intentionally or unintentionally—to an ecosystem in which they do not naturally appear and which threaten habitats, ecosystems, or native species. These species become inva-sive due to their high reproduction rates and by competing with and displacing native species, that naturally ap-pear in that ecosystem. Unintentional introduction can be the result of accidents (e.g. when species escape from a zoo), transport (e.g. in the ballast water of a ship); intentional introduction can be the result of e.g. importing animals or plants or the genetic modification of organisms.

Mainstreaming

means integrating or including actions related to conservation and sustainable use of biodiversity in sectoral strategies relating to production sectors (such as agriculture, fisheries, forestry and mining) and in national plans and programmes (such as poverty reduction plans and national sustainable development plans).

Marine protected area

An area of sea (or coast) especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.

Any area of the marine environment that has been reserved by federal, state, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein.

Marine spatial planning (MSP)

is a process of analysing and allocating parts of three-dimensional marine spaces (or ecosystems) to specific us-es or objectives to achieve ecological, economic and social objectives that are usually specified through a politi-cal process.

Natural capital (NC)

An economic metaphor for the limited stocks of physical and biological resources found on earth. (MA, 2005b)

Ocean acidification

Ocean acidification is an observable and predictable consequence of increasing atmospheric CO2 concentra-tions2 now and in the future, given the well-known physio-chemical pathways and reac-tions of CO2 as it dissolves in seawater. However, given the nascent recognition of ocean acidification as a global threat, the resulting im-pacts on marine species and ecosystem processes are still poorly understood.[1] The predicted consequences for marine plants and animals, food security and human health are profound, including disruption to fundamental bi-ogeochemical processes, regulatory ocean cycles, marine food chains and production, and ecosystem structure and function.[2,3]

1 Kleypas, J. A., Buddemeier, R. W., Archer, D., Gattuso, J. P., Langdon, C., Opdyke, B. N. (1999). Geochemical Conse-quences of Increased Atmospheric Carbon Dioxide on Coral Reefs. Science, Vol 284:118-120.

2 EUR-OCEANS. (2007). Fact Sheet 7: Ocean Acidification – the other half of the CO2 problem. www.eur-oceans.eu/KTU

3 GC(52)/INF/3 (2008). Nuclear Technology Review 2008.

Participatory rural appraisal (PRA)

PRA is a relatively new and different approach for conducting action-oriented research in developing countries. PRAs are used to help involve villagers and local official leaders in all stages of development work, from the identification of needs and decision making to the assessment of completed projects. The term can be used to describe any new methodology which makes use of a multidisciplinary team. Rapid rural appraisal is a quicker approach that may or may not be participatory.

Remote sensing

largely refers to the use of aerial sensor technologies for scanning the Earth using satellites or high-flying aircraft in order to obtain information about it.

Strategic environmental assessment (SEA)

refers to a formal, systematic process to analyse and address the environmental effects of policies, plans, pro-grammes and other strategic initiatives.

Vulnerability

The degree to which a community, population, species, ecosystem, region, agricultural system, or some other quantity is susceptible to, or unable to cope with, adverse effects of climate change.

Wetlands

Wetlands are areas where water is the primary factor controlling the environment and the associated plant and animal life. They occur where the water table is at or near the surface of the land, or where the land is covered by water.The Ramsar Convention takes a broad approach in determining the wet-lands which come under its ae-gis. Under the text of the Convention (Article 1.1), wetlands are defined as: “areas of marsh, fen, peatland or wa-ter, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres”. Five major wet-land types are generally recognized:

- marine (coastal wetlands including coastal lagoons, rocky shores, and coral reefs);
- estuarine (including deltas, tidal marshes, and mangrove swamps);
- lacustrine (wetlands associated with lakes);
- riverine (wetlands along rivers and streams); and
- palustrine (meaning “marshy” - marshes, swamps and bogs).

Wider landscape and seascape

includes the array of land and water uses, management practices, policies and contexts that have an impact within and beyond protected areas and that limit or enhance protected area connectivity and the maintenance of biodiversity.

Notes, observations, thoughts

About the CMPA project

The Project –'Conservation and Sustainable Management of Existing and Potential Coastal and Marine Protected Areas (CMPA)', under the Indo-German Biodiversity Programme, is a technical cooperation project jointly implemented by the Governments of India and Germany (2012-17). The Project is commissioned by the German Federal Ministry for Environment, Nature Conservation, Building and Nuclear Safety (BMUB) with funds provided under the International Climate Initiative (IKI), in partnership with the Ministry of Environment, Forests and Climate Change (MoEFCC), Government of India.

The project aims at contributing to conservation of biodiversity through participatory approaches in the management of existing and potential coastal and marine protected areas in India. Project activities are implemented together with the Forest Departments of the project partner states - Gujarat, Goa, Maharashtra and Tamil Nadu, as well as with premier national training institutions.

Our partners

The Wildlife Institute of India (WII), Dehradun

WII has a mandate to train Indian Forest Service officers, State Forest Service officers and other key stakeholders such as the Coast Guard and Customs and has recently initiated a one-week refresher course exclusively addressing issues related to integrated management of coastal and marine biodiversity that is targeted at senior forest officials.

http://wii.gov.in/

Xavier Institute of Communications (XIC), Mumbai

XIC is a professional media centre offering a variety of services in training and production. XIC is an autonomous educational unit of the Bombay St. Xavier's College Society Trust, which comprises St. Xavier's College, the Institute of Management, the Institute of Counseling and the Heras Institute of Indian History and Culture. XIC pilot-tested the curriculum between December 2014 and May 2015 and subsequently decided to integrate the curriculum into its Communication for Development (C4D) diploma course.
www.xaviercomm.org

BMM Department, St. Xavier's College, Mumbai

St. Xavier's College is one of the most prestigious liberal arts colleges in India. The BMM department was established in 2002. The Bachelor in Media Studies, a programme begun by the University of Mumbai in 1999, is being run by St. Xavier's College under the system of academic autonomy. While this is an applied course that seeks to provide industry with qualified media professionals, St. Xavier's believes that an academic grounding is very essential for forming young people for this crucial job of communications.
www.xaviers.edu

St. Paul's Institute of Communication Education (SPICE), Mumbai

St. Paul's Institute of Communication Education (SPICE) is a fast-growing media school in India offering a comprehensive post-graduate diploma in journalism that trains students for a career in print journalism, television journalism and digital journalism. With top-notch media faculty members and excellent infrastructure, SPICE is the go-to destination for Gen Next journalists.
www.stpaulsice.com

Department of Communication, Journalism and Public Relations, Gujarat University

The Department of Communication, Journalism and Public Relations was established in 1987–1988. The department plays a vital role in providing media professionals and communication experts to various fields. Two courses are offered by the department, the Master's in Mass Communication and Journalism (MMCJ) and the Master's in Development Communication (MDC).
http://www.gujaratuniversity.org.in

Earthwatch Institute India

Earthwatch Institute India is a premier research and engagement institution, engaging citizens in scientific field research and education to promote the understanding and action necessary for a sustainable environment. Coastal and Marine Ecosystem is one of the key focus areas in which Earthwatch conducts scientific research to promote sustainable solutions to further strengthen efforts in regard to nature conservation and environment protection in response to environmental challenges.

Earthwatch programmes have a niche in citizen science and experiential learning and they bring this unique approach to coastal expeditions to increase scientific knowledge among key stakeholders, to develop environmental leaders, enable organisations to become more sustainable, contribute to management plans and pro-environment actions, and to enhance natural and socio-cultural capital.
http://in.earthwatch.org/