Development of Climate Resilient Integrated Coastal Zone Management (ICZM) Plan for the North Coast of Egypt

Deliverable 3.2.1: Design and Implementation of a Modular Training Program

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List of Abbreviations

CDM	:	Crisis and disaster management
CMIC	:	Coastal Monitoring Information Centre
CoRI	:	Coastal research Institute
DBMS	:	Database Management System
DRI	:	Drainage Research Institute
DTM	:	Digital Terrain Model
ECRI	:	Environmental and Climate change Research Institute
EEAA	:	Egyptian Environmental Affairs Agency
EMA	:	Egyptian Meteorological Authority
FOU	:	Forecast operator training
GARPAD	:	General Authority for Reconstruction Projects and Agricultural Development
GOPP	:	General Organization for Physical Planning
GU	:	User training in GIS
HDU	:	User training in Flood modelling
HRI	:	Hydraulic Research Institute
IA	:	Implementing Agencies
ICZM	:	Integrated Coastal Zone Management
KPI	:	Key Performance Indicator
LFPA	:	The Lakes & Fish Resources Protection & Development Agency
LU	:	User training in Lit-pack modelling
M&E	:	Monitoring and Evaluation
MALR	:	Ministry of Agriculture and Land Reclamation
MOEE	:	Ministry of Electrical and Energy
MPED	:	Ministry of Planning and Economic Development
MWRI	:	Ministry of Water Resource and Irrigation
NARSS	:	National Authority for Remote Sensing and Space Sciences
NDA	:	Nile Delta Aquifer
NIOF	:	National Institutes for Oceanography and Fisheries
NUCA	:	New Urban Communities Authority
NWRC	:	National Water Research Centre
PMU	:	Project Management Unit
RIGW	:	Research Institute for Groundwater
RU	:	User training in Risk assessment/ cost benefit analysis
SPA	:	Egyptian General Authority for Shores Protection
SWI	:	Saltwater Intrusion
TNA	:	Training Needs Assessment
TOR	:	Terms of Reference
TOT	:	Training of Trainers
UNDP	:	United Nations Development Program
WRRI	:	Water Resources Research Institute
WU	:	User training in MIKE 21 SW Wave modelling

Contents

1. Introduction

This document Deliverable 3.2.1 presents the design and implementation of a modular capacity and training program for stakeholders to build skills for professional development of coastal management practitioners, in a diversity of capacities (e.g., policy positions, day-to-day management and dealing with the national and local media). The program is planned implemented by NIRAS.

To prepare for designing the Capacity and Training Programme (CTP) a thorough needs and gap assessment survey has been carried out of the present capacity and skill levels in the governmental agencies and institutions. The results are presented in Deliverable 3.1.1, see Ref [1].

The detailed approach and methodology for capacity building and training presented in the Inception Report (Ref [2]) has together with the results of Delivery 3.1.1 formed the basis for presentation of the Capacity and Training Programme presented in this report.

The programme is designed to support the new ICZM organisational set-up elaborated under Deliverable 2.1.1 presented in Ref [3].

The overall aims of the CTP are to:

- Raise the awareness of Climate Resilient ICZM stakeholders among the Egyptian management of the 1,000 km long Mediterranean coastline from Sallum to Rafah.
- Support elaboration of future legal, institutional and organisational set-up of coastal stakeholders
- Support the introduction and formulation of the ICZM Plan.
- Develop ICZM tools supporting the elaboration of the ICZM plan
- Train the future organisation in using the ICZM tools.

2. Overall Objectives

The overall objective of ICZM project is to develop a climate resilient ICZM plan for the north Egyptian coastal zone. The assignment will raise the adaptive capacity of planning and implementing organizations in Egypt, rendering them more equipped to proactively address sea level rise and extreme weather events vulnerability and propose, design and implement integrated solutions that enjoy broad support of relevant stakeholders.

The Specific objectives of the study include the following:

- Providing all the instruments required for gathering the information on which ICZM is built.
  This objective includes:
  - Systems for coastal and ocean observation (in situ and remote sensing)
  - Systems for data retrieval and data analysis,
  - Numerical model systems for short-term forecasts and long-term trends in oceanic conditions and coastal impacts,
  - Integrated assessments tools for identifying and comparing alternatives.

Accomplishing this objective will build upon the collection systems that currently exist in Egypt such as the National Observation System (NOS) that was initiated with the activities of the GEF/UNDP funded project ACCADP.

- Providing the required knowledge of coastal vulnerability and risks.

This objective includes:

Identification of coastal vulnerabilities and assessment of how risks evolve with time under climate change, for different coastal regions and for different scenarios (climate and socio-economic) at a higher resolution than that used in the scoping study (GEF/UNDP)

- Providing the required know-how through capacity building.

This objective includes:

Transfer of knowledge and training how to use, maintain and improve

  - Observation systems,
  - Data analysis systems,
  - Numerical simulation and forecasting models.
  - Training as described in task description on methods for integrated risk assessment and on strategies to promote participation and cooperation in ICZM.

- Providing a framework for integrated decision-making.

This objective includes:

  - The development of coastal planning procedures adapted to the Egyptian governance context, considering legal and organizational aspects of coastal adaptation,
  - Awareness raising
  - Stakeholder participation in planning and decision making.
  - Providing action plans for alleviating coastal, environmental, economic and social risks.

This objective includes, but not limited to, the development of actions plans for alleviating potential coastal, environmental, economic and social risks. For example, Shoreline Management Plans need to develop outlining best practices (planning measures, hard and soft measures, working-with-nature) for protecting vulnerable areas (including all types of land use and infrastructure). Following an adaptive step wise approach against flood risks and also addressing other coastal risks that may result from climate change in conjunction with socio-economic developments, in particular the risk of increased soil salinization in the coastal zone. Similar plans need to be developed for other potential risks.

3. Capacity Building and Training Framework

The capacity and training activities are integrated parts of the TOR implicitly described in a number of Deliverables as presented in the next section.

The intention is to design an all-inclusive capacity and training program addressing all the training activities included in the various deliverables.

The program will focus on the development and implementation of a capacity-building program on ICZM and climate change risk management for institutions and stakeholders involved in the long-term management of the Egyptian North coast.

Qualified and well-trained staff is a key factor for successful implementation of ICZM principles.

The actual situation is characterized by scarcity of well qualified staff and a high staff turnover in many positions (Ref [1]).

Well planned and targeted capacity building measures shall contribute to a more efficient and effective work force and, hence, better ICZM implementation results.

The capacity building program will create the basis for a thorough understanding of various aspects of coastal management for ICZM and climate change adaptation, as well as promoting collaborative networks equipped with the necessary skills, knowledge and attitudes to undertake different tasks involved in the climate change adaptation and planning of the coastal areas of Egypt.

The training activities included in the various deliverable are identified in the following sections and the results used for the design of the program in the Chapters to follow.

3.1. Sub-Task 1.7: Skill for operating and maintaining the costal observation and model systems

According to the TOR: "Egyptian experts will be trained to master and operate the coastal observation and model systems that will be developed within the study. Experts from institutions responsible for monitoring and forecasting coastal processes will be selected by the MWRI to participate in the training program in addition to representatives from the key stakeholder organizations. The Consultant shall ensure that those experts will acquire the necessary knowledge to operate and maintain the coastal observation and model systems on their own after the completion of the study. Progress in the acquisition of skills will be regularly evaluated and the training program will be adapted if needed."

Deliverable 1.7.1: Development and implementation of a class and on the job training program in English and Arabic for mastering the coastal observation and model systems.

This deliverable is essential for building up the technical ICZM capacity.

3.2. Sub-Task 2.1: Development of a legal/institutional/administrative framework for a climate change resilient coastal zone.

Deliverable 2.1.3: Organize workshops with key stakeholders to discuss the different alternatives for improving the regulatory framework including representatives from the related local administrative unit.

3.3. Sub-Task 2.2: Development of a framework for stakeholder participation and decision making

A broad governmental and public participation is essential for achieving support and constructive involvement of all relevant actors and stakeholders during the development and implementation of the ICZM plan. Stakeholder consultation is envisaged to be an open and dynamic process that should be organized throughout the study and afterwards. The project results will be communicated on the planned workshops with stakeholders in order to achieve a broadly shared recognition and understanding of present and future coastal issues (awareness raising based on results of task 1).

Deliverable 2.2.5: Hold workshops (as needed) to:

- *Improve coordination at the planning level, horizontally, between central organizations, and vertically, between central organizations and organizations at the local level.*
- *Help in integrating laws, plans, regulations, and agreements to overcome difficulties and facilitate the implementation process of ICZM projects to make a real difference on the ground and be reflected on the day-to-day work of executive agencies and communities.*
- *Propose and develop national policies and frameworks for crises and disasters management and disaster risk reduction.*

3.4. Sub-Task 2.6: Initiate implementation of the Climate Resilient ICZM plan

The Consultant will assist the MWRI at the launch of ICZM.

Deliverable 2.6.2: Assistance of the Consultant to the preparation of meetings where the ICZM plan is presented to authorities involved in the implementation.

3.5. Sub-Task 3.1: Assessment of Capacity Needs for ICZM planning

Inventory of on-going coastal management capacity building activities and identification of gaps in skills, knowledge and attitudes for the practice of ICZM and climate change adaptation.

- This task should also target raising the awareness and capacity building in fields of biodiversity conservation and sustainable development.
- Definition of training objectives in quantity and quality, with quantitative indicators to measure progress in the acquisition of skills and knowledge.

Deliverable 3.1.1: Report on needs for capacity building and training within organizations involved in coastal zone management in Egypt.

3.6. Sub-Task 3.2: Training Program for Governmental Staff

Based on a Training Needs Assessment, a Training Program is developed for covering the needs of stakeholders involved in coastal management and climate change adaptation.

It is anticipated that a mix of training methodologies will be used, including:

- On the-job support,
- Formal training,
- Webinars,
- Case studies and practical applications which mirror real work situations as much as possible.

The target audience will be selected by stakeholders identified in the inception phase of the study and will include managerial and technical staff of, for example, MWRI, SPA, EEAA, MOH, MALR and Local administration officials. The trainers will prepare a training manual in English and Arabic, which can be used by trainees to continue training activities after project completion.

A Training of Trainers (TOT) program should accompany this capacity building program, and NIRAS will provide assistance to initiate this TOT program.

Deliverable 3.2.1: Design and implementation of a modular training program for stakeholders to build skills for professional development of coastal management practitioners, in a diversity of capacities (e.g., policy positions, day-to-day management and dealing with the national and local media).

Deliverable 3.2.2: Design and assistance to initiate a corresponding TOT program.

Deliverable 3.2.3: Training courses for officials of government agencies and relevant stakeholders to enhance their capacity on integrating climate-related risks in their planning and considerations.

Deliverable 3.2.4: Dissemination of the training materials and courses on the study website in the form of, for example, webinars or any other similar means.

3.7. Sub-Task 3.3: Training Workshop at Coastal Governorates

Broad participation of all relevant local actors and stakeholders is essential for achieving support and constructive involvement during the development and implementation of ICZM and climate change adaptation.

Therefore, in this task, *the Consultant shall* organize ICZM training workshops at coastal Governorates.

Participants will be selected by the coastal Governorates from their staff and other relevant local coastal stakeholders.

The workshops will enable participants to collaborate and actively participate in the implementation of ICZM.

Deliverable 3.3.1: ICZM training workshops at the coastal Governorates.

Deliverable 3.3.2: Training courses for officials at the coastal governorates to strengthen crises/disasters management and disaster risk reduction using recent advanced technologies.

Deliverable 3.3.3: Webinars for providing easily understandable information on disaster risks and protection options to all citizens.

Deliverable 3.3.4: Provide access to all training material developed in this sub-task in the form of webinars on the study web sites to extend the benefits of the training program.

Sub-Task 3.4: Monitoring and evaluation of the capacity building program's results

- The progress made by participants in mastering the curriculum of the capacity building programs shall be monitored and evaluated.
- The program will be adjusted if difficulties in the transfer of knowledge and skills are signalled, in order to ensure sufficient progress in the acquisition of capacities.
- By the end of the programs the trained staff should have acquired a good level of expertise in the fields in which they have been trained and capable to act autonomously.
- The representation of women in the capacity building programs shall be recorded.

Deliverable 3.4.1: Report on evaluation of the capacity building programs.

3.8. Sub task 4.4: Design and implementation of the Coastal Monitoring and Information Centre.

This sub-task includes:

- Design of the operation scheme of the CMIC: data and information flows, CMIC system components, interconnections and staff needed to carry out the different tasks;
- Installation of the CMIC: fully equipped desks for the CMIC operators;
- Operation of the CMIC: Manual (English/Arabic) with a detailed description of all operational processes;

- Reporting system for the different CMIC products;
- Establishment of qualification requirements of CMIC operators;
- *Training of CMIC operators (as part of sub-task 1.7);*
- Establishment of a program for maintenance / updates with cost estimate.

4. Capacity Building Milestones

The Training Need Assessment (TNA) survey has been carried out in Ref [1] consisting of the following stages:

- Meetings with the stakeholders to assess the present capacity and need for training;
- Prepare a Training Plan;
- Develop TOT programme;
- Prepare training evaluation forms and training reports for each training event.

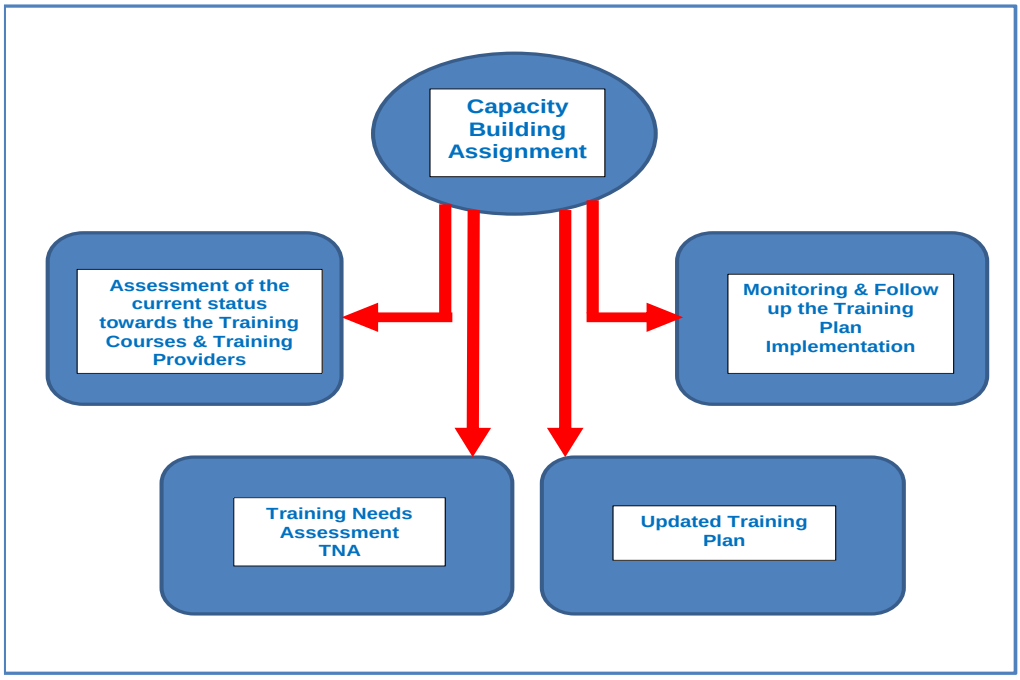

Figure 4.1: Capacity Buiding tasks.

4.1. Capacity Building Objectives

The capacity-building program will create the basis for a thorough understanding of various aspects of coastal management for ICZM and climate change adaptation, as well as promoting collaborative networks equipped with the necessary skills, knowledge and attitudes to undertake different tasks involved in the climate change adaptation and planning of the coastal areas of Egypt. The framework for the program will aim to identify gaps and corresponding capacity needs relative to key implementation issues, and to build capacity of individuals and institutions to implement ICZM.

The four main results of the Capacity Building to be achieved, as defined in the Terms of Reference, are:

1. To develop the skills, expertise and knowledge of the project target group;
2. Provide a comprehensive assessment towards the implemented training courses, training providers, analysis of training needs and develop a training plan for the implementing agencies,
3. To define the gap between existing and ideal skill sets required;
4. In particular, this should enable the implementing agencies to fully meet the TOR performance criteria and programme objectives;

The assignment is part of the Project, which involves addressing several human resources issues, including training and development of the project target groups.

4.2. The Role of Training

The transfer of knowledge and skills through technical assistance in the form of training, enabling the improvements in the performance to be measured, will achieve the Project's ICZM targets.

An increase in skills, knowledge, efficiency and effectiveness of individual employees will result in an overall increase in performance of each utility. These improvements will be measured in terms of performance indicators and will provide a noticeable improvement in service to customers.

Therefore, a component of the Project is to provide training to as many key staff as possible and with that in mind a Training Needs Survey has taken place.

This report highlights the methodology and main findings of the TNA, which will lead to the development of the required Training courses; when implemented, it will assist each Implementing Agency in the Project to achieve its Project's targets.

The following chapters provide details of the methodology and main results of the TNA.

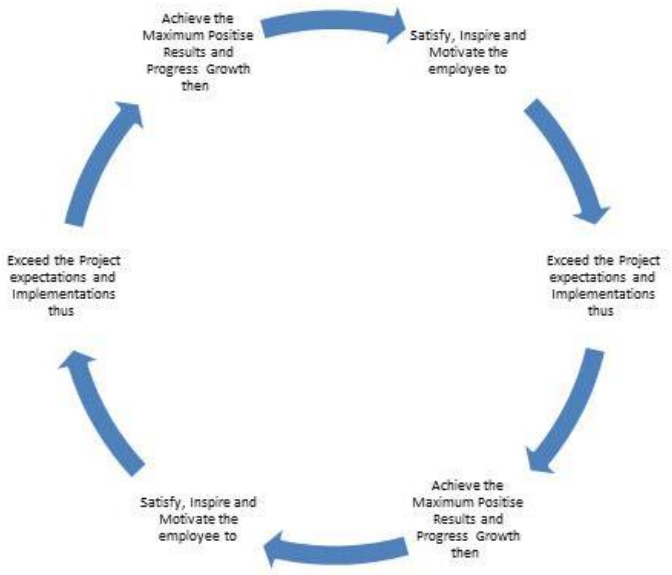

Figure 4.2: Capacity Building approach

Common weaknesses have been identified during the need assessment analysis in relevant subjects/entities:

1. Hydraulic (hind cast) Wave and Water Level Models
   The NWRC institutes staff and SPA specialists (12 participants) raised the need for this training program. They expressed their real related direct need in the daily tasks in their institutes.
2. Coastal Morphological models
   The NWRC institutes staff and SPA specialists (11 participants) raised the need for this training program. They expressed their real related direct need in the daily tasks in their institutes.
3. Flooding Models
   The NWRC institutes staff and SPA specialists (11 participants) raised the need for this training program. They expressed their real related direct need in the daily tasks in their institutes.
4. Saltwater intrusion models
   This training program is on-job training and going for DRI and GWRI staff. Other participants (4) out of the NWRC institutes expressed their real need to attend this training program.
5. Coastal Monitoring and Information Centre (CMIC)
   CMIC will have a key role to play being responsible for updating the assessment of the vulnerability of the North Coast and use this for recommending on the ICZM process to the ICZM Secretariat (25 Participants)
6. GIS platform
   GIS specialists, NUCA, planning specialists and Ministry of Transportation (69 participants) from different stakeholder raised the need for this training program. They expressed their real related direct need in the daily tasks in their institutes.
7. Risk assessment model
   Almost all the participants, except the environment specialists (86 participants) from different stakeholder institutes raised the need for this training program. They expressed their real related direct need in the daily tasks in their institutes.
8. Forecast system (This training is part of CMIC)
   GIS specialists, NUCA, planning specialists and Ministry of Transportation (68 participants) from different stakeholder institutes raised the need for this training program. They expressed their real related direct need in the daily tasks in their institutes.
9. Crisis and Disaster Management
   69 participants from different stakeholder institutes raised the need for this training program. They expressed their real related direct need in the daily tasks in their institutes.
10. ICZM Ambassadors Program
    Participants agreed that ICZM awareness through the ambassadors is crucial to ensure implementation and sustainability of the ICZM plans in coastal governorates.
    All participants who meet the criteria of the selection of the ambassadors (69 participants) from different stakeholder institutes expressed a very high enthusiasm to be the ICZM ambassadors.
11. Personal Soft Skills
    All the participants (91) from different stakeholder raised the need for this training program. They expressed their real related direct need in the daily tasks in their institutes.
12. Institutional Soft Skills
    All the participants (91) from different stakeholder raised the need for this training program. They expressed their real related direct need in the daily tasks in their institutes.

ICZM National Committee

Despite, the efforts of the Environmental Affairs Agency in the field of integrated coastal management since 1994, in addition to release of a set of supported documents and guidelines for development in coastal areas, establishment of the National Steering Committee for Integrated Coastal Management and doing coastal monitoring programme. The Agency's effort has significantly regressed last decay, this is clear in the delay of issuing the national strategy of integrated coastal management, and the failure to hold the meetings of the national steering committee for integrated coastal management as planned.
Therefore, it is now very crucial to consolidate and foster all the efforts to activate the national committee for ensuring the sustainable institutional role of the ICZM.

ICZM Committee in each governorate - Bottom-Up Approach

Participants demonstrated general agreement on the activation of the committee for integrated coastal zone management at the defined coastal governorates based on the article 60 Bis in the executive regulations of the Environment Law No. 4 of 1994. While highlighting that the committee should provide information to beneficiaries rather than conflicting information. Activation of integrated coastal zone management committees will have a positive role in bringing the regional plans to the level of the national committee that is coordinated through the Environmental Affairs Agency. This bottom-up approach ensures the promotion of results in addition to ensuring institutional sustainability.

4.3. Recommended Training Courses

The following list of training courses is not exhaustive but reflects the actual present needs. However, some of the indicated training courses seem to be unrealistic (as a first impression). Meanwhile it will be as the last priorities in case of the project extension – time - (if any) and the sufficient training budget. This list forms the basis of an updated training plan, which will address the training courses prioritization and achieve the main aims and objectives of Project

Table 4.1: List of training courses that were considered as top priorities by the stakeholders.

Training Needs Assessment (TNA) – Participatory Approach

The following list of training courses reflects the required courses of the actual needs. This list forms the basis of the training plan, which will address the training courses prioritization to achieve the main aims and objectives of the Project.

Fields marked with ✓ under "NIRAS Training Courses" will be undertaken by and under the responsibility of NIRAS.
Fields marked with ✓ under "Further Training Courses" will not be undertaken by NIRAS taken and will not be the responsibility of NIRAS.

Field	Training Topics Proposed	Required	Prioritization	NIRAS Training Courses	Further Training Courses
1: Hydraulic (hindcast) Wave and Water Level Models	1) WU1: Model Set-up and Calibration	10	Urgent	✓	
	2) WU2: Scenario and statistical analysis		Urgent	✓	
	3) WU3: Modelling		Urgent	✓	

	4) WU4: Modelling/Data analysis		Urgent	✓	
2: **Coastal Morphological Models**	1) LU1: Model Set-up and Calibration	10	Urgent	✓	
	2) LU2: Scenario and statistical analysis		Urgent	✓	
	3) LU3: Modelling and analysis		Urgent	✓	
3: **Flooding Models**	1) HDU1: Flood modelling establish and set-up	12	Urgent	✓	
	2) HDU2: Flood modelling exercise		Urgent	✓	
	3) HDU3: Flood modelling exercises and analysis		Urgent	✓	
4: **Saltwater Intrusion Model**	1) SU1: Modelling Setup	12	Urgent	✓	
	2) SU2: Modelling Coupling		Urgent	✓	
	3) SU3: Modelling Calibration and Validation		Urgent	✓	
	4) SU4: Results Analysis		Urgent	✓	
5: **GIS Platform**	1) GU1: Preparing data for GIS applications and Working with Spatial Database	42	Urgent	✓	
	2) GU2: Web-GIS application		Urgent	✓	
6: **Risk Assessment Model**	1) RU1: Classification of landcover spatial data using remotely sensed data Change detection applications using GIS/RS	35	Urgent	✓	
	2) RU2: GIS spatial analysis for detecting, classifying and delimiting flood impacted areas Methods for field data collection and Zoning and spatial planning.		Urgent	✓	

7: **Crisis and Disaster Management**	1) CDM1: Strengthen crises and disasters management	25	Urgent	✓	
8: **Data management and Forecast System**	2) FOU1: Monitoring and data management	12	Urgent	✓	
	3) FOU2: Design of forecast system		Urgent	✓	
	4) FOU3-FOU7: Operation of forecast system		Urgent	✓	
10: **ICZM Ambassadors Program**	1) Preparation of Good Quality Technical Materials	40	Urgent		✓
	2) Presentation Skills		Urgent		✓
	3) Effective Communication Skill		Urgent		✓
	4) Media and Public Relations Skills		Urgent		✓
Other Soft Skills Programs, **11:** **Personal Soft Skills** **12:** **Institutional Soft Skills**	1) Communication Skills	40	Urgent		✓
	2) Conflict Mitigation		Not Urgent		✓
	3) Problem Solving		Not Urgent		✓
	4) Technical Reports Writing		Not Urgent		✓
	5) Futurology and change management		Not Urgent		✓
	6) The necessary skills for the implementation phase of the ICZM plan at the local level	75	Urgent	✓	
	7) Coastal management professional development skills		Urgent	✓	
	8) Coastal communities' readiness skills to face harsh weather conditions		Urgent	✓	
	9) The necessary skills to deal with the early		Urgent	✓	

	warning system at the local level				
	10) Strategic Planning		Not Urgent		✓
	11) Projects Management		Not Urgent		✓

5. Introduction to the Capacity and Training Programme (Deliverable 3.2.1)

This Chapter introduces the Capacity and Training Programme including all training and capacity building activities related to the each of the deliverables presented in Chapter 3 and Training Courses presented in Chapter 4.

A mix of training methodologies is offered, including workshops, on-the-job training, formal training, webinars, case studies and practical applications which mirror real work situations as much as possible. The target audience selected by stakeholders will include managerial and technical staff primarily from five 5 key Ministries and the Governorates in accordance with the Inception Report Ref. [2].

In addition to the training program specified in the TOR it is proposed to introduce an "Ambassador Program" Ref [4] as an integrated part of the ICZM capacity and training program. It will have an important key role in securing sustainability in the adjustment of the legal and institutional framework not only within the present project period but also beyond this period.

The Capacity and Training Programme is designed using the following main forms:

- Tool Training
- Training of Trainers
- Training Workshops
- Public Webinars
- Recommended Additional Training

Tool Training and Training of Trainers is a stepwise program in 3 levels:

- Level 1: Tool Training
  Users capable of operating the tools
  (All ICZM Practitioners)

- Level 2: Tool Super Users Training
  Users capable of using the tool and key responsible for maintaining and updating the tools in the ICZM context.
  (Selected number from Level 1)

- Level 3: Training of Trainers
  TOT Selected candidates capable of transferring and exchanging the accepted knowledge to other ICZM

practitioners.
(Selected number from Level 2)

This stepwise approach secures a sustainable capacity building where a broad audience will receive general knowledge of the modelling and risk assessment tools while at the same time secure specialised members to maintain and update the models in the daily operation of the CMIC. Trainers will be selected among the CMIC operators and will receive skills in communication and teaching to be able to train new audience and to train existing audience in updates and changes made in the CMIC.

The selection of the trainees will have to wait for the final decision of the establishment of the CMIC.

The Tool Training and TOT programmes is presented in Chapter 6, 7, 8 and 9.

Workshops are used for communicating and engaging the key stakeholders in the overall ICZM process and get feed-back and guidance on the functionality of the ICZM tools being developed under the project.

The Training Workshop Program consists of 4 parallel lines:

- A-workshops:
  Administrative staff representative

- I-workshops:
  Staff at NWRC institutes and technical organisations dealing with climate change

- E-workshops:
  Key employees to manage various tools being developed under this project

- G-workshops:
  Key employees in the governorates being responsible for the ICZM and GIS administration

The workshop programme is presented in Chapter 11.

Public Webinars will be made available on the project website to increase the public awareness of climate changes and the consequences that can be expected along the North Coast of Egypt. Webinars will also provide information about crisis management and emergency procedures. Public Webinars are presented in more details in Chapter 12.

Additional training topics that have been identified needed as part of the TNA but are not administrated, undertaken or the responsibility of NIRAS is presented in Chapter 13.

As a general note NIRAS will prepare and provide training materials and trainers needed for each training session. Cost for venue, accommodation, transport, catering of the trainees and other related costs is not covered by NIRAS.

Likewise, it is assumed that trainees have hardware available that will be used for on-the-job training sessions.

6. Level 1: ICZM Tool Training Program (Deliverable 1.7.1)

The Level 1: Tool Training is developed based on the Training Needs Assessment. The training program is developed to cover the needs of stakeholders involved in coastal management and climate change adaptation to be able to use the 5 ICZM tools developed under Task 1 of the project and the GIS platform:

- Wave modelling tool: MIKE 21 SW (Spectral Wave)
- Coastal morphological tool: MIKE LitPack
- Flooding modelling: MIKE 21 HD (Hydrodynamic)
- Saltwater intrusion modelling: SIWARE and SEAWAT
- GIS platform
- Risk assessment modelling

The user will be introduced to all the phases of importance for the setting-up the models, calibration and operating the models and analysing the model results. All exercises and training material will be developed on basis of the tools developed during the project.

Besides following non-tool topics is included

- Crisis and disaster management

The training is distributed along the project execution in accordance with the progress of the development of the models. This will allow the trainee to follow the ICZM process with relevant "on-the-job" exercises and complete the training with a number of exercises in the modelling tool.

After the completion of the training the user skills achieved by each trainee will be tested. Trainee passing the test will receive a certificate documenting that they have participated in the course and successfully passed the operational user test.

Entrance exams will be used in the selection of the trainees. The entrance exams is included in the Appendix 1. NIRAS will assist PMU with the selection of trainees by evaluating the filled entrance exams.

In the following sections provides an overview of the overall content and goals for each planned training session. Detailed planning and content of each training sessions and the exams will be evaluated at a later stage during the development of the training material.

6.1. Wave modelling tool: MIKE 21 SW

This section presents the proposed user-level 1 training programme in MIKE 21 SW (Sub-Task 1.1).

Objective

The objective of the training:

- To give the trainee an "on-the job" insight in the various steps to develop, set-up and use of the modelling tool alongside with actual development of the model tool.
- To educate the trainee to operate the models at user level
- To learn to analyse the model results and present the results.

The overall structure and applicability are broadly shared with the ICZM stakeholders and feedback received on the I-workshops.

Programme

The training of the tool users will include four sessions WU1 (1 day), WU2 (1 day), WU3 (1 days) and WU4 (2 days). The duration of each session is shown in brackets. Multiple sessions can be undertaken the same day but will be final scheduled during detailed planning.

The user will be introduced to all the phases of importance for the setting-up the models, calibration and operating the models and analysing the model results.

The training is planned distributed along the project execution in accordance with the progress of the development of the project.

Certification

After the completion of the training the user skills achieved by each trainee will be tested. Trainee passing the test will receive a Certificate documenting that they have participated in the course and successfully passed the operational user test.

The key subject to be trained in, the appointed trainer and the duration of each session and other course details are shown in the tables below.

WU1: Model Set-up and Calibration

Duration:	1 Day Training Course
Who will benefit:	• Max 10 Trainees will be invited • Ministry of Water Resources and Irrigation (MWRI) especially Shore Protection authority (SPA) • National Water Research Centre (NWRC) especially Coastal Research Institute (CORI) and Hydraulic Research Centre (HRI) • National Institute of Oceanography and Fisheries (NIOF)
Prerequisites	Proven expertise in wave modelling. MSc degree in Coastal engineering, preferably. The potential candidate has to pass an exam of minimum level skill before being finally accepted for training
Purpose:	By the end of the course the participants will be more familiarized with the latest related information and applications in line with the achievement of the ICZM Project' objectives as follow: • Data preparation for modelling waves • Wave modelling concept • Wave hindcast modelling. • Calibration of wave models
Subjects:	Introduction and program overview: • Illustration of data collection needed for modelling exercise initiation. • Identification of the MIKE 21 SW hindcast model computational domain • Presentation of the MIKE 21 SW hindcast model setup • Presentation of the wave hindcast model calibration procedure

Additional Information:	Venue: TBD in coordination with PMU The Trainers will be Prof. Samir Abohadima and Klavs Bundgaard

WU2: Scenario and statistical analysis

Duration:	1 Day Training Course
Who will benefit:	• Max 10 Trainees will be invited • Ministry of Water Resources and Irrigation (MWRI) especially Shore Protection authority (SPA) • National Water Research Centre (NWRC) especially Coastal Research Institute (CORI) and Hydraulic Research Centre (HRI) • National Institute of Oceanography and Fisheries (NIOF)
Prerequisites	Proven expertise in wave modelling. MSc degree in Coastal engineering, preferably. The potential candidate has to pass an exam of minimum level skill before being finally accepted for training
Purpose:	By the end of the course the participants will be more familiarized with the latest related information and applications in line with the achievement of the ICZM Project' objectives as follow: • Definition of wave modelling scenarios • Wave analysis
Subjects:	Introduction and program overview: • Explanation of wave model simulations and scenarios • Presentation of the wave hindcast model results for the different scenarios. • Introduction to statistical analysis on waves • Explanation of statistical analysis procedure and presentation of wave analysis results
Additional Information:	Venue: TBD in coordination with PMU The Trainers will be Prof. Samir Abohadima and Klavs Bundgaard

WU3: Modelling

Duration:	1 Days Training Course
Who will benefit:	• 10 Trainees will be invited • Ministry of Water Resources and Irrigation (MWRI) especially Shore Protection authority (SPA) • National Water Research Centre (NWRC) especially Coastal Research Institute (CORI) • National Institute of Oceanography and Fisheries (NIOF)
Prerequisites	Proven expertise in wave modelling. MSc degree in Coastal engineering, preferably. The potential candidate has to pass an exam of minimum level skill before being finally accepted for training
Purpose:	By the end of the course the participants will be more familiarized with the latest related information and applications in line with the achievement of the ICZM Project' objectives as follow: • Data collection for modelling waves • Basics of ocean waves • Modelling waves using numerical models

Subjects:	Introduction and program overview: • Short introduction to ocean waves and numerical modelling • Illustration of a general workflow for modelling waves using MIKE 21 SW • Presentation of data sources useful for modelling process
Additional Information:	Venue: TBD in coordination with PMU The Trainers will be Prof. Samir Abohadima and Klavs Bundgaard

WU4: Modelling/Data analysis

Duration:	2 Day Training Course / Nov 2023
Who will benefit:	• Max 10 Trainees will be invited • Ministry of Water Resources and Irrigation (MWRI) especially Shore Protection authority (SPA) • National Water Research Centre (NWRC) especially Coastal Research Institute (CORI) and Hydraulic Research Centre (HRI) • National Institute of Oceanography and Fisheries (NIOF)
Prerequisites	Proven expertise in wave modelling. MSc degree in Coastal engineering, preferably. The potential candidate has to pass an exam of minimum level skill before being finally accepted for training
Purpose:	By the end of the course the participants will be more familiarized with the latest related information and applications in line with the achievement of the ICZM Project' objectives as follow: • Wave model implementation • Wave analysis
Subjects:	Introduction and program overview: • Application on setting up a wave model using MIKE 21 SW • Application on extraction of the wave model results. • Application on wave statistical analysis
Additional Information:	Venue: TBD in coordination with PMU The Trainers will be Prof. Samir Abohadima and Klavs Bundgaard

6.2. Coastal Morphological tool: MIKE Litpack

This section presents the proposed user-level 1 training programme in MIKE Litpack (Sub-Task 1.2).

Objective

The objective of the training:

- To give the trainee an "on-the job" insight in the various steps to develop, set-up and use of the modelling tool alongside with actual development of the model tool.
- To educate the trainee to operate the models at user level
- To learn to analyse the model results and present the results.

The overall structure and applicability are broadly shared with the ICZM stakeholders and feedback received on the I-workshops.

Training programme

The training of the tool users will include four sessions LU1 (1 day), LU2 (1 day) and LU3 (1 day). The duration of each session is shown in brackets.

The key subject to be trained in, the appointed trainer and the duration of each session and other course details are shown in the tables below.

LU1: Model Set-up and Calibration

Duration:	1 Day Training Course
Who will benefit:	• Max 8 Trainees will be invited • Ministry of Water Resources and Irrigation (MWRI) especially Shore Protection authority (SPA) • National Water Research Centre (NWRC) especially Coastal Research Institute (CORI) and Hydraulic Research Centre (HRI) • National Institute of Oceanography and Fisheries (NIOF)
Prerequisites	Proven expertise in wave modelling. MSc degree in Coastal engineering, preferably. The potential candidate has to pass an exam of minimum level skill before being finally accepted for training
Purpose:	By the end of the course the participants will be more familiarized with the latest related information and applications in line with the achievement of the ICZM Project' objectives as follow: • Sediment transport and shoreline changes • Introduction to Litpack modules of MIKE DHI
Subjects:	Introduction and program overview: • Short introduction to sediment transport and shoreline changes • Introduction to Litpack modules of MIKE DHI • Illustration of a general workflow for modelling shoreline changes using Litpack • Presentation of Litpack model setup and calibration
Additional Information:	Venue: TBD in coordination with PMU The Trainers will be Prof. Samir Abohadima and Klavs Bundgaard

LU2: Scenario and statistical analysis

Duration:	1 Day Training Course
Who will benefit:	• Max 8 Trainees will be invited • Ministry of Water Resources and Irrigation (MWRI) especially Shore Protection authority (SPA) • National Water Research Centre (NWRC) especially Coastal Research Institute (CORI) and Hydraulic Research Centre (HRI) • National Institute of Oceanography and Fisheries (NIOF)
Prerequisites	• Proven expertise in wave modelling. MSc degree in Coastal engineering, preferably. The potential candidate has to pass an exam of minimum level skill before being finally accepted for training

Purpose:	By the end of the course the participants will be more familiarized with the latest related information and applications in line with the achievement of the ICZM Project' objectives as follow: • Definition of shoreline change modelling scenarios. • Investigation of the shoreline change model setup.
Subjects:	Introduction and program overview: • Explanation of Litpack model simulations and scenarios • Investigation of the ready to run Litpack model(s)
Additional Information:	Venue: TBD in coordination with PMU The Trainers will be Prof. Samir Abohadima and Klavs Bundgaard

LU3: Modelling and analysis

Duration:	1 Day Training Course
Who will benefit:	• Max 8 Trainees will be invited • Ministry of Water Resources and Irrigation (MWRI) especially Shore Protection authority (SPA) (3) • National Water Research Centre (NWRC) especially Coastal Research Institute (CORI) (3) and Hydraulic Research Centre (HRI) (2) • National Institute of Oceanography and Fisheries (NIOF)
Prerequisites:	• Proven expertise in wave modelling. MSc degree in Coastal engineering, preferably. The potential candidate has to pass an exam of minimum level skill before being finally accepted for training
Purpose:	By the end of the course the participants will be more familiarized with the latest related information and applications in line with the achievement of the ICZM Project' objectives as follow: • Shoreline change model results presentation. • Shoreline change statistical analysis.
Subjects:	Introduction and program overview: • Presentation of Litpack model(s) results • Explanation of statistical analysis for shoreline changes quantification
Additional Information:	Venue: TBD in coordination with PMU The Trainers will be Prof. Samir Abohadima and Klavs Bundgaard

6.3. Flooding modelling – MIKE 21 HD

This section presents the proposed user-level 1 training programme in flooding modelling (Sub-Task 1.3).

Objective

The objective of the training:

- To give the trainee an "on-the job" insight in the various steps to develop, set-up and use of the modelling tool alongside with actual development of the model tool.
- To educate the trainee to operate the models at user level
- To learn to analyse the model results and present the results.

The overall structure and applicability are broadly shared with the ICZM stakeholders and feedback received on the I-workshops.

Training programme

The training of the tool users will include four sessions HDU1 (1 day), HDU2 (1 day) and HDU3 (2 days). The duration of each session is shown in brackets.

The key subject to be trained, names of trainers and duration of each session are shown in the table below.

HDU1: Flood modelling establish and set-up

Duration:	1 Day Training Course
Who will benefit:	• Max 12 Trainees will be invited • Ministry of Water Resources and Irrigation (MWRI) especially Shore Protection authority (SPA) • National Water Research Centre (NWRC) especially Coastal Research Institute (CORI) and Hydraulic Research Centre (HRI) • National Institute of Oceanography and Fisheries (NIOF)
Prerequisites:	Proven expertise in MIKE 21. MSc degree in Hydraulics/Oceanography, preferably. The potential candidate has to pass an exam of minimum level skill before being finally accepted for training.
Purpose:	By the end of the course the participants will be more familiarized with the latest related information and applications in line with the achievement of the ICZM Project' objectives as follow: • Coastal flooding concept • Hydrodynamic modelling software
Subjects:	Introduction and program overview: • Short introduction to water level variation and coastal flooding • Introduction to the MIKE 21 hydrodynamic model • Illustration of a general workflow for modelling hydrodynamics using MIKE 21 • Presentation of the hydrodynamic model setup
Additional Information:	Venue: TBD in coordination with PMU The Trainers will be Prof. Samir Abohadima, Dr. Mohamed Noureldien and Klavs Bundgaard

HDU2: Flood modelling exercises

Duration:	1 Day Training Course / July 2023
Who will benefit:	• 12 Trainees will be invited • Ministry of Water Resources and Irrigation (MWRI) especially Shore Protection authority (SPA) • National Water Research Centre (NWRC) especially Coastal Research Institute (CORI) • National Institute of Oceanography and Fisheries (NIOF)
Prerequisites:	Proven expertise in MIKE 21. MSc degree in Hydraulics/Oceanography, preferably. The potential candidate has to pass an exam of minimum level skill before being finally accepted for training.

Purpose:	By the end of the course the participants will be more familiarized with the latest related information and applications in line with the achievement of the ICZM Project' objectives as follow: • Calibration of hydrodynamic models • Definition of hydrodynamic modelling scenarios
Subjects:	Introduction and program overview: • Presentation of the hydrodynamic model calibration procedure • Explanation of MIKE 21 hydrodynamic model simulations and scenarios • Investigation of the ready to run MIKE 21 hydrodynamic model • MIKE 21 DH model exercises
Additional Information:	Venue and Facilities: TBD in coordination with PMU Documentation: PowerPoint Presentation, Videos, Photos, Training Materials The Trainers will be Klavs Bundgaard, Prof. Samir Abohadima

HDU3: Flood modelling exercises and analysis

Duration:	2 Days Training Course
Who will benefit:	• Max 12 Trainees will be invited • Ministry of Water Resources and Irrigation (MWRI) especially Shore Protection authority (SPA) • National Water Research Centre (NWRC) especially Coastal Research Institute (CORI) and Hydraulic Research Centre (HRI) • National Institute of Oceanography and Fisheries (NIOF)
Prerequisites:	Proven expertise in MIKE 21. MSc degree in Hydraulics/Oceanography, preferably. The potential candidate has to pass an exam of minimum level skill before being finally accepted for training.
Purpose:	By the end of the course the participants will be more familiarized with the latest related information and applications in line with the achievement of the ICZM Project' objectives as follow: • Hydrodynamic models outcomes • Statistical analysis on hydrodynamic models' outcomes
Subjects:	Introduction and program overview: • Introduction to statistical analysis on water level data • Explanation of statistical analysis and presentation of the analysis on the hydrodynamic model results
Additional Information:	Venue: TBD in coordination with PMU The Trainers will be Prof. Samir Abohadima and Klavs Bundgaard

6.4. Saltwater intrusion models – SIWARE and SEAWAT

This section presents the proposed user-level 1 training programme in the Salt intrusion modelling (Sub-Task 1.4).

Objective

The objective of the training:

- To give the trainee an "on-the job" insight in the use of SI tool
- To educate the trainee to operate the tool at user level
- To learn to analyse the tool results and present the results.

The overall structure and applicability of the tool is broadly shared with the ICZM stakeholders and feedback received on the I- workshops, see Section 11.1.2.

Programme

The training of the tool users will include four sessions SIU1 (1 day), SIU2 (1 day), SIU3 (1 days) and SIU4 (1 day). The duration of each session is shown in brackets.

The user will be introduced to all the phases of importance for the setting-up the models, calibration and operating the models and analysing the model results.

The training is planned distributed along the project execution in accordance with the progress of the development of the project.

Certification

After the completion of the training the user skills achieved by each trainee will be tested. Trainee passing the test will receive a Certificate documenting that they have participated in the course and successfully passed the operational user test.

The key subject to be trained in, the appointed trainer and the duration of each session and other course details are shown in the tables below.

SIU1: Modelling Setup

Duration:	1 Day Training Course
Who will benefit:	• Max. 12 Trainees will be invited • DRI, WRRI, RIGW, ARC, WRRI (DRI staff may decide to attend but will be asked to co-lecture anyway
Prerequisites:	Proven expertise in groundwater and/or (agro-) hydrological modelling. MSc degree in hydrology and/or agriculture, preferably. The potential candidate has to pass an exam of minimum level skill before being finally accepted for training.
Purpose:	Make participants familiar with the concepts and tools to quantify effects of Sea Level Rise (SLR) by means of Saline water Intrusion (SWI) on stakeholders
Subjects:	Introduction and program overview; • General objectives of the project • Overall concepts of how SLR could impact on stakeholders by means of SWI • Conceptual approach for proper SWI-modelling in NE, Nile Delta, and NW coasts • Requirements in terms of model functionality and data • How to process data for the baseline and scenarios • Definition of baseline and scenarios • Analyse, present, and report on results obtained.
Additional Information:	Venue: TBD in coordination with PMU The Trainers will be Dr. Marmar Badr and DRI staff

SU2: Modelling Coupling

Duration:	1 day Training Course
Who will benefit:	• Max. 12 Trainees will be invited • DRI, WRRI, RIGW, ARC, WRRI
Prerequisites	• Proven expertise in groundwater and/or (agro-) hydrological modelling. MSc degree in hydrology and/or agriculture, preferably. The potential candidate has to pass an exam of minimum level skill before being finally accepted for training.
Purpose:	Make participants familiar with the basic concepts of integrated geo-agro-hydrological model-ling
Subjects:	Introduction and program overview; • Conceptual approach for coupling of groundwater- and agro-hydrological models • Different (software) approaches for coupling and potential pitfalls. • Runtime requirements
Additional Infor-mation:	Venue: TBD in coordination with PMU The Trainers will be Dr. Marmar Badr and DRI staff

SIU3: Modelling Calibration and Validation

Duration:	1 Day Training Course
Who will benefit:	• Max. 12 Trainees will be invited • DRI, WRRI, RIGW, ARC, WRRI
Prerequisites:	• Proven expertise in groundwater and/or (agro-) hydrological modelling. MSc degree in hydrology and/or agriculture, preferably. The potential candidate has to pass an exam of minimum level skill before being finally accepted for training.
Purpose:	Make participants familiar with the basic concepts for model calibration and validation
Subjects:	Introduction and program overview; • What is model calibration and validation? And why is it needed (sometimes)? • Calibration/validation of the SEAWAT groundwater model for NE, Nile Delta, and NW coasts • Calibration/validations of the SIWARE agro-hydrological model How to calibrate/vali-date an integrated model for the Nile Delta coast
Additional Infor-mation:	Venue: TBD in coordination with PMU The Trainers will be Dr. Marmar Badr and DRI staff

SIU4: Results Analysis

Duration:	1 Day Training Course
Who will benefit:	• Max. 12 Trainees will be invited • DRI, WRRI, RIGW, ARC, WRRI

Prerequisites:	• Proven expertise in groundwater and/or (agro-) hydrological modelling. MSc degree in hydrology and/or agriculture, preferably. The potential candidate has to pass an exam of minimum level skill before being finally accepted for training.
Purpose:	Make participants familiar with collecting, processing, analysing and presenting SWI model results
Subjects:	Introduction and program overview; Objectives of the project and specific objectives of SWI modelling What are the relevant model output data in relation to impacted stakeholders? Analysing outputs of the models (NE, Nile Delta, and NW coasts) (logic, bounds, integrity, consistency, etc.) What are appropriate output formats (maps, tables, diagrams, statistical plots, etc.) How to convert model data into (impactful) reportable and presentable formats
Additional Information:	Venue: TBD in coordination with PMU The Trainers will be Dr. Marmar Badr and DRI staff

6.5. GIS platform

This section presents the proposed user-level 1 training programme in the GIS Platform.

Objective

The objective of the training:

- To give the trainee an "on-the job" insight in the use of GIS tool
- To educate the trainee to operate the tool at user level
- To learn to analyse the tool results and present the results.

The overall structure and applicability of the tool is broadly shared with the ICZM stakeholders and feedback received on the I- workshops, see Section 11.1.2.

Training programme

The training of the tool users will include two sessions GU1 (1 day) and GU2 (1 day) for all the participants. The duration of each session is shown in brackets.

The key subject to be trained, names of trainers and duration of each session are shown in the table below.

GU1 Day 1: Preparing data for GIS applications and Working with Spatial Database

Duration:	1 Day Training.
Who will benefit:	• 28 governmental and 20 governorates employees will be invited • NWRC, MOT, SPA, NUCA, EEAA, MOE, LFPA, MWRI, EMA and Coastal Governorates Representatives
Prerequisites:	Proven expertise in GIS application and data management. The potential candidate has to pass an exam of minimum level skill before being finally accepted for training.

Purpose:	• To give the trainee an "on-the job" insight in the use of GIS tool • To educate the trainee to operate the tool at user level • To learn to analyse the tool results and present the results.
Subjects:	Introduction and program Overview; Preparing Data for GIS Applications • Acquiring and preparing data • Data quality • Evaluating completeness and logical consistency • Evaluating spatial accuracy • Evaluating temporal accuracy • Evaluating thematic accuracy • Documenting data quality Working with Spatial Database • Creating a spatial database • Creating and populate a file geodatabase. • Loading data into a spatial database • Displaying Data as SQL View • Displaying Data with SQL filters • Organize GIS data with geodatabase components. • Create a mosaic dataset.
Additional Information:	Venue: TBD in coordination with PMU The Trainers will be Dr. Mohamed Nour El Din and Dr. Jesper R. Rasmussen

GU2 Day 1: Web-GIS application

Duration:	1 Day training
Who will benefit:	• 28 governmental and 20 governorates employees will be invited • NWRC, MOT, SPA, NUCA, EEAA, MOE, LFPA, MWRI, EMA and Coastal Governorates Representatives
Prerequisites:	Proven expertise in GIS application and data management. The potential candidate has to pass an exam of minimum level skill before being finally accepted for training.
Purpose:	• To give the trainee an "on-the job" insight in the use of GIS tool • To educate the trainee to operate the tool at user level • To learn to analyse the tool results and present the results.
Subjects:	Introduction and program Overview; Bringing Data into GIS Web Portal and Displaying the Results • Adding, Styling, and Displaying Shapefiles • Adding, Styling, and Displaying Data from Microsoft SQL server Dashboard

	• allow you to display a summary of information—including maps and real-time data—on a single screen to support decision making
Additional Information:	Venue: TBD in coordination with PMU The Trainers will be Dr. Mohamed Nour El Din and Dr. Jesper R. Rasmussen

6.6. Risk assessment model

This section presents the proposed user-level 1 training programme in the Risk assessment model (Sub-Task 1.5).

Objective

The objective of the training:

- To give the trainee an "on-the job" insight in the use of risk assessment tool.
- To educate the trainee to operate the tool at user level
- To learn to analyse the tool results and present the results.

Training programme

The training of the tool users will include two sessions RU1 (1 day) and RU2 (1 day). each session will consist of two topics of each 0.5 day duration.

The key subject to be trained, names of trainers and duration of each session are shown in the table below.

RU1: Classification of land cover spatial data using remotely sensed data and change detaction applications using GIS/RS

Duration:	1 Day Training Course
Who will benefit:	• 16 from Government and 20 from Governorates will be invited • MOT, SPA, NUCA, EEAA, MOE, LFPA, MWRI, GOPP and Coastal Governorates Representatives
Prerequisites	• Proven expertise in hydraulic engineering and GIS application MSc degree in Coastal Engineering, preferably. The potential candidate has to pass an exam of minimum level skill before being finally accepted for training.
Purpose:	• To give the trainee an "on-the job" insight in the use of Risk Assessment tool • To educate the trainee to operate the tool at user level • To learn to analyse the tool results and present the results.
Subjects:	Introduction and program Overview; • Classification of landcover spatial data using remotely sensed data • Change detection applications using GIS/RS
Additional Information:	Venue: TBD in coordination with PMU The Trainers will be Dr. Hany Ayad and Dr. Jesper R. Rasmussen

RU2: GIS spatial analysis for detecting, classifying and delimiting flood impacted areas and methods for field data collection and Zoning and spatial planning.

Duration:	1 Day Training Course
Who will benefit:	• 16 from Government and 20 from Governorates will be invited • MOT, SPA, NUCA, EEAA, MOE, LFPA, MWRI, GOPP and Coastal Governorates Representatives
Prerequisites:	• Proven expertise in hydraulic engineering and GIS application MSc degree in Coastal Engineering, preferably. The potential candidate has to pass an exam of minimum level skill before being finally accepted for training.
Purpose:	• To give the trainee an "on-the job" insight in the use of Risk Assessment tool • To educate the trainee to operate the tool at user level • To learn to analyse the tool results and present the results.
Subjects:	Introduction and program Overview; • GIS spatial analysis for detecting, classifying and delimiting flood impacted areas. • Methods for field data collection. • Zoning and spatial planning.
Additional Information:	Venue: TBD in coordination with PMU The Trainers will be Dr. Hany Ayad and Dr. Jesper R. Rasmussen

6.7. Crisis and Disaster Management

Even though Crisis and Disaster Management is not a project tool, on-the-job training of crisis and disaster management is included in the training program to ensure awareness and management skills at all organisational levels.

Objective

The objective of the training:

- To give the trainee an "on-the job" insight in crisis and disaster management.

Training programme

The training of the tool users will include two sessions CDM1 (2 day).

The key subject to be trained, names of trainers and duration of each session are shown in the table below.

CDM1: Strengthening Crisis and Disaster Management

Duration:	2 Day Training Course
Who will benefit:	• 25 Trainees will be invited • NWRC, MOT, SPA, NUCA, EEAA, MOE, LFPA, MWRI, GOPP, EMA and Coastal Governorates Representatives
Prerequisites:	• Proven expertise in hydraulic engineering and GIS application, MSc holders (preferably with MSc degree in science or engineering). The potential candidate has to pass an exam of minimum level skill before being finally accepted for training

Purpose:	• Coordination of implementation of Pilot areas • Crises/disaster Management
Subjects:	Introduction and program Overview; This course will include the strategies and the 5 stages of crisis/disaster management cycle: • Prevention, • Mitigation, • Preparedness, • Response and • Recovery
Additional Information:	The course will be held on-the-Job. Venue and Facilities: TBD in coordination with PMU The Trainer will be Dr. Yousry Elkomy, Dr. Hany Ayad and Dr. Ibrahim Elshinnawy.

7. Level 2: Tools Super User Training (Deliverable 1.7.1)

This section presents the proposed Level 2 Tools Super User Training. 2-4 trainees (having passed the level 1 training) will be selected for Super user training in the wave modelling tool, coastal morphological tool, flooding tool, GIS tool and risk assessment tool presented in Chapter 6.

The overall idea behind super user training is to secure long-term sustainability of the modelling complex by establishing a core team of advanced and committed super users responsible for maintaining model complex and assisting the users in the daily operation.

Objective

The objective of the super-user training:

- To give special appointed trainees a deeper insight in the modelling system
- To educate the trainee to operate, maintain and assist the users of the tool operations.
- To prepare advanced analyses to be used for annual reports etc. results.

The training of the super user will include three sessions for each tool, each session having a duration of 1 day.

Participants of the Level 2: Tools Super User Training will be selected among trainees that have successfully completed Level 1 training courses. Entry exams for the super user courses is thereby not needed.

The key subject to be trained, names of trainers and the total duration of each of the three sessions are shown in the table below.

Table 7.1: Training Programme for Super Users and TOT.

Super User Training	Trainer	Duration (Day)

WSU 1-3 Super User education in MIKE 21 SW	Klavs Bundgaard/Samir	3
LSU 1-3 Super user education in MIKE LitPack	Klavs Bundgaard/Samir	3
HDSU 1-3 Super user education in flood modelling	Klavs Bundgaard/Samir	3
GUS 1-3 Super user education in GIS	Mohamed Noureldien	3
RSU 1-3 Super user education in Risk assessment	Hany Ayad/Mohamed Noureldien	3
Total		15

8. Data management and Forecast system (Sub-Task 4.4)

This section presents the proposed user training programme required to operate and maintain the data management and forecast system to be anchored in the Coastal Monitoring and Information Centre (CMIC).

Participants for the Data management and Forecast system training program is anticipated to be selected among trainees who have completed Level 2: Tools Super User Training.

The selection of the trainees will have to wait for the final decision of the establishment of the CMIC.

Objective

The objective of the training:

- To give the trainee an "on-the job" insight in the various steps to develop, set-up and operate of the data management and forecast system.
- To educate the trainee to operate the data management system and prepare the forecast system
- To learn to analyse the model results and present the results.

Training programme

The training of the tool users will include four sessions FOU1 (2 days), FOU2 (1 day), FOU3 (2 day), FOU4 (2 days), FOU5 (2 days), FOU6 (2 days) and FOU7 (2 days). The duration of each session is shown in brackets.

The user will be introduced to all the phases of importance for developing and setting-up the forecast system, operating and using the tool for analyses.

The on-the-job training is conducted after partly along the project execution in accordance with the progress of the development of the Forecast system. This will allow the trainee to follow the development with relevant "on-the-Job" exercises and complete the training with a number of exercises in using the Forecast system.

The key subject to be trained, names of trainers and duration of each session are shown in the table below.

FOU1: Monitoring and data management

Duration:	2 Day Training Course

Who will benefit:	• 12 Trainees will be invited • Ministry of Water Resources and Irrigation (MWRI) especially Shore Protection authority (SPA) • National Water Research Centre (NWRC) especially Coastal Research Institute (CORI)
Prerequisites:	Proven expertise in wave modelling. MSc degree in Hydraulics/Oceanography, preferably. The potential candidate has to pass an introduction minimum exam before being finally accepted.
Purpose:	• To give the trainee an "on-the job" insight in the various steps to develop, set-up and operate of the forecast system. • To educate the trainee to operate the forecast system at user level • To learn to analyse the model results and present the results.
Subjects:	• Introduction and program Overview; It is often referred to by its acronym, DBMS. The 5 functions of a DBMS include • Concurrency, • Security, • Backup and recovery, • Integrity and, • Data descriptions
Additional Information:	Venue: TBD in coordination with PMU The Trainers will be Prof. Samir Abohadima and Klavs Bundgaard

FOU2: Design of forecast system

Duration:	1 Day Training Course
Who will benefit:	• 12 Trainees will be invited • Ministry of Water Resources and Irrigation (MWRI) especially Shore Protection authority (SPA) • National Water Research Centre (NWRC) especially Coastal Research Institute (CORI)
Prerequisites:	• Proven expertise in wave modelling. MSc degree in Hydraulics/Oceanography, preferably. The potential candidate has to pass an introduction minimum exam before being finally accepted.
Purpose:	• To give the trainee an "on-the job" insight in the various steps to develop, set-up and operate of the forecast system. • To educate the trainee to operate the forecast system at user level • To learn to analyse the model results and present the results.
Subjects:	Introduction and program Overview; • Theoretical ideas - chaos, predictability limits • Ensemble methods - taking account of uncertainty in initial conditions and in the model • Predictability in the extended range - ocean, sea-ice, stratosphere, land Probabilistic forecast initialization, modelling, evaluation and verification

Additional Information:	Venue: TBD in coordination with PMU The Trainers will be Prof. Samir Abohadima and Klavs Bundgaard

FOU3-FOU7: Operation of forecast system

Duration:	5 courses each 2 days = 10 Day Training
Who will benefit:	• 12 Trainees will be invited • Ministry of Water Resources and Irrigation (MWRI) especially Shore Protection authority (SPA) • National Water Research Centre (NWRC) especially Coastal Research Institute (CORI)
Prerequisites:	• Proven expertise in wave modelling. MSc degree in Hydraulics/Oceanography, preferably. The potential candidate has to pass an introduction minimum exam before being finally accepted.
Purpose:	• To give the trainee an "on-the job" insight in the various steps to develop, set-up and operate of the forecast system. • To educate the trainee to operate the forecast system at user level • To learn to analyse the model results and present the results.
Subjects:	Introduction and program Overview; This course will include the following steps which generate forecasts. • Determine what the forecast is for. • Select the items for the forecast. • Select the time horizon. Interested in learning more? • Select the forecast model type. • Gather data to be input into the model. • Make the forecast. • Time series trend analysis and extreme value analysis • Verify (quality assurance) and implement the results.
Additional Information:	Venue: TBD in coordination with PMU The Trainers will be Prof. Samir Abohadima and Klavs Bundgaard

9. Level 3: TOT Programme (Deliverable 3.2.2)

The Training of Trainers (TOT) model is intended to engage master trainers in coaching new trainers that are less experienced with a particular topic or skill, or with training overall. A TOT can build a pool of competent instructors who can then teach the material to other people. Instead of having just one trainer who teaches a course for a long time, there are multiple trainers teaching the same course at the same time in the TOT model. This means a new participant typically gets to watch an experienced trainer teach, complete the exercises, and then practice teaching segments to other participants. The master trainer and trainer participants should use the ICZM Professional Development Best Practices.

Trainees to participate in the TOT program will be selected among trainees who have completed at least the Level 2: Tools Super User Training which are employed in the CMIC and have the daily responsibility of operating, maintaining

and updating the complete model suit and forecast system. By this approach it is ensured that coming trainers will have the highest technical skill possible and have required skills to communicate and teach new and existing members

The TOT program is fully elaborated in Deliverable 3.2.2 Design and assistance to initiate a corresponding TOT program.

10. Coastal Monitoring and Information Centre (Sub-Task 4.4)

The sustainability of the "new" ICZM organization in Egypt depends on establishing a strong and capable CMIC centre in MWRI as described in Ref [2] and detailed in [3].

CMIC will have a key role to play being responsible for updating the assessment of the vulnerability of the North Coast and use this for recommending on the ICZM process to the ICZM Secretariat.

The CMIC is anticipated to meet the following requirements according to TOR:

- Delivery of high-quality forecasts in operational and real-time mode of events threatening the North Egyptian coastal zone (threats of flooding, loss of life, loss of assets, environmental damage) and requiring urgent protection / adaptation measures.
- Early warning app will be developed for easy warning the people being at risk of being flooded.
- The annual delivery of trends in oceanic conditions (sea levels, waves) and trends in coastal erosion.
- Providing long-term estimates of the impact of climate change on the coastal environment.
- Permanent availability of forecasts, minimal downtime (requiring some redundancy of equipment and systems, backup facilities, emergency power supply, etc.

As presented in the Inception Report 8-10 employees are anticipated to run the CMIC.

There will not be any dedicated training for CMIC operators, but the operators will be selected by PMU among trainees who have completed one or more of the following 3 training programs:

- Level 2 Tools Super User Training
- Data management and Forecast System
- Level 3: TOT Programme

CMIC operators are suggested to be selected among the most skilful candidates that have completed "Data management and Forecast system" and "TOT programme".

11. Training Workshop Program (Deliverable 2.2.5, 2.6.2, 3.2.3, 3.3.1 and 3.3.2)

The Training Workshop Program consist of 4 parallel lines:

- A-workshops:
  Administrative staff representative
  - The A workshops are dealing with the application of the ICZM tool and how the tools can support and enhance a sustainable management and planning of the coastal areas in accordance with the ICZM principles.

- I-workshops:
  Staff at NWRC institutes and technical organisations dealing with climate change
    - The I workshops will focus on the development of the individual ICZM tools through detailed specification of the tools in close cooperation with the relevant technical organization to take over the future operation the ICZM Tool.

- E-workshops:
  Key employees to manage various tools being developed under this project
    - The E-Workshops are focused on the tool Workshop of the employees in the five Ministries.

- G-workshops:
  Key employees in the governorates being responsible for the ICZM and GIS administration
    - The G-workshops are focused on the tool Workshop of the governmental staff in administration and use of the ICZM tolls.

A total of 24 training workshops are included in the program.

Tentative dates for each training workshop are presented. Please note that these dates are subject to change without notification.

11.1. Workshop (A and I) for Governmental Staff Authorities and Institutes - Deliverable 2.2.5 and 2.6.2

A number of workshops are arranged to meet the following overall objectives:

- Improve coordination at the planning level, horizontally, between central organizations, and vertically, between central organizations and organizations at the local level.
- Help in integrating laws, plans, regulations, and agreements to overcome difficulties and facilitate the implementation process of ICZM projects to make a real difference on the ground and be reflected on the day-to-day work of executive agencies and communities.
- Propose and develop national policies and frameworks for crises and disasters management and disaster risk reduction.

The workshops are split into separate workshops for Planners (Blue A- workshops for ICZM Planners) and Technical Experts (Green I-workshops for ICZM experts) as follows:

- The A workshops are dealing with the application of the ICZM tool and how the tools can support and enhance a sustainable management and planning of the coastal areas in accordance with the ICZM principles
- The I workshops will focus on the development of the individual ICZM tools through detailed specification of the tools in close cooperation with the relevant technical organisation to take over the future operation the ICZM Tool.

Including kick-off workshops a total number of 10 A- and 7 I workshops are included in the project.

On the workshops, the various ICZM tools intended to be developed are being introduced to the ICZM Planners and to the potential ICZM Experts to take over the tools after the completion of the project.

In general, the workshops are carried out in accordance with the following approach and methodology as also presented in the Inception report Ref [2]:

- On the first part of the A-and I-workshops the overall methodology, concepts and overall expectations to each of the five tools are shared with the stakeholders and their feedbacks are considered for updating the methodology and conceptual description and detailed specification presented in the Final Inception Report.
- On second part of the A- workshops, the application of the tools will be illustrated, and the preliminary results will be shared with the stakeholders for comments and discussions in addition, the detailed tool application will be also discussed. While the I-workshops will focus on the development of the individual ICZM tool through detailed specification of each tool in close cooperation with the relevant technical organization to take over the future operation the ICZM Tool.
- The last part of the A- and I-workshops focus is on the development of the ICZM and the implementation of the Pilot areas.

Please find workshop programmes in the next two sections.
Detailed workshop programme tuned to the actual ICZM process is prepared and settled with PMU approximately 2 weeks before each workshop.

11.1.1. Programme for A1 to A8 Workshops

Prior to the A1 workshop the A Kick-Off and A0 workshops was carried out during the inception phase.

Workshop A1: Date: January 25, 2022

Objective:

The overall aim of the Blue A1 workshop was to engage the relevant stakeholders in the planning process of the ICZM.

Methodology:

One day workshop including:

- Risks facing ICZM.
- Existing roles and responsibilities and institutional setup of all stakeholders in the planning and management of coastal zones.
- Comprehensive understanding of the current roles of all stakeholders in the ICZ management and planning process.
- Clarification of existing contradictions between the status quo of roles and responsibilities of ICZM and the desired effective ICZM.
- Ideas to implement ICZM.

Output:

Thorough and comprehensive discussion of the risk facing the ICZM and obstacles for introducing ICZM and qualified input to adjust the legislative/regulative and institutional framework to initiate ICZM principles in the coastal management in in Egypt. All documented in a workshop report.

Workshop A2: Date: September 14, 2022

Objective:

Sharing the draft alternatives with the key stakeholders for improving the legal and institutional framework based on a SWOT analysis performed on the existing conditions.

Methodology:

One day workshop including:

- SWOT analysis of the existing legal and Institutional framework
- Proposals for adjustments to legislation and regulation to meet demands for ICZM
- Working Group Session among the participants to discuss the adjustment of the

Expected output:

Thorough and comprehensive discussion of the obstacles for introducing ICZM and qualified input to adjust the legislative/regulative and institutional framework to initiate ICZM principles in the coastal management in Egypt.

Workshop A3: Date: January 2023

Objective:

- To share the proposed legal-institutional set-up and discuss, elaborate and receive detailed feedback.
- To share the Ambassador Programme being an integrated part of the capacity building with the stakeholders.

Methodology:

One day workshop including:

- Discussion of the adjustments to legislation and regulation to meet demands for ICZM.
- Working Group session among the participants to discuss the adjustment of the legal, regulative and institutional set-up.
- Discussion of the ambassador Programme
- Working Group session on Ambassador Programme

Expected output:

To receive final feedback on the legal and institutional framework and to receive feedback on the Ambassador programme.

Workshop A4: Date: September 2023

Objective:

- To share key results from GIS and Risk assessment and the process towards ICZM
- To share CMIC anchoring and overall data sharing
- To report on the execution of the Ambassador Programme

Methodology:

One day workshop including:

- Discussion of presentation on the three objective-subjects
- Working groups on the subjects

Expected output:

- Feedback on risk assessment, overall data sharing concepts and CMIC anchoring.

Workshop A5: Date: December 2024

Objective:

- Risk assessment of baseline scenarios

Methodology:

- One day workshop with working groups on the subject.

Expected output:

- Feedback on risk assessment.

Workshop A6: Date: January 2024

Objective:

- Risk assessment and cost benefit analysis of measures and effects

Methodology:

- One day workshop with working groups on the subject.

Expected output:

- Feedback on Risk assessment and cost benefit analysis of measures and effects.

Workshop A7: Date: May 2024

Objective:

- Presentation of the Implementation of ICZM and SMP
- Coastal management practice

Methodology:

- One day workshop with working groups on the subject.

Expected output:

- Feedback on implementation of ICZM and SMP

Workshop A8: Date: November 2024

Objective:

- Evaluation of implementation in Pilot area
- Coastal management practice methodology.
- One day workshop with working groups on the subject.

Expected output:

- Feedback on evaluation.

11.1.2. Programme for I1 to I6 workshops

Prior to the I1 workshop the I Kick-Off workshop was carried out during the inception phase.

Workshop I1: Date: January 18, 2022

Objective:

The overall aim of the workshops was to exercise and learn the ICZM process. The Green (I-01) workshop is aiming to discuss and elaborate with the relevant stakeholders the five ICZM tools which are: Hydrodynamic, Hydrology, GIS Risk Assessment Tools and Forecast.

Methodology:

- One day workshop with presentations of the NIRAS Expert team and working groups with stakeholders.

Output:

- A very good and inter-active workshop with much valuable feedbacks from the stakeholders presented in the workshop report.

Workshop I2: Date: March 28-29, 2022

Objective:

- The overall aim of the workshops is to present the progress in the ICZM tools. The Green (I-02) workshop is aiming to present the structure and layers of the GIS platform to the relevant stakeholders and elaborate the methodology adopted for the damage modelling for urban areas, beach areas and coastal constructions as well as the aquaculture and agriculture areas.

Methodology:

- Two-day workshop with presentations of the NIRAS Expert team and working groups with stakeholders.

Output:

- A very good and inter-active workshop with much valuable feedbacks from the stakeholders presented in the workshop report.

Workshop I3: Date: September 12, 2022

Objective:

- To present GIS functionality and examples Data-GIS layers and preliminary analysis of flooding and impacts:

Methodology:

- One-and-a-half-day workshop with presentations of the NIRAS Expert team and working groups with stake-holders.

Output:

- Very valuable feedback from the stakeholders.

Workshop I4: Date: January 2023

Objective:

- To share brief status of the development of the five ICZM Tools: (1) Hydraulics and Coastal Morphology; (2) Flood modelling; (3) Sea water intrusion; (4) Risk Assessment and (5) Forecast.
- To share, discuss, elaborate and receive feedback on conceptual set-up of data sharing and GIS Portal system and possible institutional set-up of (anchoring) of CMIC assessed from a technical point of view.
- To share present status of Risk Assessment and discuss, elaborate and receive feedback on technical matters in the Risk Assessment.

Methodology:

- One day workshop with presentations of the NIRAS Expert team and working groups with stakeholders.

Expected output:

- Very valuable feedback from the stakeholders to continue the development of 5 ICZM tools including data platforms.

Workshop I5: Date: September 2023

Objective:

- Sharing status on ICZM tools; Set-up of data sharing & GIS Portal; anchoring of CMIC

Methodology:

- One day workshop with presentations of the NIRAS Expert team and working groups with stakeholders.

Expected output:

- Valuable feedback from the stakeholders to continue the development of 5 ICZM tools including data platforms.

Workshop I6: Date: January 2024

Objective:

- Risk assessment and cost benefit of measures and effects.
- Discussion of implementation of Pilot areas.

Methodology:

- One day workshop with presentations of the NIRAS Expert team and working groups with stakeholders.

Expected output:

- Valuable feedback from the stakeholders to continue the risk assessment and cost benefit analysis of measures and effects.

11.2. Presentation of ICZM Plan -Deliverable 2.6.2

NIRAS will assist in the preparation of meetings where the ICZM plan is presented to authorities involved in the implementation. This will be done on the Blue A7 Workshop. For more details see Section 11.1.1.

11.3. Training Courses for Governmental Officials (E-workshops) (Deliverable 3.2.3)

Training courses for officials of government agencies and relevant stakeholders to enhance their capacity on integrating climate-related risks in their planning and considerations will be carried out on three planned one day long training E-workshops. The E-workshops are focused on the tool training of the governmental staff in administration and use of the ICZM tools in particular in the use of the GIS system and in the Risk assessment tool.

The following 3 E-workshops are planned.

Workshop E1: December 2022 & Workshop E2: September 2023

Objective:

- Need and gap analysis and training in GIS and Risk assessment.

Methodology:

- 1 day workshop for 12 qualified Governmental employees in the key ICZM agencies.

Expected output:

- Two governmental employees from each agency educated to operate the GIS system and Risk assessment system.

Workshop E3: January 2024

Objective:

- Implementation of ICZM & Coordination and the role of the Governmental agencies

Methodology:

- 1 day workshop carried out for 18 qualified selected governmental employees

Expected output:

- Information on the Pilot project and the discussion of the Governorates role in this.

11.4. Training Workshops for Officials at Governorates - G-workshops (Deliverable 3.3.1 and 3.3.2)

Training courses for officials at coastal governorates to enhance their capacity on integrating climate-related risks in their planning and considerations will be carried out on four planned one day long G-workshops. The G-workshops are focused on the tool training of the coastal governorate staff in administration and use of the ICZM tools in particular the use of the GIS system and in the Risk assessment tool.

The following 4 G-workshops are planned.

Workshop G1: December 2022 & Workshop G2: May 2024

Objective:

- Need and gap analysis and training in GIS and Risk Assessments

Methodology:

- 1 day workshop carried in Port Said or Alexandria two times for 20 qualified selected employees with basic skill on GIS.

Expected output:

- 2-4 employees from each Governorates educated to operate the GIS system and the Risk Assessment system on user level.

Workshop G3: January 2024

Objective:

- Implementation of ICZM & Coordination and the role of the Governorate

Methodology:

- 1 day workshop carried in Port Said or Alexandria for a number of qualified selected employees in the local ICZM organisation

Expected output:

- Agreement with the governorates on their role and responsibilities in the ICZM implementation.

Workshop G4: May 2024

Objective:

- Continued coordination of implementation of Pilot areas
- Crises/disaster Management

Methodology:

- One day workshop divided into coordination of the Pilot area and disaster risk management applying disaster risk reduction policies and strategies. Trainee will acquire professional knowledge and skills of the five steps of Emergency Management, which are:

    1. Prevention
    2. Mitigation

3. Preparedness
4. Response
5. Recovery.

Expected output:

Agreement with the governorates on their role and responsibilities in the ICZM implementation and trainees acquiring skills in disaster management.

Strengthen crises/disasters management

The training topics of crisis and disaster management is covered in G3 and G4 workshops as follows.

Duration:	1 Day Training Course (G3 workshops) and 1 day (G4 training workshop)
Who will benefit:	• 20 Trainees will be invited form the governorates
Prerequisites:	Proven expertise in hydraulic engineering and/or GIS application MSc degree in Coastal Engineering, preferably. The potential candidate has to pass an exam of minimum level skill before being finally accepted for training
Purpose:	• Coordination of implementation of Pilot areas • Crises/disaster Management
Subjects:	Introduction and program Overview; This course will include the strategies and the 5 stages of crisis/disaster management cycle: Prevention, mitigation, preparedness, response and recovery
Additional Information:	Venue: TBD in coordination with PMU The Trainers will be Prof. Samir Abohadima and Klavs Bundgaard, Dr. Hany Ayad Dr. Mohamed Noureldien

12. Public Webinars with Information on Disaster, Risk and Protection Options (Deliverable 3.3.3)

ICZM webinars, Community Engagement, show how to inform and involve communities to make the best decisions for their health and recovery in an emergency.

The webinars will provide simple information on current practices in both emergency management and emergency support services.

13. Recommended Additional Training Courses

The following topics has been identified in the training needs assessment to be required to make a full capacity building program in order to ensure a sustainable implementation of the ICZM.

Following topics is not the responsibility of NIRAS and will not be undertaken by NIRAS but are included this report as a recommendation.

13.1. Soft Personal and Institutional Skills

Communication Skills

Duration:	3 Days Training Course
Who will benefit:	• 40 Trainees will be invited • NWRC, MOT, SPA, NUCA, EEAA, MOE, LFPA, MWRI, GOPP, EMA and Coastal Governorates Representatives
Prerequisites:	• The candidate should have a significant role that supports the achievement of one or some of the ICZM sustainable development goals. • The candidate must be an active leader in his community and his workplace (this means that the nominee has the leadership skills such as being influential, inspiring, motivating, and a team player) certified by managers and colleagues.
Purpose:	1. A group of active participants to be selected from relevant ministries, governorates, and research centres participating in the project to promote the integrated coastal zone management elaborated by the project. 2. Build a passionate team to partake in a communication training program specialized for ICZM. 3. Apply this training to inform target audiences on the critical issues of our ICZM and the impacts this has on coastal zones' inhabitants. This will include the development of outreach materials, presentations, and speaking engagements. 4. Share the methods and skills gained through this program to train successive classes of ambassadors to build a network of skilled science communicators.
Subjects:	Introduction to Communication Skills Training program Criteria for Assessing Communication Competence Communication Skills Self-Assessment Exercise Communications Planning The Communication Cycle The 7 Cs of Communication Body Language Communication Conflict Resolution
Additional Information:	Venue: TBD in coordination with PMU Documentation: PowerPoint Presentation, Videos, Photos, Training Materials

	The Trainers will be Dr. Yousry Elkomy

13.2. Soft Institutional Coastal Management Skills

The necessary skills for the implementation phase of the ICZM plan at the local level and Coastal management professional development skills

Duration:	8 Days Training Course (2 governorate in each training course)
Who will benefit:	• 75 Trainees will be invited • SPA, NUCA, EEAA, MOE, LFPA, MWRI, GOPP, EMA and Coastal Governorates Representatives in addition to NGOs and Private Sector
Prerequisites:	• The candidate should have a significant role that supports the achievement of one or some of the ICZM sustainable development goals. • The nomination letter should indicate the actual impact of the candidate in his work environment • The candidate must be an active leader in his community and his workplace (this means that the nominee has the leadership skills such as being influential, inspiring, motivating, and a team player) certified by managers and colleagues.
Purpose:	1. A group of active participants to be selected from relevant ministries, governorates, and research centres participating in the project to promote the integrated coastal zone management elaborated by the project. 2. Build a passionate team to partake in a communication training program specialized for ICZM. 3. Apply this training to inform target audiences on the critical issues of our ICZM and the impacts this has on coastal zones' inhabitants. This will include the development of outreach materials, presentations, and speaking engagements. 4. Share the methods and skills gained through this program to train successive classes of ambassadors to build a network of skilled science communicators.

Subjects:	Introduction and program Overview; The necessary skills for the implementation phase of the ICZM plan at the local level and Coastal management professional development skills Management Skills • Understanding policy & legislative • requirements • Knowledge of conventions & protocols • Cross-sector management • MPA management/conservation • Resource planning and management • Crisis management • Livelihood development • Pollution abatement • Habitat restoration • Water resource management • Communication and stakeholder participation • Monitoring and Evaluating Technical skills • Geographical Information System (GIS) • Remote Sensing • Spatial planning/Functional zoning • Strategies and plan development • Rapid Environmental Assessment • Risk Assessment • Consensus Building • Integrated Information System • Resource Assessment • Pollution Assessment • Habitat improvement • Water analysis
Additional Information:	Venue: TBD in coordination with PMU Documentation: PowerPoint Presentation, Videos, Photos, Training Materials The Trainers will be Prof. Samir Abohadima and Eng. Bassam Gabr, Dr. Hany Ayad Dr. Mohamed Noureldien and Dr. Yousry Elkomy

Coastal communities' readiness skills to face harsh weather conditions

Duration:	4 Days Training Course 2 governorate in each training course)
Who will benefit:	• 75 Trainees will be invited

	• SPA, NUCA, EEAA, MOE, LFPA, MWRI, GOPP, EMA, and Coastal Governorates Representatives in addition to NGOs and Private Sector
Prerequisites:	• The candidate should have a significant role that supports the achievement of one or some of the ICZM sustainable development goals. • The nomination letter should indicate the actual impact of the candidate in his work environment • The candidate must be an active leader in his community and his workplace (this means that the nominee has the leadership skills such as being influential, inspiring, motivating, and a team player) certified by managers and colleagues.
Purpose:	1. A group of active participants to be selected from relevant ministries, governorates, and research centres participating in the project to promote the integrated coastal zone management elaborated by the project. 2. Build a passionate team to partake in a communication training program specialized for ICZM. 3. Apply this training to inform target audiences on the critical issues of our ICZM and the impacts this has on coastal zones' inhabitants. This will include the development of outreach materials, presentations, and speaking engagements. 4. Share the methods and skills gained through this program to train successive classes of ambassadors to build a network of skilled science communicators.
Subjects:	Introduction and program Overview; Coastal communities' readiness skills to face harsh weather conditions Strengthen—and promote access to—public health, healthcare, and social services ***Promote health and wellness alongside disaster preparedness*** ***Expand communication and collaboration*** ***Engage at-risk individuals and the programs that serve them*** ***Build social connectedness*** 7 strategies to build resilience

	• Develop and maintain strong relationships. ... • Change how you respond to situations. ... • Turn setbacks into opportunities for growth. ... • Develop a positive outlook. ... • Maintain a healthy perspective. ... • Take care of yourself. ... • Find ways to help others.
Additional Information:	Venue: TBD in coordination with PMU Documentation: PowerPoint Presentation, Videos, Photos, Training Materials The Trainers will be Prof. Samir Abohadima and Eng. Bassam Gabr, Dr. Hany Ayad Dr. Mohamed Noureldien and Dr. Yousry Elkomy

The necessary skills to deal with the early warning system at the local level

Duration:	4 Days Training Course (2 governorate in each training course)
Who will benefit:	• 75 Trainees will be invited • SPA, NUCA, EEAA, MOE, LFPA, MWRI, GOPP, EMA and Coastal Governorates Representatives in addition to NGOs and Private Sector
Prerequisites:	• The candidate should have a significant role that supports the achievement of one or some of the ICZM sustainable development goals. • The nomination letter should indicate the actual impact of the candidate in his work environment • The candidate must be an active leader in his community and his workplace (this means that the nominee has the leadership skills such as being influential, inspiring, motivating, and a team player) certified by managers and colleagues.
Purpose:	1. A group of active participants to be selected from relevant ministries, governorates, and research centres participating in the project to promote the integrated coastal zone management elaborated by the project. 2. Build a passionate team to partake in a communication training program specialized for ICZM. 3. Apply this training to inform target audiences on the critical issues of our ICZM and the impacts this has on coastal zones' inhabitants. This will include the development of outreach materials, presentations, and speaking engagements.

	4. Share the methods and skills gained through this program to train successive classes of ambassadors to build a network of skilled science communicators.
Subjects:	Introduction and program Overview; The necessary skills to deal with the early warning system at the local level (i) risk knowledge, (ii) monitoring and warning services, (iii) dissemination and communication and (iv) response capability.
Additional Information:	Venue: TBD in coordination with PMU Documentation: PowerPoint Presentation, Videos, Photos, Training Materials The Trainers will be Prof. Samir Abohadima and Eng. Bassam Gabr, Dr. Hany Ayad Dr. Mohamed Noureldien and Dr. Yousry Elkomy

13.3. Ambassador Program

Administered by NIRAS and PMU, the ICZM Ambassador Program will provide specialized workshops (A4, A5, A6 and A7), (I5, I6, I7 and I8), (E2 and E3) and (G2, G3 and G4) in addition to TOT program that focusses on ICZM and Sustainable Development.

This training will then be applied to informing and educating others about ICZM and the impact on coastal environments. Founded on the latest research on science communications, program trainings will be in-depth, interactive, and provide the tools for ICZM scientists to more effectively communicate with thought leaders, journalists, stakeholders, and lay audiences.

This program is seeking passionate and dedicated candidates that want to reach a variety of audiences and expand their thinking on the impacts that humans have on our coastal environments.

14. Monitoring and Evaluation Participatory Methodology

Monitoring and evaluation (M&E) of training programmes is a widely neglected area. But in our Project, we pay high attention to the Monitoring and Evaluation Process.

Monitoring and Evaluation is done as part of Sub-Task 3.4 and Deliverable 3.4.1.

Traditional evaluation practices seek the passive involvement of learners, who are usually the objects of evaluation. The evaluation is often one-sided, dominated by trainers, who may not even share the results of the evaluation with learners. Indeed, often it is only the learner's ability to 'cram' facts about content areas that is tested at the end of a programme, as a way to assess the effectiveness of the training.

Understanding the importance of M&E involves acknowledging that participatory training programmes are about process just as much as outcome. Our aim should be to assess what is happening during the training programme, as well

as the impact at the end (PRIA, 2011). Why is evaluation so important in participatory training? To understand this, we need to go back to our basic understanding, our principles and convictions.

We conduct these participatory programmes with a clear goal in mind – to encourage involved stakeholders to undergo a process of self-development, to bring about change, and to free them from stereotyped modes of thinking and behaviour, instilling in them willingness for transformative action. Training has a specific role in our overall strategy.

Our commitment to change impels us to constantly check and assess how far we are proceeding and what scale of change we have been able to bring about. Evaluation therefore is crucial in participatory training.

Evaluation in this context means the systematic eliciting and analysis of feedback information about the relevance and impact of the training in order to assess whether the training has effectively brought about learning or change. It is not aimed at being judgemental; rather it highlights particular strengths and weaknesses of the programme. It helps to reflect on and consolidate the present learning for participants, helps trainers modify and revise the programme, and contributes towards strengthening future programmes.

In this regard, monitoring is an essential aspect of the evaluation process. Monitoring is essentially an on-going process to ensure that the training programme is on track, and that the pace and content of the learning remain relevant to any particular group of learners. Through continuous monitoring of the pace of learning, the flexibility of a training programme to adapt its pace and depth to the requirements of learners is enhanced. Continuous monitoring also allows a trainer to have better understanding of what needs to be changed if the outcome of the training evaluation is disappointing.

Characteristics of Participatory Monitoring and Evaluation:

- Shared Control: Both the learners and the trainers maintain shared control over the process of M&E.
- Developmental: The evaluation helps to strengthen the training programme by working out the difficulties faced by learners and trainers; it is intended as a developmental intervention.
- Awareness Raising: It leads to a process of collective awareness.

All the learners and trainers are aware of what is happening to them at a given moment of time.

Empowering: As information is shared with the group, and the learners maintain control over the M&E process, it becomes an empowering experience.

Mobilisation: Learners are motivated to contribute to the effectiveness of the training programme by being actively involved in the evaluation process.

14.1. Follow-Up

Follow-up of the training programme is essentially aimed at continuing the process of learning initiated during the training programme. Each training programme creates a set of knowledge and ideas, which learners try to implement in their own context. These efforts may require further support as follow-up.

Follow-up of a training programme can be used for several purposes:

- Provision of support, encouragement, knowledge and resources needed to implement the learning, which the learner has acquired during the course of the training programme.

- Helps define additional learning needs during the period immediately after the training programme and helps to continue the learning process by bringing out new learning needs.

- Used to assess the training programme and its impact on the learners, their work and their organisations. This helps the trainers in designing future training programmes.

- Provision of an opportunity for the learners to consolidate their own experience acquired during the training programme.

14.1.1. Methods of Follow-Up

Follow-up can be conducted in different ways. It can be planned differently for each learner; it can be done for the entire group of learners; it can also be done for a selected sub-group as well. Methods of follow-up depend on its purpose and group of learners. Several possible methods are:

- Direct Methods These methods entail face-to-face interaction among learners themselves and between learners and trainers. Examples are field visits by other learners or trainers to the home of a particular learner, group meetings with or without the trainer, etc

- Indirect Methods Indirect methods do not entail face-to-face contact. These include correspondence on a regular or periodic basis, initiated by learners as well as trainers. It might constitute the form of a newsletter or periodical, including questions posed by learners based on their field problems and experiences, with a response from the trainer or other learners. This could also include an exchange of learning materials developed by different people, etc.

14.1.2. Analytical Report for each workshop or training program

Essentially this report highlights the why and how of training. It evaluates in nature and pools together analytic data to make links, focus on issues and trends and highlight what worked, what did not work and what could be the possible reasons for the same. The presentation of the report is in an action-reflection mode. It is useful for the trainers conducting the training to find out what they learnt, action-researchers in the field of training as well as for other trainers to learn about innovative thinking and experiments and use it in their own work. Often, reports end up being a combination of several types, depending on who they have been written for and towards what purposes they were written.

14.1.3. Certification

After the completion of the training the user skills achieved by each trainee will be tested. Trainee passing the test will receive a Certificate documenting that they have participated in the course and successfully passed the super user test.

15. References

[1] NIRAS, "Deliverable 3.1.1: Assessment of Capacity Needs and Training Programme for ICZM," UNDP, 2022.

[2] NIRAS, Inception Report, UNDP, 2022.

[3] NIRAS, "Legal, institutional and administrative frameworks for a climate," UNDP, 2022.

[4] NIRAS, "The ICZM Ambassador Programme," UNDP, 2022.

Appendix 1: Entrance Exams

Proposed entrance exams for tools training

Entrance exam for Wave modelling

Personal information:

1. Full name:
2. Affiliation:
3. Organization/Authority/institute:
4. Age:
5. Year of graduation:

Contact information:

1. E-mail:
2. Mobile or other:

Motivation for application:

1. What is your motivation for application to this training programs?
2. What are your expectations regarding the training outcomes?
3. Could you summarize your skills/work field?

General qualifications:

1. What is the last obtained scientific degree?
2. Is it long time since you got your last scientific degree?
3. Does the candidate participate in national projects in Egypt related to coastal flooding, climate change adaptation or other related subjects?
4. Does the candidate previously attend any of workshops that organized within the project of Enhancing Climate Change Adaptation in the North Coast and Nile Delta Regions in Egypt Project (ECCADP)?
5. Does the candidate participate in scientific conferences inside/outside Egypt related to coastal & marine engineering, oceanography, or other related subjects?
6. Does the candidate have any scientific publications related to coastal & marine engineering, oceanography, or other related subjects?
7. Does the candidate attended any training course/summer school inside/outside Egypt related to numerical modelling in coastal zone, or other related subjects?
8. Is it long time since you attended your last training course/summer school?

Technical assessment:

Please, assess yourself based on your knowledge/experience/scientific background regarding the following subjects:

Item	Subject	High	Moderate	Low	None
01	Basics of ocean waves				
02	Wave propagation				
03	Concept of wave modelling				
04	Potentiality of nearshore waves				
05	Wave generation				
06	Short term wave analysis				
07	Concept of extreme value analysis for waves				
08	Statistical interpretation of wave data				
09	Graphically present wave statistics				
10	Basic inputs to wave model				
11	General steps to execute a wave model				

12	Expected results from the wave model				
13	Common wave modelling suites				

Detailed assessment:

Please, based on your knowledge/experience/scientific background answer the following few questions:

1. Is the long-term wave analysis can be executed based on statistical distribution such as Rayleigh?
   - Yes
   - No
2. Is the short-term wave analysis basically overtaken to be used in designing the coastal structures?
   - Yes
   - No
3. Do we have another method rather than the zero uncrossing method that can be used in short term analysis?
   - Yes
   - No
4. Are the wind speed and duration the only major components that promote the wave generation?
   - Yes
   - No
5. Are the nearshore waves propagating normally to the shoreline under straight and parallel contours affected by refraction?
   - Yes
   - No
6. Is the directional wave spectrum can define sufficiently the waves at certain location?
   - Yes
   - No
7. Are the wave reflection and diffraction being dominant inside harbours more than shoaling and refraction?
   - Yes
   - No
8. Linear wave theory can be applied after wave breaking?
   - Yes
   - No
9. Is the wind being the basic forcing component in the wave hindcast model?
   - Yes
   - No
10. Are the propagated waves toward shoreline affected significantly by bathymetry in deeper water more than the nearshore?
    - Yes
    - No
11. Is the wave energy is calculated based on the wave height only?
    - Yes
    - No
12. Are the numerical models that depend on flexible mesh being advantageous than the others?
    - Yes
    - No
13. Can wave models be ran either in stationary or non-stationary modes?

- Yes
- No

14. Is the significant wave height defined as the average of the highest 1/3 of a time series wave record?
    - Yes
    - No
15. Is the bed friction one of the wave models calibration parameters?
    - Yes
    - No
16. Is not the white capping affect the wave modelling results?
    - Yes
    - No
17. Is not the wave breaking dissipates the wave energy?
    - Yes
    - No
18. Are the sea and swell have the same meaning?
    - Yes
    - No
19. Is the boussinesq wave model belong to the depth averaged wave models?
    - Yes
    - No
20. Is the water level one of the basic inputs for the wave models?
    - Yes
    - No

Entrance exam for Hydrodynamics (flooding) modelling

Personal information:

1. Full name:
2. Affiliation:
3. Organization/Authority/institute:
4. Age:
5. Year of graduation:

Contact information:

1. E-mail:
2. Mobile or other:

Motivation for application:

1. What is your motivation for application to this training programs?
2. What are your expectations regarding the training outcomes?
3. Could you summarize your skills/work field?

General qualifications:

1. What is the last obtained scientific degree?
2. Is it long time since you got your last scientific degree?
3. Does the candidate participate in national projects in Egypt related to coastal flooding, climate change adaptation or other related subjects?
4. Does the candidate previously attend any of workshops that organized within the project of Enhancing Climate Change Adaptation in the North Coast and Nile Delta Regions in Egypt Project (ECCADP)?
5. Does the candidate participate in scientific conferences inside/outside Egypt related to coastal & marine engineering, oceanography, or other related subjects?
6. Does the candidate have any scientific publications related to coastal & marine engineering, oceanography, or other related subjects?
7. Does the candidate attended any training course/summer school inside/outside Egypt related to numerical modelling in coastal zone, or other related subjects?
8. Is it long time since you attended your last training course/summer school?

Technical assessment:

Please, assess yourself based on your knowledge/experience/scientific background regarding the following subjects:

Item	Subject	High	Moderate	Low	None
01	Nearshore currents				
02	Water level variation due to tides				
03	Storm surge				
04	Wave setup				
05	Sea level rise				
06	Flow and related currents				
07	Coastal flooding concept				
08	Analysis of water level data				
09	Differentiation between tides and other water level components				
10	Graphical presentation of water level data				

11	Basic inputs to hydrodynamic model				
12	General steps to execute a hydrodynamic model				
13	Expected results from the hydrodynamic model				
14	Common hydrodynamic modelling suites				

Detailed assessment:

Please, based on your knowledge/experience/scientific background answer the following few questions:

1. Is the approach angle of wind having an effect of the resulted wave setup?
   - Yes
   - No
2. Is the drop in pressure cause change in water level?
   - Yes
   - No
3. Are the Neap/spring tides the only types exist?
   - Yes
   - No
4. Is the tidal variation being dependent to time and location?
   - Yes
   - No
5. Is the tide component can being separable form the total water level variation using any kind of analysis?
   - Yes
   - No
6. Is the land subsidence affect the coastal flooding?
   - Yes
   - No
7. Is the wind being the basic forcing component in the wave hindcast model?
   - Yes
   - No
8. Are tidal generated currents can be simulated using a wave transformation model?
   - Yes
   - No
9. Are the numerical models that depend on flexible mesh being advantageous than the others?
   - Yes
   - No
10. Is a current or flow can be promoted by a change in water densities?
    - Yes
    - No
11. Is the storm surge can be numerically simulated by coupling the wave and the hydrodynamic models?
    - Yes
    - No
12. Is not the flushing can be simulated using the hydrodynamic models?
    - Yes
    - No
13. Is the river flow constituting a basic boundary condition for the hydrodynamic models if exist?
    - Yes
    - No

14. Is the circulation can be simulated using the hydrodynamic model?
    - Yes
    - No
15. Is the bed friction considered as a calibration parameter for the hydrodynamic models?
    - Yes
    - No

Entrance exam for Coastal Morphological Models

Personal information:

1. Full name:
2. Affiliation:
3. Organization/Authority/institute:
4. Age:
5. Year of graduation:

Contact information:

1. E-mail:
2. Mobile or other:

Motivation for application:

1. What is your motivation for application to this training programs?
2. What are your expectations regarding the training outcomes?
3. Could you summarize your skills/work field?

General qualifications:

1. What is the last obtained scientific degree?
2. Is it long time since you got your last scientific degree?
3. Does the candidate participate in national projects in Egypt related to coastal flooding, climate change adaptation or other related subjects?
4. Does the candidate previously attend any of workshops that organized within the project of Enhancing Climate Change Adaptation in the North Coast and Nile Delta Regions in Egypt Project (ECCADP)?
5. Does the candidate participate in scientific conferences inside/outside Egypt related to coastal & marine engineering, oceanography, or other related subjects?
6. Does the candidate have any scientific publications related to coastal & marine engineering, oceanography, or other related subjects?
7. Does the candidate attended any training course/summer school inside/outside Egypt related to numerical modelling in coastal zone, or other related subjects?
8. Is it long time since you attended your last training course/summer school?

Technical assessment:

Please, assess yourself based on your knowledge/experience/scientific background regarding the following subject:

Item	Subject	High	Moderate	Low	None
01	Sediment transport				
02	One-line theory				
03	Shoreline definition				
04	Shoreline changes				
05	Shoreline stability				
06	Coastal structures				
07	Sediment transport rate computations				
08	Analysis of shoreline evolution				

09	Basic inputs to shoreline change model				
10	General steps to execute a shoreline change model				
11	Expected results from the shoreline change model				
12	Common shoreline-change modelling suites				

Detailed assessment:

Please, based on your knowledge/experience/scientific background answer the following few questions:

1. Are the shoreline changes only occurring due to the long shore sediment transport?
   - Yes
   - No
2. Are we considering the online model as 2-D model that simulates shoreline changes?
   - Yes
   - No
3. Is only the wave induced currents motivate the sediment transport and consequently the shoreline changes?
   - Yes
   - No
4. Is the sediment budget being calculated based on a nearshore wave rose?
   - Yes
   - No
5. Is the stable shoreline orientation affected by the nearshore oblique waves?
   - Yes
   - No
6. Is the finer sediment being transported by a rate lower than the coarser?
   - Yes
   - No
7. Are the one-line models being feasible for simulating the cross-shore sediment transport?
   - Yes
   - No
8. Are the one-line models be calibrated by historical shorelines?
   - Yes
   - No
9. Does not the depth of closure affect the one-line model results?
   - Yes
   - No
10. Can the one-line models include a wave transformation module?
    - Yes
    - No
11. Is the bathymetric data required for setting up a one-line model?
    - Yes
    - No
12. Is not the shoreline stability can be determined using sediment transport calculations?
    - Yes
    - No
13. Can the water level be induced within the one-line model?

- Yes
- No

14. Is the gross sediment transport promoting the sediment transport calculations within the one-line model?
    - Yes
    - No
15. Is the one-line model stability should be checked?
    - Yes
    - No

Entrance exam for Saltwater Intrusion

FOCUS GROUPS: DRI, WRRI, RIGW, SPA, ARC

Breakdown

WU1: Modelling Setupاعداد النمذجة

WU2: Modelling Coupling اقتران النمذجة

WU3: Modelling Calibration and Validationمعايرة النمذجة والتحقق من صحتها

WU4: Results Analysisتحليل النتائج

BASIC KNOWLEDGE

1. What is the main cause behind Saltwater Intrusion (SWI) in coastal aquifers
    - Positive difference between Main Sea Level and aquifer heads
    - Aquifer heads
    - Main Sea Level
    - Negative difference between Main Sea Level and aquifer heads

2. What will be the impact of Sea Level Rise (SLR) on SWI
    - Zero effects
    - Unknown effects
    - Increases SWI
    - Decreases SWI

3. What is the quickest pathway for saline water to enter the land (assuming open connections to the sea)
    - Irrigation canals
    - Rivers
    - Aquifers
    - Drainage canals

4. What is the slowest pathway for saline water to enter the land (assuming open connections to the sea)
    - Irrigation canals
    - Fresh aquifers
    - Saline aquifers
    - Drainage canals

5. Who would be the most impacted stakeholder of SWI in the coastal zones
    - Agriculture
    - Communities supplied by desalination plants
    - Communities supplied by fresh surface water
    - Communities supplied by groundwater

6. If a groundwater production well pumps up saline water from which aquifer layer this water is pumped
    - Depth of the well screen
    - Top of the aquifer
    - Top of the well
    - Bottom of the well

7. What is the main indicator for crop yield reductions when the crop receives sufficient water and sufficient nutrients
    - Drainage water salinity

- Saline capillary rise in the soil
- Irrigation water salinity
- Soil moisture salinity

MODELLING

1. What type of water has the highest mass per unit volume
   - Saline water
   - Fresh water
   - Brackish water
   - Seawater

2. What type of groundwater floats on top in aquifers containing both fresh and salt water
   - Saline water
   - Fresh water
   - Brackish water
   - Seawater

3. What type of groundwater model would be the most suitable for modelling SWI
   - Finite element model
   - Two density model
   - Finite difference model
   - Variable density model

4. What type of model would be most suitable for modelling SWI impacts on agriculture
   - Field-scale integrated hydrological and crop production model
   - Regional bio-physical model
   - Regional agro-hydrological model
   - Regional integrated agro-hydro-geological model

GIS Related Training Courses

Basic concepts on data types and data model

1. Which type of data set is not used in GIS related software's?

- Vertex
- Point
- Poly line
- polygon

2. What is 'Metadata'?

- It is 'data about data'.
- It is 'meteorological data'.
- It is 'oceanic data'.
- It is 'contour data'.

3. Key components of 'spatial data' quality include

- Positional accuracy
- Temporal accuracy
- Lineage and completeness
- Logical consistency
- All of the above

4. Among the available formats, which are most commonly used in case of GIS?

- GIF
- TIFF
- JPEG
- DXF

5. The point data feature can be used to represent _____

- Location
- Area
- 3D area
- Volume

6. The polygonal data feature uses which of the following data format?

- Scientific character
- Math
- Character
- Integer

7. Which of the following justifies the usage of topology?

- Terrain of the area
- Geometry of the model
- Climatic conditions
- Atmospheric conditions

8. Which feature of GIS can share the boundary of the polygon?

- Polygons
- Poly lines
- Dongle nodes
- Silver polygons

Creating of Geospatial database

1. 'Spatial databases' are also known as

- Geodatabases
- Monodatabases
- Concurrent databases
- None of the above

2. A (geographic) field is a geographic phenomenon for which, for every point in the study area

- A value can be determined
- A value cannot be determined
- A value is not relevant
- A value is missing

3. Fields can be

- Discrete only
- Continuous only
- Discrete or continuous
- None of the above

4. SDI stands for

- Spatial Data Interface
- Spatial Data Infrastructure

- Spatial Data Intention
- Spatial Data International

5. DBMS stands for

- Database Management System
- Database Monitoring System
- Database Manufacturing System
- Database Mixing Station

6. What are the various reasons for which DBMS is used

- A DBMS supports the storage and manipulation of very large data sets.
- A DBMS can be instructed to guard over data correctness.
- A DBMS supports the concurrent use of the same data set by many users.
- All of the above

Store vector and raster data into a spatial database

1- What are the three type groups of vector data?

- Points, lines, and imagery.
- Points, lines, and polygons.
- Points, polygons, and imagery.
- Points, lines, polygons, and imagery.

2- What do we call the ratio of the size of an image to the number of grids per unit?

- Resolution.
- Image size.
- Dots per inch. (DPI).
- Pixels per meter.

3- Which tables give data unique characteristics?

- Data.
- Excel.
- Raster.
- Attribute.

4- What are the three types of models we can create when generating a schema?

- Physical, logical, or rational.
- Logical, rational, or metadata.
- Physical, logical, or metadata.
- Physical, rational, or metadata.

5- When converting a spreadsheet to a feature class, where must the file output be located?

- Geodatabase.
- Attribute table.
- Compressed folder.
- Microsoft access database.

6- Which type can store a collection of objects of any type?

- GEOMETRYCOLLECTION
- MULTIPOINT
- MULTILINESTRING
- MULTIPOLYGON

Familiarity with raster data concepts

1). Raster graphic in GIS represents data in _____ data structure.

- Plane matrix
- Dot-matrix
- Continuous matrix
- None of the above

2). Raster graphic in GIS represents data in _____ grid of pixels.

- Circular
- Rectangular
- Square
- All the above

3). Raster graphic in GIS stores image files with varying _____ formats.

- Dimensions
- Generation
- Production
- All the above

4). A bitmap image is represented as _____ grid.

- Circular
- Rectangular
- Square
- All the above

5). Which of the following are common pixel formats in Raster graphics?

- Grayscale
- Full coloured
- Palettized
- All the above

Spatial queries and spatial analysis processes

1) Which of the following is NOT a form of geospatial data?

- Raster-Based
- Element-Based
- Vector-Based
- None of the answers are correct.

2). Geospatial data analysis _____ information.

- collects, processes, and renders
- collects, stores, and displays
- processes, manipulates, and renders
- stores, distributes, and prints

3). Which of the following is a characteristic of geospatial data?

- Includes positioning information.
- Includes general information.
- May include an address.
- All of the answers are correct.

4. Successful spatial analysis needs

- Appropriate software

- Appropriate hardware
- Competent user
- All of the above

5. Interpolation is made possible by a principle called

- Spatial Autocorrelation
- Spatial auto-correction
- Thematic Autocorrelation
- Thematic auto-correction

6. Which of the following belong to the eight spatial relationships?

- Disjoint, meets, equals
- Inside, covered by
- Contains, covers, overlaps
- All of the above

Entrance Exam for Risk Assessment

BASICS

What does the abbreviation GPS stand for?
- Geographical Point Software.
- Global Point Selection.
- Geographical Position System.
- Global Positioning System.

By "spatial data" we mean data that has
- Complex values.
- Positional values.
- Graphic values.

When a GIS dataset for a given project is constantly revised, accessed, and manipulated by multiple users the best practice approach for storing the data is (Choose the best response)
- Shapefiles
- Personal Geodatabase
- KML files
- Enterprise Geodatabase

The scale at which a feature is intended to be shown can help define the proper primitive used to create and display that feature. The best option to represent a feature class for rivers in a State-wide map would be: (Choose the best response)
- Point Feature
- Polygon feature
- Line Feature
- Multi-patch feature

Acquiring aerial photos is one of the methods of obtaining GIS data.
- True
- False

The vector data model could use points and their x, y-coordinates to construct spatial features.
- True.
- False.

RASTER / VECTOR

The raster data model is based on which of the following?
- Grid cells or pixels grouped to form non-spatial entities.
- Tessellations.
- Random cells.
- Discrete XY coordinate pairs.

Which of the following is NOT a raster data structure?
- Spaghetti.
- Block encoding
- Run-length encoding.

- Quadtree.

Select the statement which best describes a difference between raster and vector data types:
- Raster data are limited to representing areas, while vector data can represent areas, lines and points
- Vector data are better at storing 'real-world' features, while raster data are better at storing natural phenomena
- Vector data are generally more precise than raster data, though not necessarily more accurate
- Rasters can store only alphanumeric data values, while vector data can store many different data types

SOFTWARE / TOOLS

When a red exclamation mark appears beside a layer name in the ArcGIS TOC, it means that:
- The map document has been corrupted by a virus
- The source data has been re-named, deleted, or moved from its referenced location
- The source data's spatial reference properties have been changed
- The map is outside the scale at which the layer can be drawn

A polygon, a line, or a point that represent an object is a(n)
- Raster
- Feature class
- Attribute
- Feature dataset
- Map

A geodatabase folder that includes various type of attribute and geospatial data is called:
- Raster
- Feature class
- Attribute
- Feature dataset
- Map

MAPS BASICS AND COORDINATES

Cylindrical, Conic and Azimuthal are types of
- Metadata.
- Map Projections.
- Queries.
- Datum.

Which of the following maps is not a thematic map?
- Choropleth map.
- Dot map.
- Weather map.
- reference map.

Flat maps are distorted to some degree.
- True
- False

The Universal Transverse Mercator (UTM) system divides the Earth's surface into 60 zones, each covering 6° of longitude.

- True
- False

ATTRIBUTE TABLES, QUERIES

Which of the followings about feature attribute is False?
- For every feature, there is an attribute record
- The relation between table\feature is 1 to 1 relationship
- Each column is an attribute field
- Shape column can contain 2 different data types

If you want to combine two separate tables that have a common key field into one table, then which of the following options will you use?
- merge
- dissolve
- join
- link

Calculations (sum, average, median, etc.) cannot be performed on this type of field
- String
- Integer
- Floating
- Double

Fields can be
- Discrete only
- Continuous only
- Discrete or continuous
- None of the above

Which of the following is true about 'Discrete fields?
- Discrete fields divide the study space in mutually exclusive, bounded parts, with all locations in one part having the same field value
- 'Land classification' is an example of discrete fields
- Discrete fields make use of 'bounded' features
- All of the above

Examples of 'continuous fields' are
- Air temperature
- Barometric pressure
- Soil salinity
- Elevation
- All of the above

Entrance exam for Crisis and Disaster Management

1. What are the phases of the disaster cycle?

A. Preparedness, response, recovery, mitigation

B. Preparedness, response, risk assessment, planning, reconstruction

C. Planning, response, risk assessment, evaluation, mitigation

D. Planning, response, recovery, surveillance, evaluation

2. What are the fundamental elements of a disaster?

Possible answers:

• It is a severe event

• It causes damage to infrastructure, economic and social structures or human health

• It requires external assistance

3. Name the classifications/categories of disasters

Possible answers:

• Natural disasters – ecological disruptions

• Technological or human induced (i.e., of human origin) – result either directly or indirectly from human activities that disrupt the ecosystem or relate to technological activities of human origin

• Complex –the combination of natural and human-induced hazards and other causes of vulnerability

4. Give examples of natural disasters

Possible answers:

• Earthquakes

• Extreme Heat

• Floods

• Tropical cyclones or hurricane

• Landslides

• Tornadoes

• Tsunamis

• Volcanoes

• Wildfires

• Winter Weather

• Infectious disease outbreaks

5. Give examples of technological/human induced disasters

Possible answers:

• Radiation emergencies from nuclear blasts, nuclear reactor accidents, or accidental spills of radioactive material

• Accidental release of hazardous chemicals

• Bioterrorism

• Oil spills

• Bombing or destroying a nuclear reactor

6. Give examples of complex emergencies

Possible answers:

• War

• Conflict

7. At what point does a natural or technological/human-induced event become a disaster?

Possible answer:

If it reaches a scope that exceeds local resources and requires assistance from external organizations.

8. Name the impact categories of disasters

Possible answers:

• Infrastructure damage

• Human impact

• Environmental hazards

9. What is the result of a disaster?

Possible answer:

Disasters always result in increased morbidity and mortality and other public health concerns, environmental and infrastructure damage, or societal disruption.

10. What activity takes place during the preparedness phase of a disaster cycle? (You may select more than one response)

A. Distributing basic supplies such as food and water

B. Establishing partnerships

C. Repairing roads and collapsed structures

D. Conducting epidemiologic studies

11. What activity takes place during the mitigation phase of a disaster cycle? (You may select more than one response)

A. Conducting a rapid needs assessment

B. Conducting an inventory of available resources

C. Evaluating the safety of building codes

D. Conducting epidemiologic studies

12. What activity takes place during the recovery phase of the disaster cycle?

A. Training of health personnel

B. Developing preparedness plans

C. Repairing and maintenance of basic health services

D. Establishing partnerships

13. During which phase of the disaster cycle should inventories of medical supplies and basic needs be conducted?

A. Preparedness

B. Response

C. Recovery

D. Mitigation

14. What activity takes place during the response phase of the disaster cycle?

A. Conducting surveillance of health problems

B. Conducting an inventory of available resources

C. Training of health personnel

D. Conducting epidemiologic studies

15. During what phase of the disaster cycle does an epidemiologist play the most limited role?

A. Preparedness

B. Response

C. Recovery

D. Mitigation

16. What are the four phases of Rapid Needs Assessment RNA?

A. Respond, Recovery, Analyse Data, Disseminate Information

B. Plan, Respond, Recovery, Write the Report

C. Prepare, Conduct, Analyse Data, Write the Report

D. Preparedness, Respond, Recovery, Mitigation

17. The RNA is a validated data collection method to determine what type of information?

• The magnitude of the disasters effect on the community

• The number of households affected

• The basic characteristics of the households affected – how many households include more vulnerable groups with increased disease or death risk

• Current health priorities and potential public health problems

• Availability of basic needs such as food and water

• The need for external support or intervention

18. Which statement(s) are not objectives of an RNA? (Select all that apply)

A. Produce household-based information and estimates for decision-makers

B. Determine why people are not returning to their community

C. Deliver food, medicine, medical services, or other resources to the affected area

D. Characterize the population living in the affected area

19. Which statement best describes preventive action for challenges related to incomplete assessment data?

A. Inform/educate the community about the assessment using local media.

B. Discuss when and how to share common planning and priority settings.

C. Understand the displacement patterns of the population.

D. Conduct a quick census of the affected community by walking or driving around the affected area.

20. What is the recommended RNA sampling method?

Possible answer:

Two-stage cluster sampling design.

This design includes the selection of 30 clusters (first stage) and within each cluster 7 interviews (second stage) are completed.

The data collected using this method are meant to generate estimates. How you select the clusters and households for interviews is important to ensure valid estimates

21. _____ uses a selection interval rather than selecting units randomly.

A. Two-stage cluster sampling

B. Simple random sampling

C. Systematic random sampling

D. Stratified sampling

22. What sampling method would you use to determine health- and safety-related needs of those impacted by the flooding? Why?

Two-stage cluster sampling this method is often more practical than a simple random sample, which requires numeration of all households in the sampling frame. Two-stage cluster sampling provides a way to collect information from a relatively small sample size yet provide reasonable estimates for an entire population. This sampling method also allows for increased efficiency (e.g., less driving time) and thus can be more timely and cost-effective.

23. What are two advantages and two disadvantages of using a paper form for data collection?

Advantages

• No technical training

• Relatively cheap supplies

• Requires only paper, pens, and (preferably) a clipboard

• No maintenance of supplies

• No limitation on number of field teams

Disadvantages

• Must enter data into database after field work

• Potential for human error

• Relatively slow data management processes and requires after-hours data entry

24. What types of personal safety issues may someone encounter after a monsoon? What personal supplies should teams take into the field?

Interview teams were advised not to go into areas they believed might expose them or their team to safety risks, and the team was educated about personal safety issues.

Examples of safety concerns include the following:

• Road inaccessibility and bridge collapse

• Downed power lines

• Non-functioning traffic lights

• Domestic and wild animals

• Safe judgment in entering homes

• Debris – down trees, twisted metal, etc

• Floodwater

• Increased vectors (e.g., mosquitoes)

Teams were also made aware of personal health issues, such as flood or contaminated water exposure and personal supplies they should take to the field (e.g., hat, gloves, coat, sturdy closed-toe shoes, snacks, water).

25. Which statement(s) are true about weighted analysis? (You may select more than one answer)

A. Weighted analyses are meant to account for a complex sampling design, such as two-stage cluster sampling.

B. Weighted analyses are done to avoid biased estimates

C. Weighting is always required

D. Weighted analyses are completed by assigning a weight for each

Entrance exam for Forecasting

Personal information:

1. Full name:
2. Affiliation:
3. Organization/Authority/institute:
4. Age:
5. Year of graduation:

Contact information:

6. E-mail:
7. Mobile or other:

Motivation for application:

8. What is your motivation for application to this training programs?
9. What are your expectations regarding the training outcomes?
10. Could you summarize your skills/work field?

General qualifications:

11. What is the last obtained scientific degree?
12. Is it long time since you got your last scientific degree?
13. Does the candidate participate in national projects in Egypt related to coastal flooding, climate change adaptation or other related subjects?
14. Does the candidate previously attend any of workshops that organized within the project of Enhancing Climate Change Adaptation in the North Coast and Nile Delta Regions in Egypt Project (ECCADP)?
15. Does the candidate participate in scientific conferences inside/outside Egypt related to coastal & marine engineering, oceanography, or other related subjects?
16. Does the candidate have any scientific publications related to coastal & marine engineering, oceanography, or other related subjects?
17. Does the candidate attended any training course/summer school inside/outside Egypt related to numerical modelling in coastal zone, or other related subjects?
18. Is it long time since you attended your last training course/summer school?

Technical assessment:

Please, assess yourself based on your knowledge/experience/scientific background regarding the following subjects:

Item	Subject	High	Moderate	Low	None
01	Basics of ocean waves				
02	Wave propagation				
03	Concept of wave modelling				
04	Potentiality of nearshore waves				
05	Wave generation				
06	Short term wave analysis				
07	Concept of extreme value analysis for waves				
08	Statistical interpretation of wave data				
09	Graphically present wave statistics				
10	Basic inputs to wave model				
11	General steps to execute a wave model				

12	Expected results from the wave model				
13	Common wave modelling suites				
14	Nearshore currents				
15	Water level variation due to tides				
16	Storm surge				
17	Wave setup				
18	Sea level rise				
19	Flow and related currents				
20	Coastal flooding concept				
21	Analysis of water level data				
22	Differentiation between tides and other water level components				
23	Graphical presentation of water level data				
24	Basic inputs to hydrodynamic model				
25	General steps to execute a hydrodynamic model				
26	Expected results from the hydrodynamic model				
27	Common hydrodynamic modelling suites				

Detailed assessment:

Please, based on your knowledge/experience/scientific background answer the following few questions:

1. Is the long-term wave analysis can be executed based on statistical distribution such as Rayleigh?
   - Yes
   - No
2. Is the short-term wave analysis basically overtaken to be used in designing the coastal structures?
   - Yes
   - No
3. Do we have another method rather than the zero uncrossing method that can be used in short term analysis?
   - Yes
   - No
4. Are the wind speed and duration the only major components that promote the wave generation?
   - Yes
   - No
5. Are the nearshore waves propagating normally to the shoreline under straight and parallel contours affected by refraction?
   - Yes
   - No
6. Is the directional wave spectrum can define sufficiently the waves at certain location?
   - Yes
   - No
7. Are the wave reflection and diffraction being dominant inside harbours more than shoaling and refraction?
   - Yes
   - No
8. Linear wave theory can be applied after wave breaking?

- Yes
- No

9. Is the wind being the basic forcing component in the wave hindcast model?
   - Yes
   - No
10. Are the propagated waves toward shoreline affected significantly by bathymetry in deeper water more than the nearshore?
   - Yes
   - No
11. Is the wave energy is calculated based on the wave height only?
   - Yes
   - No
12. Are the numerical models that depend on flexible mesh being advantageous than the others?
   - Yes
   - No
13. Can wave models be ran either in stationary or non-stationary modes?
   - Yes
   - No
14. Is the significant wave height defined as the average of the highest 1/3 of a time series wave record?
   - Yes
   - No
15. Is the bed friction one of the wave models calibration parameters?
   - Yes
   - No
16. Is not the white capping affect the wave modelling results?
   - Yes
   - No
17. Is not the wave breaking dissipates the wave energy?
   - Yes
   - No
18. Are the sea and swell have the same meaning?
   - Yes
   - No
19. Is the boussinesq wave model belong to the depth averaged wave models?
   - Yes
   - No
20. Is the water level one of the basic inputs for the wave models?
   - Yes
   - No
21. Is the approach angle of wind having an effect of the resulted wave setup?
   - Yes
   - No
22. Is the drop in pressure cause change in water level?
   - Yes
   - No
23. Are the Neap/spring tides the only types exist?

- Yes
- No

24. Is the tidal variation being dependent to time and location?
    - Yes
    - No
25. Is the tide component can being separable form the total water level variation using any kind of analysis?
    - Yes
    - No
26. Is the land subsidence affect the coastal flooding?
    - Yes
    - No
27. Is the wind being the basic forcing component in the wave hindcast model?
    - Yes
    - No
28. Are tidal generated currents can be simulated using a wave transformation model?
    - Yes
    - No
29. Are the numerical models that depend on flexible mesh being advantageous than the others?
    - Yes
    - No
30. Is a current or flow can be promoted by a change in water densities?
    - Yes
    - No
31. Is the storm surge can be numerically simulated by coupling the wave and the hydrodynamic models?
    - Yes
    - No
32. Is not the flushing can be simulated using the hydrodynamic models?
    - Yes
    - No
33. Is the river flow constituting a basic boundary condition for the hydrodynamic models if exist?
    - Yes
    - No
34. Is the circulation can be simulated using the hydrodynamic model?
    - Yes
    - No
35. Is the bed friction considered as a calibration parameter for the hydrodynamic models?
    - Yes
    - No