



مشروع تكيف دلتا نهر النيل للتغيرات المناخية وارتفاع سطح البحر بأسلوب الإدارة المتكاملة للمناطق الساحلية

Adaptation of the Nile Delta to Climatic Changes and Sea Level Rise through ICZM Project

الاجتماع الأول للجنة إدارة مشروع

تكيف دلتا نهر النيل مع التغيرات المناخية بأسلوب الإدارة المتكاملة للمناطق الساحلية

معهد بحوث الشواطئ - الاثنين ٢ أغسطس ٢٠١٠

انه فى يوم الاثنين ٢/٨/٢٠١٠ وفى تمام الساعة ١٢ ظهرا اجتمعت لجنة إدارة مشروع تكيف دلتا نهر النيل للتغيرات المناخية المشكلة بقرار رئيس المركز القومى لبحوث المياه رقم ٣٩٥ بتاريخ ١/٧/٢٠١٠ والمشكلة من:

١. أ.د. إبراهيم الشناوى رئيسا
٢. المهندس نجيب عدلى نائب للرئيس
٣. أ.د. مكرم جرجس عضوا
٤. أ.د. محمود خميسى عضوا
٥. أ.د. على البلتاجى عضوا

وقد رحب د. إبراهيم الشناوى بالحضور كمدير للمعهد ورئيس اللجنة وشرح لأعضاء اللجنة فكرة المشروع كيف نشأت ومراحل تطورها حتى تم الموافقة عليه وتمويله فى سبتمبر ٢٠٠٩. وقد أشار سيادته بأن البداية الفعلية للمشروع هى إبريل ٢٠١٠ مع تعيين المدير التنفيذى للمشروع.

وقد استعرض الحاضرون الوثيقة الرئيسية للمشروع والبرنامج المعدل الذى يقترحه المدير التنفيذى للمشروع وبعد مناقشات مستفيضة اتفق أعضاء اللجنة على التالى:

١. نطاق عمل المشروع هو المنطقة المحصورة بين محافظتى الإسكندرية وبورسعيد وحتى كنتور +٣ م.

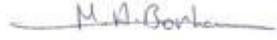
٢. أن هناك شواهد وقرائن كثيرة عن وجود تغير في نمط الترسيب والنحر على طول شواطئ الدلتا ويجب أخذ كافة الدراسات والمشروعات السابقة فى الحسبان خلال مرحلة دراسة أنسب المواقع لتطبيق المشروعات الإرشادية (Pilot Projects).
٣. يجب دراسة كافة وسائل الحماية سواء الأعمال الهندسية أو الطرق البيئية (Work with Environment) أو أى خليط بينهم دون التركيز على أسلوب واحد محدد.
٤. يجب تحديد كم الرواسب المتاحة لبناء الشواطئ والطاقة المصاحبة للأمواج والتيارات البحرية قبل البدء فى تنفيذ أسلوب الشواطئ الحية (Living Shorelines).
٥. شدد الحاضرون على ضرورة أتباع أسلوب الإدارة المتكاملة لإدارة موارد المناطق الساحلية عند اتخاذ قرارات حماية الشواطئ وأسلوب الحماية.
٦. ضرورة تحديد مسئولية كافة الجهات ومدى المسئولية فى مواضيع الإدارة المتكاملة لموارد المناطق الساحلية.
٧. ضرورة تحديد المسئولية القانونية والتنظيم المؤسسى اللازم لحماية الشواطئ وضرورة التزام كافة الجهات بهذه المسئوليات.
٨. ضرورة التأكد من صحة البيانات السابقة ووجود أسلوب للمعايرة التبادلية للنتائج التى جمعت بمعدات مختلفة (Quality Assurance and Inter-calibration) خلال فترات زمنية مختلفة.
٩. يجب أن يكون هناك سياسة واضحة للاتصال بين كافة الشركاء فى المشروع سواء بين الجهات الحكومية أو مع المجتمع المحلى الذى سيتأثر بالمقام الأول. كذلك يجب وأن يكون هناك جهود مركزة على وسيلة اتصال فعالة وتعاون مستمر بين الجهات المسئولة عن تنظيم عمليات الحماية والجهات المسئولة عن الأبحاث والمراقبة والرصد.
١٠. يجب عدم إغفال أهمية تملح المياه الجوفية كأحد المخاطر التى تتعرض لها دلتا نهر النيل سواء من تسرب المياه المالحة من البحر أو تغير فى نظام الصرف الزراعى.
١١. المجتمع المحلى من الجهات الأساسية التى يجب دراستها والاهتمام بها وتحليل اقتصاديات هذا المجتمع واهتماماته.
١٢. يجب البدء فى أسرع وقت فى إجراء الدراسات التى ذكرت فى برنامج العمل لأنها أساسية فى عملية اتخاذ القرار.

هذا وقد طلب أعضاء اللجنة مهلة أسبوع لإرسال تعليقاتهم على وثيقة المشروع وبرنامج العمل المقترح (مرفق رقم ١). كذلك كلف المدير التنفيذى للمشروع بإعداد البنود الفنية للدراسات

المقترحة إلى أعضاء اللجنة قبل موعد الاجتماع بأسبوع على الأقل حتى يتثنى للأعضاء دراستها والتعليق عليها.

وقد أغلق الاجتماع فى تمام الساعة الثانية بعد ظهر يوم ٢٠١٠/٨/٢.

المدير التنفيذى للمشروع



محمد برهان

مرفق رقم ١
تعليقات أعضاء اللجنة

A. COMMENTS OF DR. ALI I. BELTAGY

Some points to be considered during our next meeting

1. There must be specific task to deal with coastal lakes during Q3 & Q4
2. Survey on possible soft prediction material and methods must be prepared during Q3 and Q4 2010
3. Summary of existing shore protection projects (present and future) and evaluation of their efficiency must be prepared.
4. Topographic map of the coastal zone (up to +3m) should be prepared
5. Coastal road condition and its suitability to act as coastal defense.
6. Certain topics need to be evaluated with 2 independent consultant for each topic
7. The saline water wedge intrusion below the lake and d its extent.
8. The equilibrium along the delta coast line
9. Activity to be located and proposed resettlement areas
10. Stakeholders and socio - economic related matter, must be coordinated with other projects in the same area, Like PEGASO, funded by EU

B. COMMENTS OF DR. MAKRAM A. GERGES

The following are some comments on the project's work-plan, proposed by the Project Management Unit (PMU) for the year 2010.

1. The "Stakeholder Analysis": Obviously, the project in its totality is a collective effort by several important partners and stakeholders. Its success is, therefore and to a great extent, dependant on how closely and effectively these partners can work together to achieve the project objectives. In this context, the early "Preparation of Stakeholder Analysis" is of prime importance, If it has not been completed as yet, it should be done as a matter of priority and as much before the planned "Inception Workshop" as possible.
2. The "Inception Workshop" itself is an important milestone for the successful launching and implementation of the project. It should be given enough time for good preparation. With this in view, and in order to ensure good participation by all concerned parties and relevant stakeholders, and hence ensure a successful and productive workshop, the Work-plan should include in column 3 under PLANNED ACTIVITIES, a separate item for "Direct contacts with major stakeholders " prior to the convening of the workshop.
Purpose of the contacts: to introduce the Project, explain the aim and objective of the workshop, and promote some sense of "ownership" among stakeholders as an important step in the "Participatory Approach"
Timing: contacts must be undertaken in the 3rd Quarter (Q3) before the Inception Workshop.
Responsibility: The Project Manager (PM), possibly accompanied by one or more of the Management group (Project Committee), as deemed appropriate.
3. The planned activities for OUTCOME 1 (outputs 1.1 and 1.2 on pages 2 & 3 of the work-plan):
For the various activities listed here, there are several "Local Consultants" (LCs), each with specific consultancy responsibilities. To avoid possible confusion and/or overlap, these consultants should be distinguished from each other by, for example assigning a different number to each consultant, as follows:
For the activity of "legal/technical workshop": Local Consultant (1)
For the study to identify wind, waves,...etc. Local Consultant (2)
For the activity to acquire and analyze satellite Img. Local Consultant (3)
For the "Desk study on marine sediments,... etc" Local Consultant (4)
For helping in drafting the Ministerial Decree Local Consultant (5)
And so on
4. An appendix should be annexed to the work-plan, giving the ToR for each of these consultants. Members of the Project Committee can assist (if necessary) in formulating these ToRs , and based on their personal knowledge, each in his

area of expertise, can possibly put together a list of qualified candidates for these consultancies for the consideration by the Project's top management.

5. The "Training Workshop addressing ICZM Concept and Models", proposed for for the 4th Q of 2010, should NOT be a "conceptual" workshop with a series of theoretical presentations on ICZM, which will just add yet another volume of "less useful" papers. The literature is packed with such papers, and they are readily and freely available on the internet. Instead, the workshop should be of more practical nature, addressing in particular the case of integrated management of the Nile Delta coastal zone, with just a quick background on the concept of ICZM.

It is therefore suggested that the title and scope of the workshop be changed to address the "Application of ICZM concept and models to the case of the Nile Delta". Local and international presenters (mainly practitioners) with practical experience in applying ICZM and/or expertise within the scope of the workshop should be invited as the main speakers, and should focus on the lessons learned, and accordingly, provide guidance on the way forward.

6. With this in view, it is suggested, if possible at this stage, to split this item of the planned activities in column 3 into two parts:
 - (a) Preparation for a practical workshop on ICZM during Q4 of 2010, and
 - (b) Convening of the workshop on " Application of ICZM concept and models to the case of the Nile Delta", to be held in Q1 of 2011
7. Output 1.3:
The activity of Draft Ministerial Decreeetc. should be re-structured as follows:

Planned activity: Preparation of Draft Ministerial Decree on ICZM with the help of local consultant

Means of verification: Draft Decree prepared, presented and discussed at the Participatory Meeting.

Timing: Q3 of 2010

Responsibility: Project staff & Local Consultant (5)

Planned activity: Finalization of the Draft Ministerial Decree on ICZM on the basis of discussions and comments at the Participatory Meeting

Means of verification: Ministerial Decree issued.

Timing: Q4 of 2010

Responsibility: Project staff and competent State Authority

8. Output 1.3:
Planned Activity: Users Needs Assessment Meeting
Means of Verification: Report of the meeting prepared and submitted to the Project Committee for appraisal/advice
Timing: Q4 of 2010
Responsibility: Project staff

9. Output 2.3: (page 4 of the work-plan)

Introduce climate risk assessment into ICZM system for Nile Delta

The planned activity for organizing a Workshop addressing ICZM and its relation to climatic changes:

Question: What is the relation between this workshop and that on ICZM concept and models?

A relationship should be established between the two workshops. The output of the first should be an important input into the second.

It is suggested that this workshop should be planned for Q2 or Q3 Of 2011.

C. COMMENTS OF DR. MAHMOUD KHAMIS EL-SAYED

General Comments

The document is well written, the background information was largely based on publications provided to the writer team, balanced and tailored on GEF project format.

The project will have three major outcomes. First, the regulatory framework and institutional capacity to improve resilience of coastal settlements and infrastructure will be strengthened. Second, strategies and measures that facilitate adaptation to climate change impacts, with sea level rise (SLR) in particular, will be implemented in vulnerable coastal areas in the Nile Delta. And third, monitoring/assessment frameworks and knowledge management systems will be established to facilitate adaptive management in the face of unfolding climate change impacts.

There is no major problem encountered regarding the first and third outputs, however the strategy that is based largely on the Living Shoreline raise some concerns. The main concern addresses this innovative approach that has been previously tested and implemented in different low energy areas. In high energy environment there is no report before hand on the efficiency and durability of such intervention.

Therefore, this concept is to be revised and implemented in ONLY one of the three coastal lagoons, as appropriate, and further to the recommendation and findings of the baseline studies on the sediment budget, transport, dynamics and shoreline of the Nile delta coastal area. Different adaptation measures are to be considered for the other two coastal lagoons, as a hybrid soft and hard structures including Living Shoreline, and sand nourishment, or other acceptable measures.

Monitoring and Evaluation of the efficiency of the different structures will possibly enable the selection of the best adaptation measure based on the BAT.

The socio-economic dimension is to be more highlighted,

Specific Comments

In this part will use the para numbering as appeared in the report, and will use RED colour for the insert

Sea Level Rise in the Northern Coast

21. The dominant feature of Egypt's Northern Coastal Zone is the low lying delta of the River Nile. In addition to the relative sea level rise (RSLR) and subsidence current trends, Egypt's Mediterranean coast and the Nile Delta have been identified as highly vulnerable to abrupt SLR, which is considered to be due to climate change. In 1992, a study by Delft Hydraulics/CORI showed that a 0.3 meter rise of mean seal level would be sufficient to increase the frequency of flooding from the then-current estimate of a flood every ten years to ten floods per year. Several subsequent studies on the vulnerability of Alexandria, the second largest city in Egypt, indicated that a 0.3 meter SLR would inundate large parts of the city resulting in including damage to infrastructure worth billions of dollars, displacement of over half a million inhabitants, and a loss of about 70,000 jobs (Firhy et al, 1997, El-Raey et al

1999, El-Raey, 2004). Such concerns about future SLR are well-reflected in Egypt's Initial National Communication (GOE, 1999).

In para 21 one has to be very careful on the assumptions given for Alexandria and this to be revised based on the fact that Alexandria was founded over a high ridge and 0.3 m rise is that what the city has experience in the last 100 years (1910 – 2010), with no evidences for inundation.

27. Approximately 60% of Egypt's annual fish catch are from three main Delta lagoons, namely Idku, Burullus and Manzalla. Fishing is mainly done by trammel net and various primitive methods (e.g. catching by hand and collecting fishes under vegetation using a cone-shaped net). Aquaculture is the largest single source of fish supply in Egypt accounting for almost 51 percent of the total fish production of the country with over 98 percent produced from privately owned farms; most aquaculture activities are located in the Nile Delta Region with fish farms usually found clustered in the areas surrounding the four Delta lagoons. Fish hatcheries are also generally located in the vicinity of the fish farms. Pollution, reclamation, fragmentation, overfishing and illegal harvesting of fish fry are the major environmental issues threatening the fragile ecosystem of the northern lagoons.

The fish production of the three mentioned lagoons represents only 10.2% of the total production and not 60% المصدر: الهيئة العامة لتنمية الثروة السمكية ٢٠٠٨

This figure is to be corrected

29 Additional factors that contribute to the region's vulnerability are related to the importance of agriculture in the vicinity of the coastal lagoons. Agriculture contributes 17% of the country's GDP and is the largest source of employment, constituting 30% of the labor force. About three-fifths of the country's agricultural production is in the low-lying delta in close proximity to the Idku, Burullus and Manzalla lagoons (Agrawala, et al., 2004).

Three-fifths of the country's agricultural production is in the low-lying delta in close proximity to the Idku, Burullus and Manzalla lagoons, is a doubtful figure and has to be checked, since the land in the low coastal area is ranked as 4th grade. Besides the coastal area low land is limited by contour +3.

32. A subsequent important planning protocol was the development of the National Framework Toward Integrated Coastal Zone Management Planning in 1996. This framework was drafted by EEAA in collaboration with DANIDA and adopted by the steering National Coastal Zone Management Committee in the same year. This document provided a strategy for developing overall short-, medium- and long-term planning requirements. Accounting for the large differences in the nature of the challenges facing the range of coastal regions, the initial framework identified four national priorities that were relevant to each, namely shoreline protection, coastal land use, coastal marine water quality and marine resource preservation.

To mention that an ICZM Strategy is being developed in 2009, within the PAP/RAC Strategy

38. Third, there is no consensus view on coordination across responsible ministries. Currently, there is a multiplicity of controls and consenting regimes and regulators in Egypt, with overlapping jurisdictions and without a lead or coordinating regulator. An integrated coordination of roles, objectives and responsibilities is a pre-requisite to successful ICZM implementation. Efforts are underway to overcome these barriers to ICZM implementation. There have been recent efforts to rejuvenate the operational capacity of the CZMC. Several meetings have been held by the coastal zone committee in an attempt to minimize the interest of individual stakeholders and to establish an appropriate mechanism for developing the national integrated coastal zone management. Specifically, several workshops have been held to identify the strategic objectives and to outline the roadmap for the completion of the National ICZM plan for Egypt. The most recent workshop (April 2009) was attended by 41 participants, including: representatives of the Egyptian Environmental Affairs Agency (EEAA) and Priority Actions Programme Regional Activity Centre (PAP/RAC) of UNEP-MAP, the representatives of coastal Governorates, the National Committee for ICZM (NCICZM), relevant ministries and agencies, national experts and a team leader of SMAP participated at the Workshop, **aiming at developing ICZM Strategy**

The start of this para is offensive, and we have to be careful not to offend sister organizations!!

39 At the same time, the Egyptian Shore Protection Authority has been focusing only **its mandate!!** on construction of coastal protection structures including jetties, groins, seawalls, and breakwaters to combat beach erosion, and reduce shoaling processes in the lakes, and navigation channels in the Nile estuaries **as well as soft engineering** . The total cost of these activities is estimated at US\$ 200 million over the last decade (World Bank, 2005).

Is the mandate of the Egyptian Shore Protection Authority, soft solutions were also experienced.

Stakeholder analysis

42. There are several stakeholders that are implicated in the development of the ICZM plan and have been consulted during project preparation. National experts from the Egyptian Coastal Research Institute and Shore Protection Authority (within the Ministry of Water Resources and Irrigation) have been heavily involved from the outset in the development of the design of project activities. There were other key local stakeholders consulted for input in project design, including the relevant government agencies, the scientific research community and the final beneficiaries. These are summarized below together with their potential role in project implementation:

- Ministry for Environmental Affairs' Egyptian Environmental Affairs Agency (EEAA). The EEAA is the initiator of the ICZM planning process and houses the Secretariat of the National Committee for Integrated Coastal

Zone Management (NCICZM). The project's outcomes are expected to be direct inputs into the development of knowledge systems;

- Ministry of Tourism (Tourist Development Authority): The project's outcomes are expected to be provide protection for potential touristic activities;
- Ministry of Housing (Urban Planning Authority, General Organization for Physical Planning);
- Ministry of Transportation (Marine Transportation Department in Alexandria): The project's outcomes are expected to affect the continued viability of transport networks across the Delta;
- Ministry of Agriculture (Fish Authority **why only???**): The project's outcomes are expected to protect and enhance ecosystem function, particularly fisheries;
- Ministry of Petroleum (Health, Safety and Environmental Department); and
- Ministry of Defense (Coast Guard Department): The project's outcomes are expected to be provide protection from coastal erosion;
- **No NGO involved**

Why only fish authority, what about real agriculture activities. NGOs are to be included in this process at a given stage

49. Historically, Egypt's agriculture system has thrived under favorable climatic conditions, fertile soil and access to irrigation via the Nile. To meet the demands of an ever growing population, Egyptian agriculture has expanded both towards desert as well as reclaiming waterlogged and salinized land in the Delta. As much as 12-15% of existing agricultural land in the Delta could be lost due to sea level rise; a widespread and vigorous intervention will be essential to ward off food shortages and an eventual food supply crisis (Kasperson and Kasperson, 2001). Changing land use exacerbates human exposure to weather-related climate change hazards. Initial settlements, while built on the most suitable areas, new development in Alexandria have had to occur on more hazardous ground in low-lying flood-prone areas (Klein et al, 2003).

Table 1. Area loss, population displaced and loss of employment in each sector due to a different SLR scenario in Alexandria governorate (El Raey, 1999)

	SLR (cm)		
	18 (2010)	30 (2025)	50 (2050)
Area loss (km ²)	11.4	19.0	31.7
Population displaced (x1000)	252	545	1512
Loss of employment			
Agriculture	1370	3205	8812
Tourism	5737	12323	33919
Industry	24400	54936	151200
Total loss of employment	32507	70465	195443

Same remark as for para 21

60. Up through the mid-1990s, government programmes and investments in protective measures along the Nile Delta coast have included an emphasis on "hard" coastal structures such as sea walls, jetties, and detached breakwaters,

as summarized as follows (El-Raey, 1999):

- *Abu Quir Bay*. The Abu Quir Sea wall was built in 1780 and has been maintained by placement of additional large concrete blocks. This wall was modified and reinforced in 1980 by constructing a sloping face (2:1) and placing 0.5 ton modified cubes as a layer of protection.

This date is not correct, I think is 1830 need a check.

73. Given the Nile Delta's vulnerability to climate change and sea level rise, it is clear that Egypt's challenges are compelling. The project's strategies for reducing vulnerability to climate change is to climate-proof proposed coastal development pThe NCZMC will also be working closely with the newly established Prime Minister's Climate Change Adaptation Unit, which has been tasked with coordinating climate change adaptation policies in Egypt and promoting a broad stakeholder dialogue and consensus over the adaptation strategies.

What is the proposed mechanism, and if an approach has been already established is to be reflected

75. The project approach for any measures undertaken in the three lagoons is that they avoid hard structures, be innovative in nature, and provide flexibility for future adaptive activities in the region to augment project activities. Of the three major forms of coastal adaptation (i.e., abandon, protect, managed retreat), the mode of adaptation in the proposed project is lagoon protection through soft protection and innovative measures. The "Living Shorelines" approach meets these criteria and has been shown to be an effective strategy to control erosion and reduce land lost to sea level rise in other areas, including the Chesapeake Bay in the United States.

Refer to General Comments

78. Adaptation alternative: The CCAU is to become national institutional "champion" in Egypt and well help organize and coordinate the, until now, fractured group of implicated national/regional organizations responsible for coastal zone management. The CCAU will be supported who is going to support ??? by the establishment of virtual centre for integrated (cross-sectoral) research for climate change adaptation to foster climate data and information sharing.

How this approach is going to be materialized, careful editing

79. Output 1.1: Modified coastal development legislation and regulations (focusing on ICZM and EIA). To inform new legislation, this output will require additional studies on the potential impacts of climate changes on the issues itemized below.

- land and groundwater salinity

- on patterns of waves and currents
- erosion and accretion systems due to current and wind actions
- lakes ecosystems
- water resources and drainage systems
- fisheries due to changes expected in current patterns
- infrastructure and natural resources of the coastal zone of the Nile Delta coastal settlements and lagoon-dependent agricultural activities
- evaporation from oceans and seas open waters and their role in reducing SLR phyto-plankton role in absorbing CO₂ and generating O₂.
- **Effectiveness of the existing protection system**

I think an assessment regarding the Effectiveness of the existing protection system is to be highly considered.

92. Output 2.3: Introduction of climate risk assessment into ICZM system for Nile Delta: A climate risk assessment process will be institutionalized within the final ICZM plan, and adopted by relevant government entities, e.g. Shore Protection Authority, General Organization of Physical Planning, Tourist Development Authority, Health, Safety and Environmental Department of the Ministry of Petroleum, and CoRI **where is MoE/EEAA??**.