The International Maritime Transport and Logistics Conference
"A Vision For Future Integration"
18 - 20 December 2011

DISASTER MANAGEMENT AND RISK REDUCTION IMPLICATIONS ANALYSIS AND RECOMMENDATION OF THE EGYPTIAN MARINE COMMUNITY AND PORTS

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Abstract

This paper describes the phenomenon of mismanagement of safety dimension, disaster strategy, and applications within the Egyptian Marine Sector. The authors provide results of new investigations of the reasons of a past accidents and shortage of applying the main marine service (Load/Unload) in regard of National and International Legislations and requirements in Egyptian Ports. Results of applied questionnaire for a selected sample from marine sector population in regard of 'HYOGO FRAMEWORK OF ACTION' for disaster and risk reduction strategy show that the magnitude of this event has been overestimated. The results imply that serious revisions and new policies are necessary.

Design/methodology/approach: Various methods of risk assessment approach are utilized combined with a statistic-analysis, and questionnaire surveys.

Findings: Measured results and recommendation has provided opportunities through achieving experiment under new disaster prevention and management technologies and strategies.

Key words: Disaster Management, Risk Assessment, 'IMO' and 'HYOGO FRAMEWORK OF ACTION' Marine Sector, Manmade and Natural Disaster

1. Introduction:

In view of the research done by previous studies[1,2,4,9,10,12,16,25-53], several threats and risks, such as those resulting from navigational activities as manmade hazards or from natural hazards as climate changes especially sea level rise, were found to be underestimated. As a result, it was well realized that many aspects of risk were not well covered by various assessors. In this regard, it was decided that the assessment has to be revisited according to the following requirements:

1- Determination of the suitable and accredited standards for measurement of performance
2- Monitoring of the actual performance according to the methodology applied
3- Determination of the performance points of strength and weakness and the hazards, risks and vulnerabilities areas.
4- Suggestion of measures and recommendations applied to bridge gaps and develop safety and disaster management system.

It was realized that immediate precautionary measures have to be taken to prevent or mitigate these risks, and that the main factor needed to apply those

measures is the presence of legal instruments along with their enforcement. It is also necessary to focus on spreading awareness of the problem among members of the navigational society and to raise training levels to limit human errors as well as the necessity of scientific research

Four areas are considered of main interest:

1) Accidents occurred in offshore at marine Egypt zone or from Egyptian vessels or vessels raising the Egyptian flag,
2) Accidents occurred in onshore at port of Alexandria, Egypt
3) Applied measures, legislations, systems, and procedures to enhance various levels of risks related to the most important Alexandria port activities 'shipping and offloading',
4) The ability of all of Egyptian Marine society to face Disasters and Crisis in a comprehensive frame (natural and manmade).

2- Used Methods

The following techniques were used:

1) Statistical analysis (Quantitative /Qualitative) were undertaking using SPSS "x^2، and MINITAB programme "Regression" to assist off shore and onshore marine accidents and activities of handling dangerous containers.(NOPSA-2007-08[64]),(APS[65]) ,(Breimn2000[66]).

2) A Checklist has been designed- due to the lack of an adequate checklist for the required analysis. The checklist includes and covers the main activities we classified according to the views of specialists and experts we interviewed. Interviews were carried out several times during brain storming and field visits to determine the life cycle and the elements of the most important port activities within the aim of the study and to determine risks related to" shipping and offloading".(Appendix 1).(OHSAS 18001\ISO14001Tool kit & OSHA 3071-1998& DETEs-AS-NZS&NZ Nautical Analysis& Public Risk Management Association& Society for Risk Analysis)[16/17/59/60/81].

3) The most significant risks have been determined using risk matrices (frequency, severity, repercussions, and degree of danger). DETEs،&'AS-NZS 4360-1999[(59)], Wellington Harbour Operational Risk Assessment[(60)], Marine Security Code ISPS/ Risk Assessment[(70)],

4) The SWOT methodology used to determine points of strength, weakness, opportunities and threats, which facilitate identifying improvement action priorities.

5) The tailored questionnaire in regard of International conference and recommendations used to identify the Capability of Egyptian Marine society to face potential disasters in a comprehensive frame (natural and unnatural)[(70-73,79)].

6) We then distributed those between a diverse group formed of 7 professors and experts working in the field of general and marine crisis and disasters as jury, and we asked them to revise it by amending or adding or deleting as they see fit. The group of jury presented their views as to the precision of these dimensions and their adequacy to be a measure of Performance and to measure what it should. The final result was determination of 143 article agreed upon to form targeted performance indices used to measure the actual performance of crisis and disaster management in the navigational community. (Appendix 2)

7) Using a survey composed according to the most recent and updated requirements for managing disasters and crisis to limit their risks and losses in regard of the main factors (planned /convenient /controlled /modified/ developed Preparation, Respond and Recovery).Such factors are (I- Governance & Institutional Arrangements {Preparedness Stage}
   - II - Risk Knowledge & Hazard Monitoring {Preparedness Stage}
   - III - Information Management& Communication {Preparedness Stage}
   - IV - Early Warning From Concept to Action {Preparedness Stage}.
   - V - Awareness, Education& Knowledge of Preparedness {Preparedness Stage}.
   - VI – Planning & Programmes Package Range {Preparedness Stage}
   - VII – Disaster Preparedness Capacities & Mechanism{Response Stage}.
   - VIII – Priorities Determination & Build resilience to avoid reconstruction of risks after disaster events {Recovery Stage}).(HYOGO[61]).

8) Statistical analysis were undertaking by using SPSS test 'F & T' and 'Pv', to find correlation between the indicators related to the factors above, to accomplish the targets' Disaster Risk Reduction' at all Marine activities and sectors throw realizing such indicators:
   1. A legal framework for disaster risk reduction exists with explicit responsibilities defined for all levels of government..
   2. A national multi-sectoral platform for disaster risk reduction is operational.
   3. Dedicated and adequate resources are available to implement disaster risk reduction plans at all administrative levels.
   4. National risk assessments based on hazard data and vulnerability information are available and include risk assessments for key sectors.
   5. Early warning systems are in place for all major hazards.
   6. A national public awareness strategy for disaster risk reduction exists that reaches all communities and people of all education levels.
   7. Environmental protection, natural resource management and climate change policies include disaster risk reduction elements.

8. A procedure is in place to assess the disaster risk implications of major infrastructure project proposals.
9. Disaster preparedness plans and contingency plans are in place at all administrative levels, and regular training drills and rehearsals are held to test and develop disaster response programs.
10. All organizations, personnel and volunteers responsible for maintaining preparedness are equipped and trained for effective disaster preparedness and response
11. Financial reserves and contingency mechanisms are in place to support effective response and recovery when required.
12. Procedures are in place to document experience during hazard events and disasters and to undertake post event reviews). (NOPSA-2007-08[64]), (APS[65]) , (Breimn2000[66]), (HYOGO[61]),

9) Designing Model in regards of all considerations to reach the targets from these analyses at development means needed, to prevent or mitigate or forecasting the occurrence of the possible disasters and risks, to be applied to all activities and port risks as one of the sources of disasters.

3- Results

The above methodologies were applied to shipping activity and offloading in the marine port of Alexandria deduced the following:
A- Descriptive statistical analysis of marine accidents of Egyptian vessels compared to foreign ships quality wise and cause wise and location wise, which caused an increase in the rates of Egyptian vessels accidents than their counterparts especially in the geographical location of the Mediterranean. It was found that the main reason underlying these accidents is the negligence arising from defects in management and supervision and the absence of an applied safety and crisis management system enforced and supported by state legislation.

By quantitative statistical analysis of the data regarding the shore accidents in the port there was a relation and a strong relative link between the different elements of analysis
(type of accident, location\ responsibility of accident- cause of accident and its date) , and absence of the implementation of a strong enforced updated and supervised system which undertakes dealing with those causing these accidents whether by negligence or lack of awareness or intentionally is the main reason for their occurrence .

By using the descriptive statistical analysis of the activities of handling the dangerous containers in the Port of Alexandria, it was found that the most dangerous areas and violations in the inspection program elements lie in the lack of the safety statement of the cargo in the container.

The packing non conforming to the specifications, the packages used are not suitable for the nature of the cargo in the container.

The segregation process is not enacted according to the segregation\separation table of dangerous cargo, the violations arising from loose stowage lead to accidents of environmental pollution and fires and that the absence of markings which determine degree of danger such as labeling \ placarding lead to ignorance of those handling the agent about its nature and hence its properties. So whether inside or outside the container and as such they don't follow the rules of safe handling of this type of dangerous agents in the container , which leads in turn to great risks, hazards and potential disasters.

By application of the inspection programs on the containers according to the ports of shipping it was found that there is absence of good supervision and follow up of the execution of the inspection programs in those ports according to IMO instructions which in turn subjects the companies, ships and ports handling dangerous goods to several risks.

B-Analysis of the risks of the most significant port activities "shipping and offloading":

It was found that the most important five hazards in this activity among 68 hazards screened according to the checklist we prepared: the first is the shipping agencies and documentation of dangerous goods, the second is unloading and shipping of dangerous goods, the third storage, detection and exchange of goods and the fourth is management of human resources, material and methods of operation for management of dangerous goods and lastly the fifth is the Environmental Management of handling goods.

According to the analysis methodology, priorities of the risks and the selection of the most important seven risks based on the degree of severity" Extreme / High "have been identified, namely:

1. Decisions and bodies concerned with handling of dangerous goods.
2. Procedures for handling dangerous goods.
3. Human resources and handling of dangerous goods.
4. Emergency equipment.
5. Means of transportation.
6. Handling equipment (cranes - lifts).
7. The implementation of the ecological system within the process of trading goods.

Detailed analysis of the situation was done according to the standards applicable to these seven risks and the actual situation currently present in the port, we then determined means of the necessary developments needed in view of the standardized status, discovered gaps and points of strengths and weaknesses.

c- Assessment of the ability of disaster and crisis management in the Egyptian Marine community: we carried out this assessment using an exploratory study of the latest updated systems, conferences and international recommendations in the field of disaster management and risk reduction, whereby we found the following strategies, codes and conference recommendations:

1 - International Strategy for Disaster Reduction (ISDR).
2 - Hyogo Framework for Action 2005-2015.
3 - NFPA 1600Standard on Disaster.
4 - UN/ISDR. 2006. Developing Early Warning Systems.
5 - Third International Conference on Early Warning 2006, Bonn, Germany.
6 - UN/ISDR and UNDP. 2006. Integrating Disaster Risk Reduction into CCA and UNDAF- UNDP/BCPR. 2005. Post-Disaster.

This is the latest most comprehensive system upon which the survey and analysis can be constructed, and we found Egypt in agreement to participate, commit and implement all requirements of the conference (2005HYOGO).We have presented a preliminary structure of the survey axis according to the basic elements of the previous systems which included eight axis including 160 dimensions. The likretgraded penta scale was used to measure the indices, whereby the performance measures included the following:

1- Governmental and institutional measures and their effectiveness, with the presence of a legal work frame to limit and reduce risks and hazards with a clear and specific definition of responsibilities in all work levels.

2- The ability to determine and monitor hazards and specify points of strength and weakness according to the hazard data and points of weakness information.

3- The efficiency of the information management systems and the ability to communicate and availability of the hazard related data as well as the presence of a procedural system to document expertise and experiences, and a system that ensures its usage and benefiting from it in all stages of handling "before \during\ and after" the crisis or disaster events.

4- Presence and activation of strategies for early warning systems for all foreseeable and potential dangers and the existence of procedural system used to assess the implications of the risks of natural disasters as well as in all the major infrastructure projects

5- The performance level of awareness-raising programs and training management and a public awareness strategy for disaster risk reduction, as well as a training strategy and active regular revised drills.

6- Effective planning strategies and a scope for the implementation of several appropriate programs in the various maritime sectors in order to limit disaster hazards, these programs include public safety policies ,

environmental protection , natural resource management and the expected potential climate changes .

7- Capacity and mechanisms for dealing with events, and the availability of appropriate resources allocated for the application of plans for disaster risks reduction in all maritime sectors and activities.

8- Presence and activation of recovery plans and the availability of components and requirements of financial reserves and mechanisms needed to support the effective response and implement recovery plans in place for all of its elements.

Finally It was found from the statistical analysis of the Survey that there is:

1- A large disparity between the members of the study and that they are not in agreement or generally satisfied with the current management system for crises and disasters compared to the requirements of modern management systems described above, which was the object in this survey of opinion.

2- Wide variation and multiple gaps in the capacity of actual disaster and crisis management to confront the challenges according to the elements of the survey and its eight axis , which represent the latest formula to be applied and the requirements that need to be fulfilled to complete and raise the ability of the maritime sector to manage crises and disasters and achieve risk reduction.

In short, the main reason is the absence of a uniform activated published system applied to all members of the marine community. This reflects the necessity of establishing a system that ensures the adequate management of disasters and crisis and aims at raising the capacity of expected and potential risk reduction and the ability to confront them when they occur. This is being the event that proved the study theorem and which drove us to recommend the necessity of establishment of a disaster and crisis management system for the navigational sector. (Appendix 3).

Listen Read phonetically.

4-Recommendations

According to the global conferences and in view of what we have proven in this analytical assessing study of Egyptian marine sector and port risks, it was found that the most significant recommendations for disasters and crisis management and risk reduction in the marine community are the necessity of application and active implementation of a system supported by the enforced legal and legislative instruments and the strict follow up of fulfillment of all its requirements , as well as applying a fair system of reward and punishment.

A. Recommendations for ports safety and port activities:

- Activation of the proposed system concerning handling of general and hazardous cargo with specifying roles and responsibilities among different bodies which are possible sources for occurrence of disasters and crisis on the level of Egyptian river and sea ports\harbors
- As well as their activation in the matter of confrontation of emergency situations and risk reduction which includes requirements of the laws and the technical specifications of the various port activities and the requirements of the national and international port, professional, environmental safety standards, on the condition that the port authority is the main authority in the implementation of this system.
- The necessity of implementation of the requirements of the integrated system by establishing specific procedures to deal with determination and assessment of hazards by which we then identify the size of the risks and their possible impacts , followed by the tools and instruments needed to confront them. The work is done by specialist accredited experts to ensure the adequacy of those tools for the nature and size of risks and the prompt effective confrontation actions.
- Enhancing the role of the "Ministry of environmental issues" for monitoring and inspection of general and hazardous cargo in coordination with the "Ministry of transport".
- Enhancing the role of the "Agency of atomic energy" for monitoring and inspection of cargo possibility of radioactive cargo
- Enabling heads of port authorities to manage and supervise the works of administrations and agencies affiliated to ministries and public agencies related to port works within their field in compliance with the presidential decree.
- Reformulation of the state laws and regulations which organize the internal navigation in the river Nile and its branches (Before the High Dam and beyond it) since the laws currently used need to be amended (Law No. 10 \1956 amended by law number 57 \ 1962) due to changes in the depth and nature of the waters , the evolution of safety systems at both national and international levels and due to increase and raise of the numbers and sizes of river vessels and, consequently, the passengers.
- Create a new branch in the south region with adequate authorities to manage all matters related to internal waters in view of the extended nature of the River Nile and the difficulty of addressing all its dimensions through the single central administration located in Cairo (Agency of River Transport). Re-distribution of specialties and restructuring of some of the tasks to fit with the requirements of navigational safety in the River Nile in accordance with international systems such as (The technical state of the barges and means of their evaluation - navigational licensing systems ,certificates of safety equipment ,fighting

environmental pollution . fire-fighting and certificates of the approved pathways , safety limit for crews of the maritime units and a certificate of total loads - training programs , qualification ,follow-up of navigational personnel and finally imposing a system that allows the River Transport Agency to supervise and inspect service stations responsible for the maintenance of the equipment in question.

- Issuance of a uniform law to regulate the method of handling hazardous materials, especially within the ports of the Republic so as to comply with each update in the International reference, as well as taking into account the coordination with the parties concerned with the process of handling them (Ministry of Environment - Ministry of Interior - the Atomic Energy Authority - Customs Department).
- The state issues and monitors - represented by the Ministry of Transport and Port authorities - laws prohibiting handling hazardous containers which do not comply with the instructions of the IMDG Code
- Application and activation of the "Inspection program" at all ports \ harbors of the Republic where the "Holding Company for Maritime Transport" sends the annual total results report to the IMO to take the necessary sanctions against defaulting ports
- A resolution stating the inevitability of the existence of control points to measure the possibility of "radioactivity" in the containers entering the country via shipping and unloading companies as well as customs points before allowing the shipment into the country and to monitor the level of performance of the control points functions.
- The State issues through its agencies concerned with the matter (Ministry of Environmental Affairs - Ministry of Interior - Ministry of Transport - Department of Customs) strict and deterrent laws for exporters as regards compliance with the instructions of the IMDG Code, in coordination with the Egyptian ports and harbors agencies and the concerned parties on the matter of dealing with hazardous materials.
- Issuance and activation of a procedural system to ensure stopping the shipment of dangerous goods except after ascertaining the existence of documents indicating completion of control and inspection on (packing - stacking - marks of degrees of risk - the international number of the article - cargo safety statement) of the exported containers.
- The plan must include the implementation and activation of all local laws and requirements of international standards stated in the standardized situation, taking into account the identification of posts in accordance with the operational requirements of the international reference "IMDG".
- Creation of a procedural system to ensure effective planning of training programs that includes all those dealing with the activities of port and general\ hazardous cargo, the specialized training bodies, educational materials provided, the periods of training, evaluation of the extent of knowledge of individuals about the educational subjects, evaluation of

the providers of these materials as well as the effectiveness of such training and its impact on the work performance.

- Review and develop training curricula at fixed convergent and appropriate periods, and periodical review of the courses contents for (annual) update.
- Comparison of the material taught in the curriculum with the daily work and their re-evaluation to rectify the deficiencies in each and review of the objectives of the curricula and their contents to ensure their compliance with all the skills required in work management and risk reduction.
- Ensure the participation of specialists or other practitioners drawn from the parties interested and involved in the design of the curriculum and curriculum review, which is done by an external professional technical specialist Committee on a regular basis.
- Ensure the availability of the safety requirements including equipment and instruments in accordance with the curriculum, the international and local standards.
- Assess the mental, psychological, health and skill capacities of staff when appointed, and before they are assigned sensitive or dangerous functions.
- Provide adequate financial budgets to support the requirements of safety and risk reduction in support of training programs.
- Using the latest books, references and periodicals specialized in dealing with hazards and updating them when they become obsolete.
- Expansion of databases and their update in the Central Library and the Library of the port or agency, if any.
- Offering the possibility to communicate with local, regional and international data base.
- Procedures should also include frequency of maintenance and methods of storage of such equipment and tools.
- The need for a procedural system to ensure monitoring, inspection and update of the gaps and defects discovered during the analysis of incidents or the training or practical experiences, as well as ensuring follow-up of implementation of the recommendations and amendments of the results of internal audits of top management or the relevant committees or external audits.
- Establishment of a procedural system to ensure registration, documentation and transparency of the presentation of all the incidents and what was the action taken.
- The ports and harbors agencies require the shipping\ offloading and transport companies dealing with dangerous goods to qualify and train

drivers about the nature of dangerous goods and their safe handling in coordination with the accredited bodies.

- The Ports authorities should require the transport companies to provide equipped vehicles to load general cargo and those suitable for hazardous cargo.
- Good coordination between the concerned parties (Ministry of Transport- Ministry of Interior - the Atomic Energy Authority - Ministry of Environment - Ministry of Defense) to provide the necessary information about the passage of trucks carrying dangerous goods, especially (explosives, radioactive materials).
- The ports and harbors Administrations and agencies should place adequate instructional placards within its boundaries and provide suitable light sources to complete the safe transport of general and hazardous cargo
- The port Administration should require shipping and offloading companies to qualify and train instruments and tools operators on modern simulator devices compliant with and similar to digital technology modern handling equipment
- The port Administration should establish a procedural system which ensures requirements stated in the international standards OSHA specialized for inspection and safety of tools and the methods and frequency of their maintenance or according to the standard for each tool or instrument, as well as establishment of a procedural system for monitoring and inspection to ensure the level of activation of the previous system.
- Activation of the required internal and external review systems and implementation of the continuous improvement strategy for expected and possible risks reduction.
- Each port administration or management should commit strictly to applying the laws and environmental instructions (international, regional, local).
- Activation of the system requirements as regards environmental requirements to include all administrations and various sectors of the port with assigning the roles of each separately to ensure:
  - Support of human, financial and information resources
  - Communicating environmental awareness to all port employees (officers, employees in cargo handling activities , personnel dealing with the port)
  - Training employees in ways of combating pollution so as to include all various pollutants
  - Presence of a bonus system to reward employees for their environmental performance
  - Training on the methods of safe disposal of waste (sorting, collection, transport, incinerator) , dealing with possible emergency cases

- Provision of an adequate number of vessels for transfer of waste oil as well as ballast water and so as to suit the size of pollutants resulting from handling activities and the size of waste produced in daily practices
- Tools and modern equipment to detect all pollutants (chemical - biological - radiological).
- Provision of stations and reservoirs for reception of sewage and vessels waste and their safe disposal according to environmental specifications.
- Raised heights of pollutant bumpers (such as coal storage sites) and installation of systems such as sprinkler water to cut its rates.
- Installation of rubber parts on the ends of the suction pipes used in transfer of cement and grains to reduce associated dust.
- Tightening and cleaning of the belt conveyors used in transport of grains.
- supplying port and harbor authorities with adequate clearance units
- Creation of a center for combating marine and river pollution in each geographic sector supplied with adequate trained crews and sufficient modern equipment.

B- Recommendations dealing with search and rescue:

- Activating the role of the search and rescue committee provided in the Presidential Decree No. 300 \ 1983, Article 5 which mandates the follow-up, study and development of search and rescue centers and the coordination of efforts between ministries and relevant state agencies, with the activation of the legislative and supervisory role
- Technical development of the maritime inspection system and the monitoring of the port administration affiliated to the Egyptian Authority for Maritime Safety and supporting it with personnel, authorities and capabilities necessary to direct its work in the maritime and river communities in order to support and develop the search and rescue system according to the system proposed.
- Extending lines of communication with the vessel tracking information system VTS to include rescue centers and the maritime transport sector and the centers of operation of military maritime bases and the major port authorities to ensure the swift decision making and effective coordination
- Support of the VTS in the middle east with modern state of art vessels (specialized rescue units which are self steering and self propellant) to help with the swift rescue of survivors
- Support of the subsidiary rescue centers of the maritime forces with modern tugs with adequate abilities in coordination with the maritime transport sector and the maritime navigation safety agency and study of methods of attaining international support
- Training using simulators equipped with GPS to raise the efficiency of rescue elements and planning joint training between main and subsidiary search and rescue centers and the civil navigational community in the state and the civil aviation agency and petroleum companies

- Joining the international agreement for search and rescue SEARCH AND RESCUE 1979 and its amendments and applying the instructions of the search and rescue maritime manual prepared by IMO.
- Review and updating of the regional border map for state search and rescue.
- Holding agreements of search and rescue with the neighboring countries especially those with common borders, and stating conditions and frames of cooperation in detail according to the cooperation laws in Egypt.
- Organizing courses and regional and international joint conferences between the civil maritime community and the military community under the supervision of the middle east search and rescue center of the armed forces to raise expertise, exchange information, coordinate efforts and correct gaps.
- The ministry of transport in coordination with the maritime transport sector and the maritime navigational safety agency establish and activate a procedural system to ensure the following:
  - a- Implementation of international rules of safety management and national ones and all the requirements of the proposed system in all ports and harbors in the state and shipping companies and river and sea vessels with the follow up according to a defined, specific and documented mechanism
  - b- Provision of the main basic requirements for the emergency centers and the rescue and safety tools of every port , harbor and vessel according to international standards and continuous monitoring to ensure their validity
  - c- Suitability of the human element to all tasks assigned to them according to specifications and standards of operation and international requirements and through implementation of specified published suitable assessment standards.

C- Recommendations for management of disasters in the navigational sector:

Suitable Measures must be done to protect the ports\harbors present in the country and raise their ability to prepare for hazards and risk reduction in early stages which leads from the economic point of view to a cut of costs whereby it is not too expensive and easier to cover than later on in case of occurrence of disasters and crisis and forms of environmental decay aside from other human and social losses which are difficult to remedy. In addition to that, it must be taken into account that most of the international financial establishments including the World Bank have adopted policies to grant financial support to projects which adopt the ideas of development of disasters and crisis management systems and reduce causes of environmental decay. This leading governments and societies vulnerable to risks to proceed swiftly to develop disasters and crisis management systems especially in view of the current natural threats away from human interference which are increasing as a result of human impacts such as technological advancement and urban extension. The

misuse , abuse and destroying lands, gas emissions which affect the atmosphere whether arising from intentional or unintentional human errors, taking into account that development of such systems and methodologies currently applied takes huge efforts and time since they are related to societies cultures and customs in addition to governments and establishments. We will present in detail the recommendations that should be applied for risk reduction as regards the country as stated before and in as so far as we deduced from the herewith study :

1- Recommendations as to governmental arrangements:

A development of institutional abilities of the navigational sector to achieve disasters and crisis risk reduction by the following means:

- Establishing legal basis which offers the trade , specialized and river port agencies the authorities needed to deal with development of mechanisms and systems of emergency preparedness each within their responsibilities and as per their requirements , and the active coordination between different Administration levels and applying suitable and adequate decentralization
- Provision of adequate resources suitable for achievement of tasks for confrontation of disasters and crisis and preparing for them from the national budget in a continuous way not related to their actual occurrence
- The ministry of transportation should ensure that all maritime establishments in the navigational sector involved in emergency preparedness and response have the abilities , information and sufficient awareness about all the tasks allocated to them within the comprehensive pictured of disasters and crisis risk reduction responsibilities and points of weakness analyses as well as limiting the impacts and disasters and crisis risk reduction
- They should also ensure the effectiveness of the current legal arrangements and that all roles , obligations and authority lines as well as coordination channels are characterized by clarity and comply with the state law and international treaties \ common laws and the implementation and adequacy of penalty mechanisms
- All local communities and private organizations should be involved in planning , implementation , monitoring and assessment of hazards, each in their arena according to TQM concepts
- Administrative context and application of early warning systems and in view of the resources capacities of the maritime sector
- Reaching regional and international agreements to ensure the integrity of early warning systems and enforcing coordination mechanisms dealing with the relations and partnerships between early warning organizations and placing them in an institutional framework , along with achieving integrity of all early warning programs in all risk reduction policies and in development and enforcing a system to support policies and laws
- Establishment of programs to standardize processes , roles and responsibilities of each organization which publishes and issues early warning and framing them in an enforced legal state

- Holding agreements and protocols for the integrity and unity of warning wording and communication channels in case of the navigational agencies dealing with the various hazards with defining responsibilities and communication channels.

2- Recommendations for risk awareness and monitoring of hazards:

- Establishment and development of a documented system for risk analysis including descriptive maps of all hazards with specified measures and nature, location and probability of hazard and all potential sources of threats , along with analysis of points of weakness and assessment of their foreseeable impacts
- The hazard profile must define how , extent and degree of presence of points of weakness including all facets related to the degree, type and cause of danger and the level of exposure of individuals and the losses expected for hazards
- Analysis of the different hazards scenarios and defining the sources and factors of points of weakness , the conditions that cause that
- Establishment and activation of a strategy to attain and review and distribute data related to the points of weakness related to major hazards and activation of a system to retain data and make them available for purposes of verification and research to ensure data processing in the appropriate time frame.

3-Recommendations for information management and communication:

- Develop a system dedicated to information management which includes information and diagrams on how to define the risks and about monitoring of communications networks, scenario analysis, warning messages, and creates mechanisms to provide information leaflets , operation reports and distress calls to humanitarian donors from institutions , individuals and other navigational sectors, with the identification and definition of responsibilities entailed .
- Linkage and analysis of information according to the dimensions of social, economic and environmental risks and the potential dangers to navigational workers , and development of information systems for natural disasters navigation industry
- Development of research programs dedicated to risk and hazard reduction in accredited academic scientific institutions and provision of funding needed for teachers and academic society as well as support of modern communication networks in order to build basis of partnership between teachers and academic, research and scientific societies on both national and international levels. Establishment of a central library or a GIS database to store all crisis and natural hazards data.

4- Recommendations for establishment and activation of early warning systems:

A- Integration and insertion of early warning in the economic planning and presenting the economic gains of early warning to the highest political leadership , linking the early warning system to the response system on the navigational sector level in the state with defining hazards priorities and natural hazards which require early warning.

B- Development and defining the resources needed for execution of the training programs and plans for early warning systems , involving the private sector and encouraging it to participate in capacity building and the ability to confront disasters and crisis as well as enlisting public and private partnerships to help develop early warning systems.

C- Defining responsibilities for coordination of hazards definition processes and assessment of hazards and assigning that to one defined national organization to do the following tasks:

- Collection and study of historical hazards data concerning natural and unnatural disasters and crisis in navigation, as well as any potential future disasters and crisis during the process of assessment of points of weakness and results
- Defining hazards that could result from interactions between hazards as aftershocks when occurred, and defining and assessment of activities that increase hazards and insertion of hazards assessment results in planning of local hazards management, warning messages and warning venues.
- Establishment of a system to verify that the warning is received by the target population and carrying out extensive tests and drills concerning that once annually with clarification of the difference between predicting hazards and warning against them.
- Preparedness of warning centers with tools needed to handle data and operated prediction models and conferring with international organizations and experts to help in definition and provision of suitable tools
- Development and implementation of awareness and training programs for employees and volunteers in dealing with and interacting with warnings.
- Analysis of the degrees of awareness of the navigational society personnel of the natural hazards risks and warning services in order to predict their response in case of their occurrence.

5- Recommendations for knowledge and awareness management:

- Insertion of hazards\ risks awareness programs and response via general information, education system and specialized training courses with focusing on reaching the employees most at risk in the navigational field.
- Provision of resources and funding needed to hold conferences and sessions for qualifying trainers and the academic society.
- Preparation of local training centers and professional utilities which can receive disasters and crisis risk reduction training courses with provision of bonuses to ensure the continuous active individual participation and training work shops
- Assessment of training and awareness strategies and programs.

6- Recommendations of planning

1) There must be realistic and achievable preparedness plans frameworks for all sources of risk to navigational society with the involvement of all parties involved in the planning process with clear definition of their roles and responsibilities
2) The plan should include the mechanisms and activities of application and clear resources and should be reviewed, updated and published regularly.
3) Inclusion of future impacts of climate change in planning for disaster risk reduction and Environmental management in collaboration with professional and trade organizations and international federations.
4) Review of the compensation value, which apply in cases of disasters and hazards emergency funding.

7- Recommendations for capacity and mechanisms:

- Development of the legal system to form a disasters and crisis response planning
- There should be an assessment of bodies assigned to respond to events and define their level of performance, points of weakness and availability of resources allocated to them.
- Review of availability of needed rescue material and accessibility as well as necessary human resources in fields such as search and rescue, medicine, communications, engineering, nutrition, volunteers and emergency funding for swift purchasing
- Reevaluation of available mechanisms for direct response after crisis occurrence and the extent of knowledge of emergency response agency concerning that as well as the effectiveness of coordination with local society groups.

8- Recommendations for defining priorities needed to avoid risks consequences:

- Development of a system to collect and review documents related to financial and economic plans ,development plans, plans for natural hazards, activities , structures under continuous threats, points of weakness according to each sector with assessment of resource availability and definition of points of strength and weakness for emergency response organizations.
- Redefinition of adequate requirements and methodology of suitable response to the different types of crises events as well as procedure to limit expected impacts.
- Publishing and distribution of recovery plans and promoting its salient points, defining leading agencies of planning and implementation of recovery plans , defining priorities of coordination fields and establishment of joint work groups.
- Establishment of a system to ensure the precision and credibility of data uses to form emergency plans.
- Adoption of planning scenarios according to expected hazards events, damage and losses that could ensue and considering points of weakness of society and scenario analysis
- Managers of recovery processes of previous crisis events should participate in pre planning drills.
- Insertion of recovery planning in periodical reviews to monitor and assess the situation.

5- References:

1 - وزارة النقل–الهيئة المصرية لسلامة الملاحة البحرية–الإدارة المركزة للتفتيش البحري/ مركز المعلومات .Accident Report/lv بقطاع النقل البحري 2009/8/2 اسم التقرير 3.

2 - المؤتمر العالمي للأمم المتحدة هيوغو " 2005–2015"– بناء قدرة المجتمعات والأمم على مواجهة الكوارث والحد من مخاطرها– اليابان – كوبي - Hyogo frame work for action 2007: Making disaster risk reduction a priority، ch.1، 1.

3 – بعض مؤتمرات ومنظمات الأمم المتحدة الخاصة بمجال الكوارث التى تم دراستها:

- EWC III Third International Conference on Early Warning
- IFRC International Federation of Red Cross and Red Crescent Societies
- UN United Nations-UNDP United Nations Development Programme.
- UNEP United Nations Environment Programme.
- UN/ISDR United Nations International Strategy for Disaster Reduction
- UNOSAT United Nations initiative to provide the humanitarian community with- access to satellite imagery and Geographic Information System services.
- UNU-EHS United Nations University Institute for Environment and Human Security.
- PPEW Platform for Promotion of Early Warning.
- WMO World Meteorological Organization.

4 - Emergency Response Guidebook (First Responder's Guide for HAZMAT operations), DOT، 2000 www.tc.gc.ca/canutec/en/guide/guide.htm

5 - Environmental Protection Agency، Chemical Emergency Preparedness and Prevention Office U.S. EPA Web page: www.epa.gov/swercepp/ or www.epa.gov/ceppo.

6 - National Institute of Occupational Safety and Health (NIOSH) Publications Web page: www.cdc.gov/niosh/publistd.html.

7 - National Oceanic and Atmospheric Administration (NOAA) Web page: www.noaa.gov

8 - Occupational Safety and Health Administration (OSHA) Web page: www.osha.gov.

9 - Asian Disaster Preparedness Center Web page: www.adpc.ait.ac.th

10 - National Earthquake Information Center، U.S. Geological Survey Web page: neic.usgs.gov/

11 - National Landslide Information Center، U.S. Geological Survey Web page: landslides.usgs.gov/index.html.

12 - Canadian Centre for Emergency Preparedness (CCEP) Web page: www.ccep.ca.

13 - Disaster Recovery Institute Canada (DRI Canada) www.drie.org

14 - New England Disaster Recovery Information Exchange (NEDRIX) Web page: www.nedrix.com

15 - National Institute for Urban Search and Rescue Web page: www.niusr.org

16 - Public Risk Management Association Web page: www.primacentral.org

17 - Society for Risk Analysis Web page: www.sra.org

18 - "Dangerous Goods" List Server – Storage and Handling Commercial Products Web page: www.onelist.com/subscribe/DangerousGoods

19 - Emergency Management Discussion List Web page: http://groups.yahoo.com/group/emergencymanagement

20 - International Association of Emergency Managers (IAEM) American Society of Professional Emergency Planners (ASPEP)Web page: www.iaem.com.

21 - Disaster Preparedness and Emergency Response Association (DERA)Web page: www.disasters.org/dera/dera.htm.

22 - National Voluntary Organizations Active in Disaster (NVOAD) Web page: www.nvoad.org/.

23 - International Association of Emergency Managers (IAEM) (Formerly NCCEM) Web page: www.iaem.com/certification.html

24 - Business Continuity Institute (BCI) Web page: www.thebci.org

25 - دراسة أستاذ دكتور/ شريف عبد المعطى العربى – الجودة فى مجال النقل البحري – الأكاديمية العربية للعلوم والتكنولوجيا الإسكندرية – مؤتمر معهد التدريب البحري (2006).

26 – دراسة الربان / سعيد بلبع – منظومة دعم اتخاذ قرارات الربابنة علي عبارات الركاب– الأكاديمية العربية للعلوم والتكنولوجيا الإسكندرية – مؤتمر معهد التدريب البحري (2006).

27 – دراسة Dr/.Chinedum Onyemechi النظم المدمجة لإدارة الموانئ–الجامعة الفيدرالية للتكنولوجيا، اويرى، نيجيريا– الأكاديمية العربية للعلوم والتكنولوجيا الإسكندرية/ مؤتمر معهد التدريب البحرى (2007).

28 – دراسة دكتور مهندس / محمد محرم– منظومة الجودة البيئية لإدارة وتشغيل الموانئ البحرية "دراسة بميناء الإسكندرية"– مؤتمر معهد التدريب البحري (2009).

29 – دراسة Cap.Alian Michel Chauvel– مدير السلامة والبيئة والأمن البحري –النظام الأمني لنظم الإمداد بالموانئ – هيئة برو فيريتاس – فرنسا – مؤتمر معهد التدريب البحري (2009).

30 – دراسة مقدمة من/ نبيل فرج المحامى – توصيات بتعديل بعض نصوص مواد قانون التجارة البحرية رقم 8 لسنة 1990والقانون رقم 120 لسنة 2008الخاص بإنشاء المحاكم الاقتصادية

لمواكبه عصر التجارة الصناعة البحرية في العالم المتقدم– مؤتمر معهد التدريب البحري (2009).

31 – دراسة مقدمة من دكتور/ إسماعيل مبارك –هندسة القاهرة– إستراتيجية تطوير الموانئ المصرية– مؤتمر معهد التدريب البحرى (1999).

32 – دراسة مقدمة من دكتور/ شريف محمد ماهر عثمان هيكل – إعادة هيكلة التنظيمات بالموانئ لمواكبة التغيرات السريعة والمتلاحقة بالموانئ الحديثة– كلية النقل البحري الأكاديمية العربية للعلوم والتكنولوجيا والنقل البحري– مؤتمر معهد التدريب البحري (2007)

33 – دراسة مقدمة من Eng.Richard C. Larson& Kourosh Eshghi – معهد ماشوستس للتكنولوجيا– كمبريدج–الولايات المتحدة الأمريكية– الكوارث والدروس المستفادة من المائة وخمس عام الماضية 2008–www.emeraldinsight.com_Insight_ViewContentServlet_105Type=Art5-icle&Filename=_published_emeraldfulltextarticle_pdf_0730170105

34 – الدراسة المصدرة بكتاب "الاختفاء بدون أثر"للمؤلف Barry Turner فى عام 1978– Emeraldinsight.Book.

35 – دراسة مقدمة من دكتور. بروفسير/ اليكسندر جوليلموس – التطوير لنظم السلامة البحرية"منع وإدارة الكوارث Alexander Golilmous "Emerald" ISSN 6-3562 09 2004

36 – دليل الأمم المتحدة – الخاص بدمج آلية التطوير "مشروع المساعدة الدولية العام للدول "و" الحد من أخطار الكوارث"– ابريل 2009. DRR "UNCCA "

37 – المؤتمر العالمي للتنمية المستدامة – التغير المناخي للتنمية المستدامة في المناطق الساحلية في مصر أد/محمد عز الدين الراعى –12/11– نوفمبر 2004 JT00178091

38 - Sestini G (1989). The implications of climate changes for the Nile Delta. Report WG 2/14. UNEP/OCA، Nairobi www.emeraldinsight.com/0965-3562.htm

39 El Raey M، Nasr S، Frihy O، Desouki S، Dewidar Kh (1995) Potential impacts of accelerated sea-level rise on Alexandria Governorate، Egypt. J Coast Res 14:190–204

40 - El Raey M، Frihy O، Nasr SM، Dewidar Kh (1998) Vulnerability assessment of sea level rise over Port-Said Governorate، Egypt. Environ Monit Assess 56:113–128

41 - Carter TR، Parry ML، Harasawa H، Nishioka S (1994) IPCC technical guidelines for assessing climate change impacts and adaptations. WGII of IPCC. WMO/UNEP،Geneva

42 - Delft Hydraulics (1991) Implications of relative SLR on the development of the lower Nile Delta، Egypt. Pilot study for a quantitative approach. Final Report، CRI

43 - كتاب إدارة الخطر والتأمين د/عبد الحليم القاضى – د/ممدوح حمزة– د/مصطفى مظهر– 2007جامعة الإسكندرية.

44 - Quarantelli، E.L. (1998)، What Is a Disaster?، Routledge، London

45 - The University of Delaware's Disaster Research Center (DDRC، available at: www. udel.edu/DRC /preliminary/ pp304.pdf).

46 - Mileti، D. (1999)، Disasters by Design: A Reassessment of Natural Hazards in the United States Joseph Henry Press، Washington، DC.

47 - Leon Abbott، P. (2005)، Natural Disasters، 5th ed.، McGraw Hill Science، New York، NY.

48 - Blaikie، P. (1994)، Risk: Natural Hazards، People's Vulnerabilities and Disasters، Routledge، Florence، KY.

49 - Yang، D. (1996)، Catastrophe and Reform in China، Stanford University Press، Stanford، CA.

50 - Guinness (2005)، Guinness World Records 2005: Special 50th Anniversary-Edition، Guinness Publisher، Enfield.

51 – دراسة (الكوارث التى تحدث بفعل الإنسان، وجهات النظر الخاطئة).

52 - Nick Pidgon & Barry Turner" جامعة "'Wales، Bangor' Original Thinking– Emeraldinsight-Issue.1999

52 – "بحث إدارة الأزمات البحرية والسلوك البشري– ربان/ محمد طلال الشواربي– الدكتور/ أحمد عبد الحميد الكسار"– الأكاديمية العربية للعلوم والتكنولوجيا 2005.

53 – ميناء الإسكندرية البحري /إدارة شرطة الحماية المدنية–عقيد.حاتم عباس/ عميد.لمعى السيد.

54 - World Disasters Report (2005)، World Disasters Report 2005، International Federation of Red Cross and Red Crescent Societies، Zagreb.

55 – بيمك، إصدارات، الإشراف العلمي د. عبد الرحمن توفيق، الجودة الشاملة : الدليل المتكامل للمفاهيم والأدوات، (القاهرة : مركز الخبرات المهنية للإدارة "بيمك". 2003 م).

56 – غراهام، روبرت ج.، راندل ل. إنجلاند، ترجمة أيمن الطباع، تكوين البيئة المناسبة للمشاريع الناجحة: بحث فى كيفية إدارة المشاريع، (الرياض: مكتبة العبيكان، الطبعة الأولى، 2000 م)

57 – عالم الإحصاء الأمريكي ادوارد ديمينج–احد رواد الجودة.

58 – بن سعيد، خالد بن سعد، إدارة الجودة الشاملة تطبيقات على القطاع الصحي، (الرياض: الطبعة الأولى، 1997 م).

59 - & ISO14001 Tool kit / CQI's Body of Quality Knowledge http://www.thecqi.org/Knowledge-Hub/Knowledge-portal/ www.iso.org IRCA Knowledge Bank http://www.irca.org/auditorcert/auditorcert_6_2.html.

- Australian Standard 'AS-NZS 4360-1999" DETEs، Risk management framework. http://www.standards.com.au
- Nautical Analysis- Maritime Safety Authority –New Zealand Wellington www.osh.dol.govt.nz. www.eea.co.nz
- Guidelines for Port & Harbour Risk Assessment and Safety Management Systems in New Zealand- from www.msa.govt.nz.

60 - WELLINGTON HARBOUR Operational Risk Assessment-Marico Marine Issue: Issue 1.1/ Report No: 05NZ104

61 - International Strategy for Disaster Reduction (ISDR) - UN 2th World Conference on Disaster Reduction(WCDR) 'Hyogo Framework for Action 2005-2015 Kobe، Japan'- UN/ISDR. 2006. Developing Early Warning Systems، Third International Conference on Early Warning، 27-29 March 2006، Bonn، Germany- UN/ISDR and UNDP. 2006. Integrating Disaster Risk Reduction into CCA and UNDAF- UNDP/BCPR. 2005. Post-Disaster Recovery - Guidelines (Version 1) - FRC. Guidelines for Vulnerability and Capacity Assessment- IFRC. 2005. Guidelines for emergency assessment.

62 – الأهمية الاقتصادية لميناء الإسكندرية د/ علا عرفة (Trozzi, C. Vaccaro, R. 2000).

63 - (ABP، Southampton 1977، ECO information، 1999) ola

64 - National off Shore Petroleum Safety Authority-2007-08 www.nopsa.gov.an

65 - Australian Bureau Statistics

- INTERNATIONAL MARITIME ORGANZATION (I،M،O) International Maritime Dangerous Goods (IMDG Code).
- INTERNATIONAL MARITIME ORGANZATION (I،M،O) International Maritime Security Code (ISPS Code-2003).

66 – معهد بريمن للإحصاء 2000عام– دراسة أنواع وأسباب الحوادث البحرية - Breimn Institution.

67 – الإدارة المركزية للتفتيش البحرى – الهيئة المصرية لسلامة الملاحة البحرية – بنك معلومات وزارة النقل البحرى – جمهورية مصر العربية – تقرير accdrep 2003.

68 – هيئة ميناء الإسكندرية– الإدارة المركزية لحركة البضائع – مركز المعلومات

69 – شركة الإسكندرية لتداول الحاويات والبضائع– إدارة الحركة– قسم البضائع الخطرة

70 - INTERNATIONAL MARITIME ORGANZATION (I،M،O) International Maritime Dangerous Goods (IMDG Code).

- INTERNATIONAL MARITIME ORGANZATION (I،M،O) International Maritime Security Code (ISPS Code-2003).

71 – القوانين المحلية الملزمة

72 – القوانين الدولية الملزمة

73 – قوانين وقواعد نقل وتداول البضائع الخطرة "IMO"

74 - Office for Foreign Assistance/Centre for Research on the Epidemiology of Disasters have a mandate from UN to monitor disaster impacts، this paragraph has therefore been revised based on latest data from Centre for Research on the Epidemiology of Disasters' EM-DAT database over the two past decades 1988-2007، excluding 'accidents'.

75 - The World Bank's Hazards of Nature، Risk to Development (2006)

76 - Neumayer، Eric and Thomas Plümper، The Gendered Nature of Natural Disasters، London School of Economics (2007)

77 - United Nations Development Group -Disaster Risk Reduction April 2009.

78 - UN-Country Team.

79 - Hyogo framework for action 2005-2015; building the resilience of nations and communities to disasters (HFA)

(National Association of Safety Professionals 800-922 2219.HAZWOPER OSHA Risk assessment Guide lines United Kingdom NTS-UK). www.hse.gov.uk (http://www.osha.gov

80 - Office case study Warehouse case study

SCOTLAND'S CANALS-an asset for the future - ISBN 0-7559-1312-9-October11،2002-

http://www.scotland.gov.uk/Publications/2002/10/15571/11777

81 -- COAST PROTECTION ACT 1949 - Section 34-Safety of Navigation http://www.scotland.gov.uk/Topics/Transport/ferries-ports-canals/17699/9608

APPENDIX 1

Scope and applicability:

Include the loading, unloading , movement or other handling of cargo, ship's stores or gear within the terminal or into or out of any land carrier , holding or consolidation area, any other activity within and associated with the overall operation and functions of terminal, such as the use and routine maintenance of facilities and equipment. All cargo transfer accomplished with the use of shore-based material handling devices shall be regulated by this checklist.1-the provisions here do not apply to the following: A-Facilities used solely for the bulk storage, handling and transfer of flammable, non flammable and combustible liquids and gases. B-Facilities subject to the regulations of the Office of Pipeline safety regulation of the Materials Transportation Bureau, Department of Transportation , to the extent such regulations apply C-Fully automated bulk coal handling facilities contiguous to electrical power generating plants.

Contents:

I. Cargo Transport Units Checklist
II. VESSEL (Working Surfaces- Hatches-Cargo handling Gear)
III. Handling and Storage of Hazards Materials
IV. Handling Equipments & Storage of Cargo
V. Safe Working Conditions & Environmental Activities
VI. Related Terminal Activity, Operations & Equipments
VII. Emergency Plans

References:

1. OSHA Marine ports Standard 1917 / 1918
2. OHSAS Safety Standard 18001
3. SOLAS Convention R.II-1-Parts C / D
4. MARPOL Annex I / i / ii / v / R.16/17/19
5. ISM Code
6. ISPS Code
7. IMDG Code -Vol. I & III
8. E.N.V. National Law No. 4.