

CHALLENGES OF OIL SPILL RESPONSE CAPABILITIES IN EGYPT

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Abstract

The rapid growth of economic development in Egypt over the last few decades has led to a numerous offshore projects, expanding maritime facilities and a vast spread of coastal tourist developments. However, such growth was not complemented by adequate capacity building of existing national oil spill response facilities. This has resulted in imbalance of the degree of environmental exposure and level of preparedness to respond to potential oil and chemical spills that may occur in these highly sensitive coastal areas and marine environment of Egypt.

Both the Red Sea and Mediterranean coasts of Egypt support thriving ecosystems and a substantial tourist industry centered around golden beaches, crystalline waters, and a plethora of plant and animal species that occur nowhere else on earth. At the southern tip of the Sinai Peninsula Ras Mohammad National Park alone shelters over 130 species of coral and 116 species of fish. Only a few kilometers away, the Gulf of Suez is one of the world's busiest industrial shipping routes. More than 117 million tons of oil pass through Egyptian waters each year and cross Egypt's main land through the SUMED pipeline from Ain Sokhna terminal (at the head of the Gulf of Suez) to Sidi Kreir terminal on the Mediterranean. Another 28 to 30 million tons of oil go through the Suez Canal directly and there is 15000 ship movement every year in Egypt.

A National Oil Spill Contingency Plan (NOSCP), prepared in 1986 by the petroleum sector, has been updated by the Egyptian Environmental Affairs Agency (EEAA) in 1998. The NOSCP is the national framework for action in the event of an oil pollution incident. Updating, the NOSCP was just the beginning and not the end of the road. Challenges to take forward necessary action at all response levels to ensure efficiency of application of the NOSCP are enormous.

Over the last few years concerned parties and stakeholders has conducted several investigations and assessment to identify critical areas of concern and high exposure. Many assessment reports has identified the gaps and addressed the required measures needed to enhance bridging the gaps and restore the required balance between exposure and preparedness and recover from this situation.

This paper demonstrates present status of imbalance between environmental exposure and oil spill response preparedness along Egyptian coastline, describes current status of the NOSCP, discusses challenges to ensure credible response to potential major spills and provide options to face these challenges.

Introduction

The National Oil Spill Contingency Plan (NOSCP) was prepared in 1986 by the petroleum sector with some Canadian aid. The Egyptian Environmental Affairs Agency (EEAA) then updated it in 1998 with some Danish aid. The NOSCP is the national framework for action in the event of an oil pollution incident. It is based on three levels of response called tiers:

- ? **Tier One:** is essentially the responsibility of and all offshore petroleum activities, oil handling facilities, (offshore installations; terminals, refineries; etc), individual port authorities and the Suez Canal Authority
- ? **Tier Two:** is essentially the responsibility of EEAA. Oil spill response with contingency plans for geographical sectors of the Egyptian coast should be capable of dealing with up to 1,000 tons each
- ? **Tier Three:** Handling spills larger than 1000 tons is the responsibility of EEAA to coordinate the response to such major oil spills and establish a minimum level of pre positioned oil spill combating equipment in accordance with the OPRC Convention.

Updating, the NOSCP was just the beginning not the end of the road. Therefore, it is necessary to take forward the action at all above three levels of response to ensure efficiency of application of the NOSCP. On the other hand numerous offshore and inshore developments took place along the Egyptian Coastal zone without parallel development of Oil Spill response facilities since 1986. Such situation resulted in a severe imbalance between exposure and preparedness. Current challenges facing concerned authorities and industry to improve oil spill response capabilities in Egypt are significant and should be promptly addressed to ensure effectiveness of the NOSCP.

Current Status of NOSCP

Background

The first National Oil Spill Contingency Plan (NOSCP) was prepared by the Petroleum Sector in 1986 with some Canadian aid. At that time, the Ministry of Maritime Transport (MMT) was designated as the responsible lead Agency. This responsibility was then passed on to the Egyptian Environmental Affairs Agency (EEAA) in 1994 upon the promulgation of the new Law for the Environment (Law No. 4 of 1994).

The 1986 contingency plan envisaged plans for the establishment of a state wide oil spill combat system to be developed under government authority in parallel to the capabilities being developed within the petroleum sector and the ports and Lights Authority, PLA.

After 10 years from the initiation of the NOSCP and the transfer of its ownership to the EEAA, it was decided to revise and update the NOSCP. This was done with a Danish aid over 2 years and was completed in 1998. Since then the plan has not been fully integrated. Figure. 1 shows the geographical distribution of present oil spill response facilities along the Egyptian Coastline. It clearly shows the coverage imbalance between the Mediterranean coast and the Red Sea coast including the Gulf of Suez and Gulf of Aqaba.

The updating project has improved the NOSCP instrumentation where:

- a legal instrument was prepared to provide the legal basis for the NOSCP and to implement Egypt's obligations under the International Convention for Oil Pollution Preparedness, Response and Co-operation, 1990 (OPRC);
- a framework was prepared to enable the Government of Egypt to claim compensation for environmental damage from polluters;
- a mechanism was established to draw upon the financial resources of the Environmental Protection Fund to enable EEAA to reimburse combating and clean-up costs, including responding to pollution from unknown sources;

• a number of technical studies produced reports on:

* marine currents

* meteorology and wind data
* predicting the fate of an oil spill in Egyptian waters
* a national risk assessment
* a national equipment review

* implementation and enforcement of the MARPOL, 73/78 Convention

- the entire Egyptian coastline has been surveyed and its ecological and economic sensitivity analyzed. The results have been mapped in a Geographic Information System (GIS) which is available at EEAA;
- a 24 hour operational response center (the Central Operations Room) has been established at EEAA Headquarters and equipped with computers and communications equipment. It is continuously manned by personnel who have been trained and are qualified in communications procedures;
- EEAA has entered into a 10 year Agreement with the Arab Academy for Science, Technology and Maritime Transport (AASTMT) under which the Academy is running NOSCP training courses under the auspices of EEAA;
- EEAA has established a permanent National Contingency Planning Committee to oversee the development and implementation of the NOSCP. EEAA has also established liaison groups with the petroleum and the maritime sectors.

However, with all these achievements the NOSCP is not functioning fully or effectively operable to cope with the ever increasing offshore petroleum activities, maritime transportation and tourism development. Specially that these activities are taking place in a very environmentally sensitive coastal zone, (see figures 2 and 3).

This situation has created a significant imbalance between exposure and preparedness.

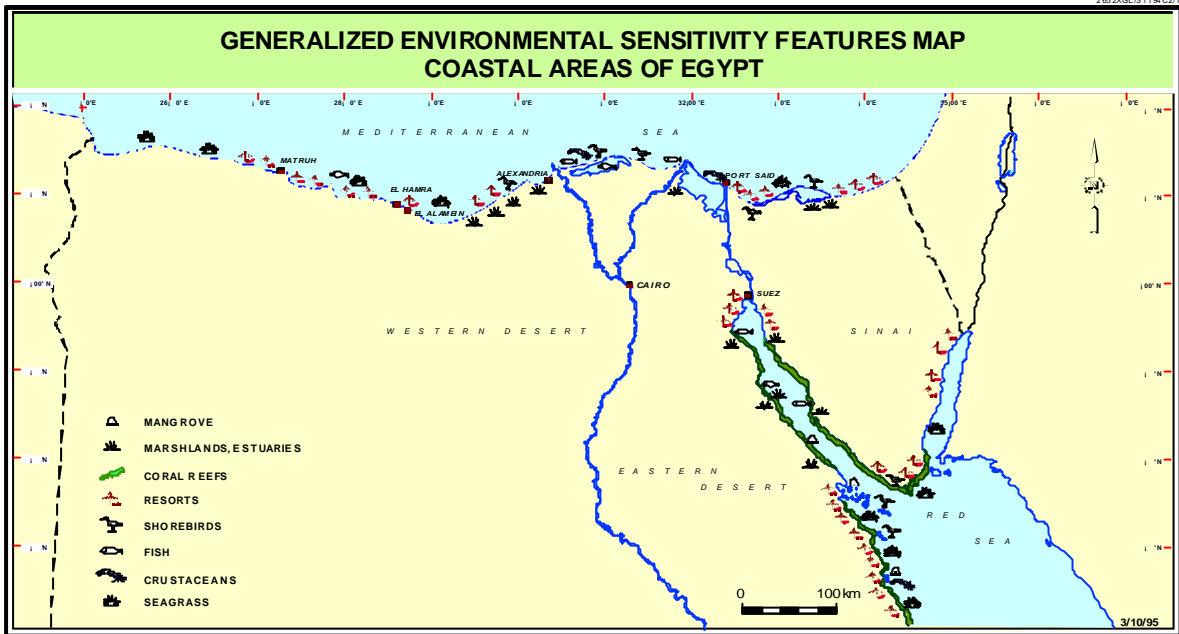


Figure 2. Environmental Sensitivities



Fig 3 Coastal Activities

Appendix A.2.11

Current Status of Oil Spill Response

The oil spill response capability can be measured by simple index relating magnitude exposure to level of preparedness several relevant parameters contributes to the index . Each parameter is assessed through a certain evaluation process to determine its impact on the magnitude of exposure and level of preparedness. Following are some of the factors assessed in this measurement and the result of its application to prevailing situation in Egypt is given in figure 4.

Exposure

Factors considered for exposure include:

- Length of sensitive coastal zone
- Number & significance of identified areas
- Accessibility of sensitive areas
- Probability of impact
- Magnitude & quality of risk assessment
- Role of stakeholders
- Competency & skills of players
- Media anticipated reaction
- Community & NGOs anticipated reaction
- Number of Terminals
- Number of tankers movement per year
- Total length of marine pipelines
- Total quantity & types of oils handled / y
- Number of offshore drilling rigs
- Number & location of production platforms

Preparedness

Factors considered for preparedness include:

- Adequate assessment of potential threats
- Mapped sensitivities of surrounding areas
- Tier response risk analysis
- Integrated contingency plans
- Roles and Responsibilities defined & agreed
- Well informed and educated Media
- Adequate response equipment
- Adequate geographical coverage of response centres.
- Response management exercised
- Equipment deployment regularly exercised
- Regular audits performed and audit findings addressed
- Regional assistance integrated

Response Index

Assessment of exposure magnitude and level of preparedness for different coastal areas of Egypt including the River Nile (Figure 4) indicates a disturbing situation which needs to be rectified.

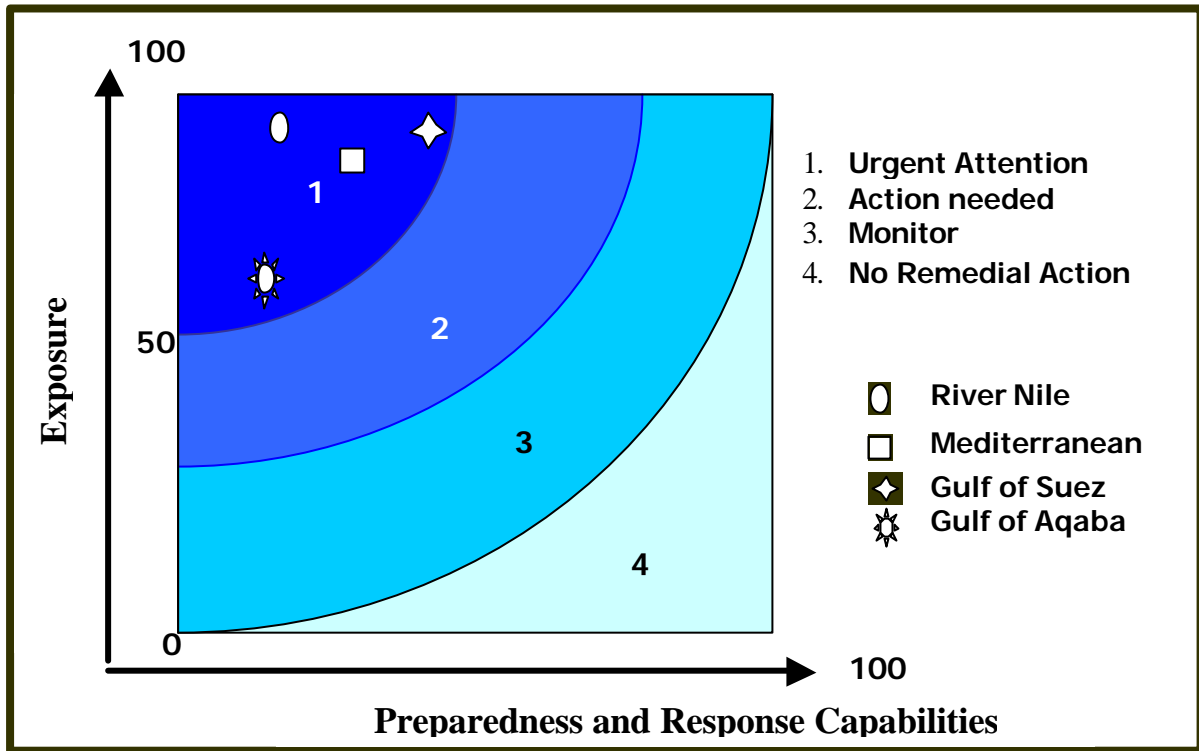


Figure 4 Response Index

The Challenges

To ensure effectiveness of the NOSCP and provide for its efficient implementation several actions need to be promptly taken at all its levels. The national framework of the NOSCP is based on three levels: Tier One, Tier Two and Tier Three. The following sections discuss the challenges of each tier.

Tier

One

The Tier 1 oil spill response plans are the foundation pillars of the NOSCP. Without good Tier One plans in the petroleum sector, the Suez Canal Authority and the ports, backed up by adequate and appropriate expertise and equipment, the NOSCP will not function effectively.

All those responsible for preparing local oil pollution emergency plans should have prepared such plans, or revised and updated existing plans to ensure that they are consistent with the National plan. This requirement is far from complete and needs to be implemented immediately.

The requirement for ports, terminals, offshore installations and all oil handling facilities to prepare local oil pollution emergency plans is an obligation of OPRC, to which Egypt is committed.

Action needed by Tier 1 Players

The tier 1 players such as ports authority (under the supervision of MMT), the Suez Canal Authority and the petroleum sector (in co-operation with EGPC) need to:

1. prepare or revise local (Tier One) oil pollution emergency plans which are consistent with the policies and procedures laid down in the NOSCP;
2. submit such plans to EEAA for approval. The plans shall:

* evaluate the risks arising from operations and plan for most likely and worst case Scenarios.

* assess the use of dispersants as part of the response strategy in the light of EEAA's policy on the use of dispersants and the application guidelines set out in the NOSCP;

* evaluate the equipment stockpiles and ensure that they are adequate to deal with the most likely risk scenario without recourse to external assistance. This should include sufficient resources for shoreline protection (based on spill prediction models) and shoreline clean-up. If necessary, a planned equipment purchase program should be prepared and discussed with EEAA as part of the oil pollution emergency plan;

3. ensure that their operational staff receive regular training, including training on the NOSCP courses run by EEAA at AASTMT, and that an adequate annual budget is set aside for training;

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4. participate in exercises, including national exercises organized by EEAA in accordance with the NOSCP.

Action needed by the Regulators

The regulators need to:

1. evaluate and approve Tier One oil spill response plans;
2. consider applications for "standing approvals" for the use of dispersants and ensure that such approvals are given only in conformity with EEAA's policy and guidelines on the use of dispersants;
3. evaluate individual Port Authorities', Suez Canal Authority's and Petroleum Sector's equipment stocks in the light of the authorities' own risk assessments and advise on adequacy;
4. organize regular NOSCP training programs.
5. maintain an annual exercise program in accordance with the decisions of the National Contingency Planning Committee:, and in consultation with all stakeholders.

6. offer advice and assistance to the petroleum sector port authorities, the Suez Canal Authority, and other authorities, whenever requested, in order to enhance the overall oil spill response capability in Egypt.

Tier Two

Most oil spills would be dealt with in the context of the Tier One oil pollution emergency plans where the responsible authority will manage the response to the spill and notify EEAA using the OILPOL format.

The Tier Two contingency plans will be activated whenever:

- The oil pollution incident escalates beyond the capabilities of the Tier One plan to deal with;
- or
- The EEAA is called upon to deal with an unknown source of oil pollution.

It is the responsibility of EEAA to develop Tier Two contingency plans for geographical sectors of the Egyptian coast (see below). In parallel, EGPC should develop its own Tier Two contingency plan arrangements for organizing response up to the 1,000 tone level within the petroleum sector.

Action needed by Regulators

The strategy of the Regulators at Tier Two level should focus on preparing Tier Two contingency plans for the following geographic regions:

- ⇒ Mediterranean coastline
- ⇒ Gulf of Suez (in close co-operation with EGPC and Red Sea Ports Authority) Gulf of Aqaba (in close co-operation with the National Parks Department).
- ⇒ Red Sea proper
- ⇒ Nile River

The oil pollution combating centres planned for Sharm El-Sheikh and Nuweiba should be the focal points of the response action in the Gulf of Aqaba Tier Two Contingency Plan.

For each of these Tier Two contingency plans, it is necessary to:

1. improve the knowledge of surface currents and local wind conditions in order to better predict the likely movement of oil spills;
2. identify "Sacrificial beaches" where, circumstances permitting, it is better to deflect oil ashore rather than let it pollute more sensitive coastal resources;
3. determine appropriate clean-up strategies for the different beach types in the region in accordance with the policies of the NOSCP;

4. identify, in advance, local resources for beach clean-up operations;
5. develop disposal options for recovered oil and oily wastes in close cooperation with EGPC and the local Governorate;
6. organize regional exercises at the Tier Two level.

Tier

Three

It is the responsibility of EEAA to coordinate the response to a major (Tier Three) oil pollution incident. Where local resources exist in ports or the petroleum sector, these will be called upon to assist in the response action. Where the oil pollution incident involves a tanker owned by or carrying the oil of one of the petroleum companies operating in Egypt, the representative of that company will be a member of the Emergency Response Committee established by EEAA and he may be asked to activate a response from the petroleum industry's stockpile of equipment in Southampton, UK. Where appropriate and relevant, Egypt's partners in sub-regional contingency plans may be asked for their assistance.

In addition, in accordance with article 6(2)(a) of the OPRC Convention, Egypt is obliged to establish "a minimum level of pre-positioned oil spill combating equipment, commensurate with the risk involved ..." The Convention recognises that this obligation may be effected by each State Party "either individually or through bilateral or multilateral co-operation and, as appropriate, in cooperation with the oil and shipping industries, port authorities and other relevant entities."

In the Gulf of Aqaba, this obligation to provide a minimum level of equipment is being met through the establishment of the two combating centres at Sharm El-Sheikh and Nuweiba. These centres are being established by EEAA, with oil spill combating equipment being provided through the delegation of the European Community. However, tremendous effort is needed to upgrade these centers to sub regional level

There are two regions where local resources do not exist or are inadequate to deal with the perceived risk of oil pollution the Red Sea proper and the Mediterranean

Action needed for the Red Sea

There are two reasons for Egypt to develop its response capability in the Red Sea: one is national and the other is regional. Much has been written about the unique ecosystem of the Red Sea and the need for Egypt to protect its share of this environment from threats such as uncontrolled coastal development and oil pollution. There are three indices which justify the establish of a combat center in the Red Sea for national reasons:

1. The increasing tourism development in the Red Sea south of Hurghada and the need to protect these resources, as well as the ecological resources on which they are based, from oil pollution;
2. The increasing exploration for oil which is going on in the region as companies exercise their concessions and the increased risk of oil pollution incidents which will accompany such activity;

3.The expansion of protected areas along the Red Sea coastline.

On the other hand there is a regional need for a Red Sea Marine Emergency Mutual Aid Center in Egypt as she is a Contracting Party to the Jeddah Convention for the Conservation of the Red Sea and Gulf of Aden Environment. As part of the arrangements for implementing this regional convention, the Governments of the region have agreed upon the necessity to establishing a Marine Emergency Mutual Aid Center (MEMAC). It has been agreed in principle that the Government of Egypt should act as host for MEMAC. The Center should have primarily a coordinating role in the exchange of information, training programs and monitoring.

Action needed for Mediterranean

The Mediterranean already has some equipment at strategic locations: the EGPC stockpile at French Harbor; small quantities of equipment at the ports of Alexandria and Damietta to deal with pollution incidents in the-ports; and the Suez Canal Authority stockpile at Port Said. However, there is no local center for coordinating a Tier Two response in the Mediterranean region and no equipment west of Sidi Kerir or east of Port Said.

The highest risk area for an oil pollution incident is in the vicinity of tankers calling at SUMED's Sidi Kerir terminal. The risk of collisions involving ships entering or leaving Alexandria port is also relatively high. It is logical that the major equipment stockpiles should focus on these areas.

However, there is also a need to have a shoreline protection and shoreline cleanup capacity in the areas west of Sidi Kerir and east of Port Said. In particular, the coastline east of Port Said suffers from a heavy incidence of tar balls, which pollute the beaches. It is likely that this is the result of tankers reducing their ballast before entering the Suez Canal.

The strategy for improving the situation of the Mediterranean should focus on:

1. establishing a local response center for the Mediterranean. The Arab Academy for Science, Technology and Maritime Transport (AASTMT) could be a suitable choice as it is linked to ECAA's Central Operations Room and has compatible computer equipment and software resources;
2. enhancement of the response capability of SUMED at Sidi Kerir and EGPC at French Harbor;
3. establishing an oil pollution-combating center at El Arish. Preferably within El Arish port;
4. establishing a small shoreline clean-up center at Marsa Matrouh;
5. dedicated combat ship for the long and busy 1000 Km. Mediterranean coast

Inland

Waters

The NOSCP does not cover oil spills in Egypt's fresh water system; nor does it cover oil spills on land. It is essential that these issues be addressed in near future. Focus should be directed to:

1. establish an oil spill contingency plan for Lake Nasser and the River Nile. This contingency plan should also address the problem of sources of oil pollution into the these aquatic resources;

2. establish appropriate arrangements for dealing with oil spills arising from accidents when oil is transported by road or rail transport.

Conclusion

Oil is and will continue to be, for decades to come, the main source of energy for both the developed and developing countries all over the world. Sea transport will continue to be the main transportation mean to move oil and oil products from producing countries to consumers all over the world. In spite of continuous improvement in safety of maritime transportation, tankers industry and ports facilities, oil spills incidents and vessels accidents will continue to occur. Therefore, countries should have in place effective and integrated National Oil Spill Contingency Plans that can promptly respond to these incidents and deal with preventable consequences.

Egypt, with its long and sensitive coastline, which is situated in the center of the marine transpiration lanes of oil from east to west, has already a National Oil Spill Contingency Plan in place since 1986 and has signed all relevant international and regional conventions. However, in as much as the NOSCP is an essential requirement, the effective integration of its components is crucial for its successful implementation when activated. Having a NOSCP in place is not the end of the road. Its integration and regular testing will be the key for its effectiveness.

References:

1. Guidelines on Oil spill dispersant application and environmental considerations. IMO London, 1982 IMO/UNEP
2. Characteristics of petroleum and its behavior at sea, CONCAWE, Report No. 8/83
3. A Field guides to inland oil spill clean up techniques, CONCAWE, Report no. 10/83.1983
4. Oil spill response: options for minimizing adverse ecological impact, API pub.No. 4396, 1985
5. National Oil spill Response Plan Egypt 1986.
6. Response to marine oil spills, 1987. International Tanker Owners Pollution Federation.
7. Environmental Recovery in Prince Williams Sound and Golf of Alaska 1990, J.M. Baker
8. International convention on oil pollution preparedness, response and cooperation,

IMO,1990

9. A guide to contingency planning for oil spills on water, MOSAG publication 1991, SIPC
10. SENV Environmental Management Manual 1993
11. Putting Dispersants to work overcoming obstacles, International Oil Spill Conference. 1997
12. National Oil Spill Contingency Plan Egypt, EEAA, 1998
13. BMES Report on OSR status in Egypt, 2000
14. Global Challenges To Preparedness And Response Regimes, Issue paper, IOSC 2003
15. Oil Spill Prevention: A Proactive Approach, Issue paper, IOSC 2003