

## CHALLENGES FACING MYANMAR IN DEVELOPING A NATIONAL CONTINGENCY PLAN FOR MARINE POLLUTION

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### ABSTRACT

Myanmar became signatory to the OPRC 1990 in December 2016 and hence requires applicable vessels, ports and offshore facility operators to develop and maintain oil spill contingency plans coordinated with the National Contingency Plan. At about the same time, a super tanker terminal was constructed at Kyaukpyu deep-seaport on the west coast of Myanmar. This project made Myanmar an oil receiver country thus raising the risk of significant oil pollution incidents. To mitigate the risk, Myanmar developed its National Contingency Plan for Marine Pollution (NCP) in order to establish a coordinated oil spill preparedness and response policy and to align with the Regional Oil Spill Contingency Plan (ROSCP) developed under the ASEAN MOU for Joint Oil Spill Preparedness and Response (ASEAN, 2014).

Even with the NCP, Myanmar is still encountering a number of challenges to be fully prepared for severe and disastrous pollution incidents. Chief among these is the establishment of a proper spill response capability including trained personnel and a stockpile of appropriate response equipment. Many options are being considered: government funding; establishing a mutual aid program led by industry; contract bases; or some combination of these.

This paper looks at the actions Myanmar is taking to develop a state of the art NCP that is appropriate for Myanmar and the Region. The paper also discusses some of the key

challenges Myanmar is facing, including transboundary issues and the solutions being considered and/or adopted to address such challenges.

## **INTRODUCTION AND BACKGROUND**

Myanmar is a littoral State sharing common maritime and land boundaries with its neighbors, located at the crossroads between the Indian and the Pacific Oceans and thus at the center of the tanker routes connecting the oil rich Middle-East States and the high oil demand countries of East Asia. Myanmar has a wide-ranging coastline and a rich fertile coastal plain with productive offshore waters. Previously, Yangon was the only major seaport. Today there are a number of deep-sea ports being developed within special economic zones and numerous offshore drilling blocks being explored. In addition, shipping traffic, including many weekly VLCC transits, becomes ever more congested. As a result, the pristine coastline of Myanmar and its coastal environment are under ever higher threats of maritime incidents.

To meet the energy demands of China, Myanmar recently constructed the Kyaukpyu deep-sea port in the Rakhine region (here on out referred to as Made` Island port) on the west coast of Myanmar. Oil received at that port is transported via pipeline to China. In addition, a number of oil terminals and general cargo wharves have been increasing along the Yangon River, causing additional oil and product imports, including bunker fuels and even further vessel congestion.

In its offshore waters, Myanmar has continued to open offshore blocks for exploration and production within its Exclusive Economic Zone (EEZ) thus also raising the risk of marine pollution from possible offshore incidents. These risks threaten coastal habitats, beaches, the tourist industry, sea birds, marine life, mangroves, coastal installations and the fishing industry. Being prepared to respond to a major oil pollution incident has become a high priority issue for the Myanmar Government. Upon completion of Made` Island port, the Myanmar Department of Marine Administration (DMA) directed the port operator to develop a spill response plan that was completed in May 2015. In April 2016, the IMO and the DMA held a

joint workshop for the development of Yangon River Oil Spill Contingency Plan (YOSCP) and the Myanmar NCP. This workshop provided fundamental information on oil spill contingency planning and displayed models for continuation of the planning process. The outcomes of the workshop included a draft plan with several recommendations and the establishment of a Task Force to conduct follow-up actions. Actions taken to date include:

- Development of the draft YOSCP which was submitted to the Ministry in February 2017;
- Signing the International Convention on Oil Pollution Preparedness, Response and Co-operations (OPRC) 1990 on 15 December 2016;
- Signing the 1992 Civil Liability Convention on 12 July 2016; and
- Signing the 2001 BUNKER Convention on 19 January 2018.

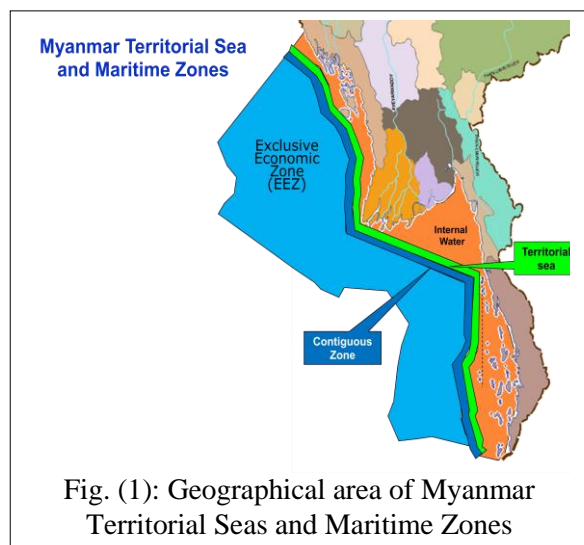
To develop the NCP, a National Task Force (NTF) was formed with approval of the Ministry of Transport and Communications. It was headed by the DMA and composed of twenty-two members from relevant government agencies, representatives from various ports, the offshore sector, and also local and international consultants from Norwegian Coastal Administration (NCA) including the IMO-IPIECA Global Initiative for Southeast Asia (GISEA) Project Coordinator. The deadline for completing the draft NCP was December 2018.

### **Myanmar National contingency plan: what it includes**

The NCP embraces all stakeholder arrangements to promote a rapid and cooperative response to oil spills occurring within the area defined in the Plan. It is complemented by local and individual plans such as the YOSCP and Made` Island port OSCP. The NCP also includes a mechanism for seeking international assistance and support.

As the NTF began their work, they found, for the most part, assigning the roles and responsibilities of the government authorities and private industry (including responsible parties) were in some agreement. Disagreements, though, did arise when it came to formulating various response strategies including whether to take the “do-nothing” approach. Although the principles of NEBA and SIMA are not easily understandable, the GISEA project coordinator

resolved these arguments. Finally, the English version of the plan was finished in December 2018.



The NCP covers the geographical area as defined in the Myanmar Territorial Seas and Maritime Zones Law as in Fig. (1). The area of responsibility for the NCP includes all the areas offshore within the 200 nautical mile EEZ and all the coastal waters of Myanmar. The area of interest also applies to other areas outside the area of responsibility that may affect the

country. As oil spills have no borders at sea, any spills in the area of interest outside the EEZ need to be monitored in co-operation with neighboring countries in order to mitigate the consequences of the incident.

### Transboundary issues

Responding to transboundary pollution incidents is one of the key elements of the ASEAN MOU on ASEAN Cooperation Mechanism for Joint Oil Spill Preparedness and Response. The MOU was signed in Mandalay, Myanmar on 28 November 2014. The Parties to the MOU are the ten ASEAN Member States. The MOU aims to promote a regional collaborative mechanism for building capacities and capabilities in preparedness for response to oil spill incidents, as well as for promoting mutual assistance in preparing for, controlling and combating oil spill incidents in the ASEAN region. Myanmar has been working closely with the other signatories in order to implement a ROSCP. Cooperation mechanisms for oil spill incidents principally focus on two key circumstances: Those incidents affecting or likely to affect the marine and coastal environment of one or more Parties; and those incidents exceeding the response capacity of one country (ASEAN, 2014).

## **CHALLENGES IN THE DEVELOPMENT OF NCP**

### **No single legislation**

The first challenge for the NTF was determining what legislation Myanmar already has regarding marine pollution incidents and how they would tie in with the recently ratified mandatory requirements embodied in international conventions: MARPOL, OPRC, CLC and BUNKER Conventions. Analysis by the NTF found that there is no single legislation with the provisions directly addressed to prevention of marine pollution or liability and compensation for oil pollution damages. However, it was also observed that several domestic legislations such as the Environmental Conservation (EC) Law, Myanmar Port Authority (MPA) Law and National Disaster Management (NDM) Law relevant to preparedness and response to marine pollution incidents are already in place.

### **Unclear designated authority**

The next challenge was the fact there is no clear dedicated authority responsible for overseeing and enforcing marine pollution preparedness and response requirements. Since the NCP is based on the multiple laws, it can lead to an unclear mandate and conflicts between the ministries concerned who are legally responsible. Most countries indicate a single government entity to take the lead and thus there is clarity as to “who is in charge”. This stalemate needs to be solved by the National Disaster Management Committee (NDMC) after the NCP is approved by the Vice-President.

### **Lack of understanding on risk assessment**

It was observed that each port facility does not have clear understanding of the risk of marine pollution in order to determine minimum requirements of spill response equipment. After visiting eleven port facilities along the Yangon River, the inspection team concluded that the majority of the port HSE managers and environmental officers could not show that proper risk assessment conducted for their facilities nor did they fully understand how the risk

assessment ties into developing an effective spill response contingency plan. The team recommended that training on risk assessment and risk management as an ingredient of the risk prevention part of the plan is required. Such training was scheduled for the first quarter of 2020 by Oil Spill Response Ltd., (OSRL). However, due to the pandemic, a series of OSRA workshops were conducted in the last quarter of 2020 through a virtual platform. These will be supplemented with face-to-face interactive workshops once it is safe to do so.

### **Sensitivity Maps**

Myanmar realizes the importance of sensitivity mapping on its diverse coastal regions, including the Yangon River in order to assist in fast and effective oil spill response operations. As of 1 January 2021, almost 35% of the sensitive areas along the coast have been surveyed.

A key challenge facing Myanmar in the development of these sensitivity maps is a scarcity of personnel in the region with experience in developing sensitivity maps focused on spill response activities. For that reason, an in-house capacity building training was conducted. In spite of this lack of experienced personnel, sensitive ecological sites, that are most vulnerable to oil spills, have been identified in three regions: Rakhine coast, the Deltaic region, and the Tanintharyi coast including Myeik archipelago. A survey team was formed composed of technicians from the DMA, members of the Wildlife Conservation Society (WCS) Myanmar and Fauna and Flora International (FFI). During the field survey trips, the team has encountered a number of challenges and inconveniences including: (a) security concerns; (b) inadequate collaboration between government agencies; (c) lack of financial and technical support for capacity building; (d) the need to involve additional government agencies as part of the survey teams including representatives from: the Department of Fisheries (DoF); Forest Department (FD); Myanmar Oil and Gas Enterprise (MOGE); and the General Administrative Department (GAD); and (e) the need to establish a survey data handling and sharing system.

## **Incident Management System (IMS)**

Since the standard IMS was a somewhat new concept to many of the Myanmar government agencies, much discussion ensued. IMS is not a permanent organizational structure and adopted for managing responses to significant oil spill incidents. It is logically sensible that the IMS should be applicable to all spills no matter the size and type of product spilled. This will allow for timely combination of resources and workforce during an emergency and promotes communications among responders. Making matters easier, the NDMC could establish and maintain coordination among other ministries, departments and organizations through direct representation, representatives, or liaison personnel. Per IMS, the Incident Management Team (IMT) is composed of four main sections under the Command function: Operations, Planning, Logistics, and Finance/Administration. As with the majority of IMTs worldwide, Myanmar's structure allows third parties to integrate and play essential roles in Tier 2 and Tier 3 spill incidents such as, OSRL and the Spill Response Center (SRC) located at Made` Island and other industry spill response experts. For Tier 1 and Tier 2 incidents, where necessary, the DMA shall provide the National Incident Commander (NIC). For Tier 3 incidents, the NDMC shall principally appoint the NIC and the DMA may serve as the NIC in normal circumstances.

## **Notification**

According to the NCP, the vessel Master, person in charge of a facility or any other entity that either spills a petroleum product or crude oil into the waters of Myanmar or observes a spill from another source (known or unknown) shall immediately send an initial report to the national authority via VHF, phone, fax, or email. Recognizing the importance that any notification of a spill shall be sent to an "active" recipient, points of contact have been identified: one is the appropriate port authority in case of a spill within the port limits, and the other is the maritime police within rivers and near shore. In addition to these, the DMA is designated as a national contact point and Maritime Search and Rescue Coordination Center

(MRCC) is also included in the contact list as they have a 24-hour seven day a week duty officer.

**Tiered Response**

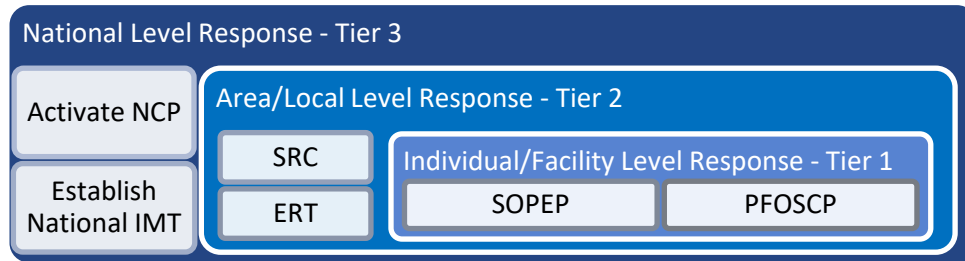


Fig. (2): Escalating level of response

As we know, marine pollution response is based upon a three tiered response concept in which there is an escalating scale whereby the amount of equipment, personnel and other resources mobilized for a response, and the agency in control, will vary according to the incident characteristics. While Myanmar’s definition of each tier does not exactly match the IPIECA definition, they are similar. In Myanmar, the three tiers are defined as: Tier 1 - Individual/facility level; Tier 2 - Area/Local level; and Tier 3 - National level as depicted in Fig. (2). Provided that international assistance may be requested especially at the Tier 2 or Tier 3 level.

**Tier 1 - Individual or facility level response**

For Tier 1, the person in charge of the facility/vessel is responsible for activating the facility oil spill response plan (PFOSCP)/ Shipboard Oil Pollution Emergency Plan (SOPEP). This includes the activation, as appropriate, of the facility Emergency Response Team (ERT) and the facilities response equipment. In cases where the spill incident exceeds the facility’s response capabilities, the person in charge must immediately inform the appropriate local authorities and request additional support. The role of OSC designated by the facility plan will take the lead until the local authority formally takes over. Challenges observed at this level may not be that considerable - those would be eventually settled once the NCP and respective local plan are activated.



**Tier 2 -Local/Area level response**

There are six identified geographical States/Regions within Myanmar. Each has a local/area plan for oil pollution to provide area level response. The six divisional Regions are listed below:

No.1 Region: Rakhine State coastal and offshore areas, rivers and creeks;

No.2 Region: Ayeyarwady Deltaic Region, including Patheingyi port;

No.3 Region: Yangon region, including Yangon River;

No.4 Region: Kayah and Mon State, including Mawlamyine port;

No.5 Region: Thaninthayi coastal region and Myeik Archipelago;

No.6 Region: Ayeyarwady River through Kachin, Sagaing, Mandalay, Magway and Bago regions.

Local contingency plans must have a structure similar to the NCP. Each local plan shall be prepared by the local government based on the assessment of oil spill risk and vulnerability of those regions. The local governments are responsible for their area level response activities in coordination with the designated OSCs. The key issues for the regional authorities are: resource availability; coordination of resources; and waste management.

**Tier 3 - National level response**

National level response is concerned with major spill incidents requiring the mobilization of all available national resources and, depending on the circumstances, likely request and activation of regional and international response resources including personnel and equipment. The NDMC is responsible for overall coordination of all relevant agencies and organizations during a response. If domestic capabilities are inadequate, then the NDMC will propose to the Vice-President a request for international assistance to be made. This level would be the biggest challenge not only in terms of resource availability and capability but also if it requires complicated crisis management due to transboundary issues. Additional challenges are anticipated when the integration of the NCP and the National Disaster Management Plan is required.

### Response stockpile - Spill Response Centers (SRC)

As per the Plan, appropriate response stockpiles will be located at the two main coastal zones. One SRC is located at the Made` Island Port and another in the Yangon River as indicated in Fig. (3). The Kyaukpyu-Made` Island port SRC is set up for Tier 1 capabilities. The port also signed an agreement with OSRL to provide response assistance. Two SRCs allocated in Yangon: Thilawa Port Area (downstream) and Yangon Port Area

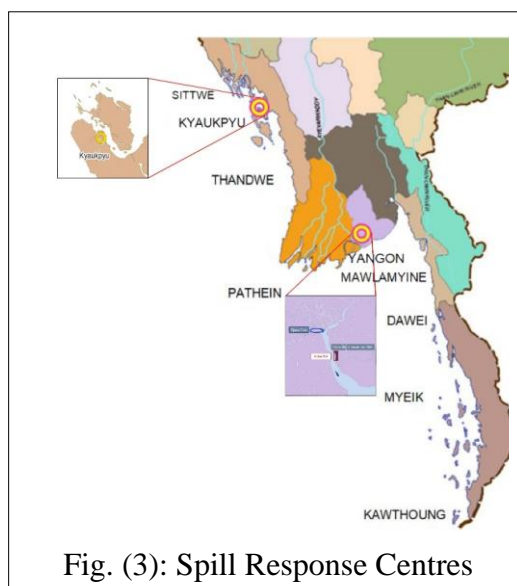


Fig. (3): Spill Response Centres

(upstream) provide Tier 2 spill response capability for the higher risk areas along the Yangon River. Of course, the principal question for the establishment of these SRCs is how they will be funded. Will funding come directly from the Government or annual fees be collected from the vessels utilizing the ports? Another option being considered is requiring the industry to establish a mutual aid program. This is a question yet to be answered.

### Translation into Myanmar language

As required by the Myanmar National Constitution, all laws, regulations and plans must be translated into Myanmar language prior to submission to the Union Attorney General's Office. This is also a hurdle and heavy encumbrance for the NTF members in the process of drafting the NCP. Even though translation is achievable, some technical terms are much more burdensome to interpret from English to Myanmar. Eventually, the plan was translated into domestic language in July 2019.

### NCP approval suspended due to COVID-19 pandemic

The NCP was put forward to the NDMC for seeking approval once after the final draft has been completed in February 2020. On 18 March, the NCP approval meeting was held, but

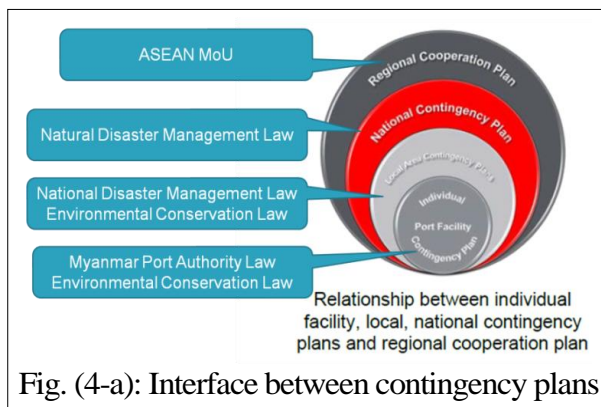
it was turned down with a reason to revise some Myanmar translation errors in the plan. The new Task Force was formed for the purpose of revising and reviewing the draft NCP as directed by the Committee. In the meantime, as of 23 March, the Ministry of Health and Sports confirmed that COVID-19 has stepped into Myanmar. Since then, the number of local transmission and positive cases has been increasing not only in metropolitan cities like Yangon but also in other provinces. People are urged to take precautionary measures such as staying at home, social distancing, wearing masks when going out, and gathering of five people and above are restricted and therefore all events have been postponed or cancelled until further announcement. However, the Task Force members were organized and attended a couple of meetings through videoconferencing in order to revise the plan. All-inclusive participation and engagement compromised the stagnated controversial issues and endorsed the NCP. Finally, the NCP was resubmitted to NDMC in October. However, follow-up activities such as developing regional contingency plans are delayed as long as the pandemic exists.

**CHALLENGES IN THE IMPELMENTATION OF THE NCP**

The following challenges have been encountered with most yet to be solved.

**Unclear lead agency**

Because of the overlapping existing regulations as shown in Fig. (4-a), it is still unclear as to whether or not a single designated lead agency to implement the requirements of the Plan is possible. For national (Tier 3) incidents the Plan falls under the the National Disaster Management (NDM) Law, but falls under both the NDM Law and the EC Law for Tier 2 incidents. Making the issue more challenging, for individual facility (Tier 1) responses, all individual plans are under the Myanma Port Authority Law for port facilities



and the EC Law for offshore facilities. Also yet to be resolved is which ministry shall appoint

a competent person to execute the Plan. These problems will be resolved at the top level of NDMC chaired by the Vice-President. These issues are clearly addressed in the Merchant Shipping (Marine Pollution) Law that is expected to be promulgated at the end of 2021 as depicted in Fig. (4-b).

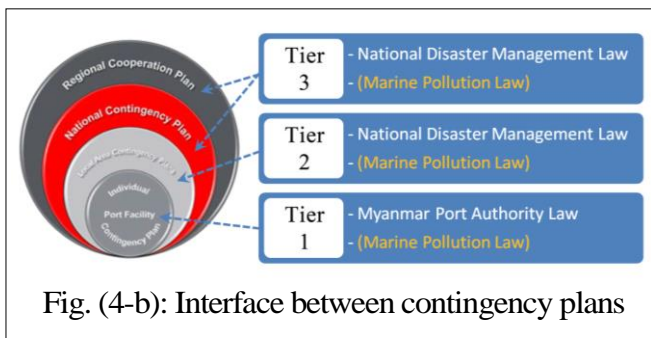


Fig. (4-b): Interface between contingency plans

**Funding mechanism**

The NDMC is entitled to obtain a national disaster management fund from the government to carry out disaster management activities. Even if an emergency fund is established, it is doubtful whether it can be accessed because there is no specific provision for its use during a response to an oil spill incident. On the other hand, every port and offshore facility is required to share their resources (i.e. mutual assistance) including response equipment in case of a marine spill incident anywhere within Myanmar waters. Further, there was a discussion on the establishment of SRCs by means of contributions to be borne by port and offshore facilities.

**Environmental levy on ships**

Not surprisingly, there has been much resistance in the implementation of the YOSCP in respect of levying a “tax” on ships. It was argued that there is already a “polluter-pay-principle”, thus why the need for a separate charge? It was also counter-argued that, in cases of mysterious spills, there would not be a known “polluter” to pay the response costs. Thus, a “response fund” is necessary. One possible solution being discussed is requiring all vessels calling to ports to have a contract in place with an approved SRC. This would be a similar model to the Oil Spill Response Organizations (OSROs) found in China.

### **Claimant procedure and damage assessment**

Notwithstanding the CLC 1992, the BUNKER Conventions and the “polluter-pay-principle” stipulated in the EC Law and the MPA Law, there is a similar issue as other countries regarding claimant procedures and damage assessments. There needs to be a strong judicial and legal system in place to settle disputes on maritime claims including civil liability and compensation as well as to communicate with the IOPC Fund in cases of oil pollution damage. The jurisdiction of the maritime court conferred by the law to deal with pollution cases should be clearly defined since only then can serious disputes and ambiguities be avoided in the adjudication of maritime claims. The Marine Pollution Law, which is still being drafted, needs to be in place including the civil liability conventions relating to pollution damages. In this respect, maritime courts play a very important role in dealing with incidents and therefore provisions needed to ensure polluter’s liability and proper restitution for victims of pollution incidents could be put into effect fairly.

### **Training and exercises**

Aside from the equipment, the key to success in any oil spill response is the capacity of the people within the response organization and how well they are trained. The NCP provides policies, procedures, and guidelines for the national system. However, the efficiency and effectiveness of any response can only be achieved by regular trainings and exercises. Simulation or realistic exercises will help to ensure that contingency arrangements function properly, and roles and responsibilities of all parties are thoroughly tested and understood. Hence, IMO Level 1, 2 and 3 training courses are required to provide to operational staff, OSCs and Section Chiefs and senior managers. Every port and offshore facility must conduct exercises on a regular basis including “Table-top Exercises (TTEX)” or “Field Exercises (FEX)” every year.

A question facing Myanmar is how to have effective exercises in locations without any response equipment. There is a large stockpile of equipment at the Made` Island port. Adequate

equipment, though, does not yet exist in the Yangon River region. Only after Myanmar establishes an appropriate response equipment stockpile, including response vessels at each of the two designated SRC locations, practical drills and field exercises could be conducted – this is a pending critical issue.

Some other challenges in the implementation of the NCP include:

- **National SRC or Strike Team:** Though the NDMC and NIC are designated in the NCP there is, to date, no national SRC or Strike Team yet identified. The NDMC has an authority to assign tasks and duties to a person or a body, but no government agency has yet been appointed to take responsibility. For instance, the Myanmar Navy is currently acting as a law enforcement agency within Myanmar waters as well as being part of the Operations Section within the IMT, however, they are not obliged to be a part of the IMT since it is not stipulated by any law. Overall, this is a serious issue in that it is still unclear what roles and responsibilities are for the agencies involved in marine pollution preparedness and response.
- **SRT vs. SRC** - Spill Response Teams (SRTs) are the small organizational elements that can be organized and operated by the SRC's being established under the NCP. The SRTs are strike teams that can carry out spill response within Myanmar. The SRTs will be led by an OSC who takes instructions from the Incident Commander. Thus far, the Made` Island SRC has been established but SRT is not yet functioning. The SRCs and SRTs for the Yangon River have yet to be established.
- **Oil spill monitoring and surveillance:** Another unresolved question is how to monitor a spill. Surface drift of an oil spill is driven by wind and current such that its movement can be predicted by computer models. In principle, if the oil is drifting away from sensitive resources, there may be no immediate reason to activate response measures. However, the wind direction can vary hence monitoring the movement of the spill must be maintained. Not only are surveillance aircraft needed

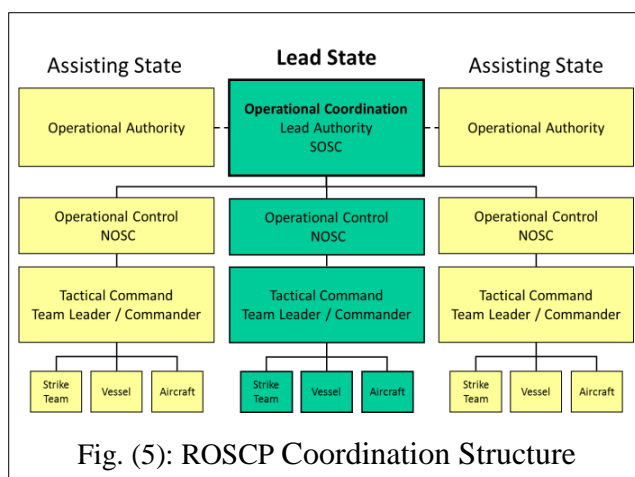
to monitor the oil movement but also remote sensing equipment is necessary to identify the location of the greatest concentration of surface oil.

- **Waste management mechanism:** The Ministry of Environment regulates waste management facilities, whereas local authorities are responsible for waste collection services. During an incident, it would be impracticable to construct an on-site facility to manage the waste generated from cleanup operations. Thus, the hazardous waste management services must be identified and prior agreement between relevant parties, particularly with port terminals and offshore operators, need to be established..
- **Dispersant policy:** In principle, dispersants should only be used when there is a net environmental benefit, i.e. when the potential harm, done by dispersed oil is less than untreated oil. Authorization is required for the use of dispersants. Such authorization must come from the Environmental Conservation Department (ECD) through the DMA. For example, when the Incident Commander is seeking dispersant approval from the DMA, the DMA would consult with the ECD for approval or denial for dispersant use.
- **Lack of public awareness:** Very few people in Myanmar have clear understanding of the short and long term impacts of an oil spill incident. For example, the people living and fishing in the vicinity of the Made` Island port have a much higher fear of having their fishing nets destroyed by a passing tanker than a major oil spill incident, even though the spill would potentially have long term negative effects on the fishing industry. Additionally, they are not aware what to do or how to report a spill should they observe one. Even after the response plans are in place, there is a challenge of how to manage public involvement. Public outreach will be needed to encourage the people living along the coast and the river to report an oil spill incident and inform them how they can take part in the response operations.

**CHALLENGES ANTICIPATED FOR: OBTAINING INTERNATIONAL RESOURCES AND; RESPONDING TO TRANSBOUNDARY POLLUTION INCIDENTS**

Pursuant to the OPRC Convention, in the event of a major oil spill incident, international assistance may be required. In such cases, customs, immigration and quarantine (CIQ) authorities and other relevant agencies shall provide necessary facilitation for clearance procedures for import of equipment and personnel so that such resources can reach the scene by the most expeditious means. The essence of the ROSCP may neither alter nor replace any national response system of the affected country in respect of the coordination, control and command. This means that the affected country has to continue implementation of its NCP and activate its IMS.

Notwithstanding above, in case of transboundary movement of spills, the ROSCP sets a coordination structure in Fig. (5) which is also applicable in transboundary oil spills which cause or likely to cause damage to the environment of the adjacent countries. The Pollution



Reporting (POLREP) system is incorporated into the procedures of ROSCP to provide sharing of key information and facilitate requests for assistance between States (ASEAN, 2018).

To keep it simple, the most direct answer for transboundary issues is that prior agreements with neighboring countries should be contemplated in peace time. In order to improve effective implementation of these agreements, regular meetings between parties and periodic exercises are of crucial importance. Joint exercises should address every aspect of transboundary issues. For example, customs and immigration clearance procedure for oil spill equipment and response personnel/experts that is often complicated needs to be established in advance. Another constraint will be the language barrier for effective communication. In this



respect, mutual agreement between parties should be reached beforehand and pre-formatted, and agreed upon forms useful for smooth operations be developed or agreed upon. Building capacity for transboundary cooperative response requires time for training and joint exercises between neighboring countries. Cooperation agreements should not be limited to bilateral agreements (multilateral should also be considered). For instance, Norway has an agreement with Britain as well as with Russia, the Bonn Agreement between the North Sea Countries and the Arctic countries even though the Copenhagen Agreement between Nordic Countries is the one they most often call on.

For the purposes of effective transboundary contingency planning, the countries must have all necessary international agreements and appropriate national legislation adhering to international best practices in place. Early warning and notification systems through mutual data exchange between the neighboring countries should be instituted to ensure the affected country is notified without delay. It is recommended a prepared checklist germane to harmonized contingency planning between neighboring States as well as a joint body to deal with transboundary issues be developed and implemented between neighboring countries. At the end of the day, a financial mechanism is ultimately necessary for emergency response and remediation (UNECE, 2016).

### **Challenges in BoB and Indian Ocean Region**

Given geographic location, Myanmar, naturally, is a party to the ASEAN MOU and thus the ASEAN ROSCP. Myanmar, though, also sits at the eastern edge of the Bay of Bengal. Thus an unanswered question – how will Myanmar activate the ASEAN ROSCP when an oil spill occurs in the Bay of Bengal (BoB)?

To improve preparedness and response, Myanmar needs to reach agreements with the other neighboring countries bordering the Bay of Bengal and Andaman Sea including India and Bangladesh as well as the Andaman and Nicobar Islands. Any BoB agreement should at least include: (i) Consultation and cooperation between the countries with an objective to

ensure a clear delineation of responsibility for any response (ICG, 2015); (ii) Standard operating procedures for response measures and clean-up operations; (iii) Monitoring and reporting systems in case of pollution incidents affecting or likely to affect the bordering countries; and (iv) Training courses and joint exercises at different levels.

## **SUMMARY**

Even though the NCP has been developed, Myanmar is facing a number of challenges to be fully prepared for a significant pollution accident. Currently the biggest issue is the establishment of proper spill response stockpiles of equipment and properly trained personnel where the SRCs are allocated. There are several options being considered such as direct government funding, a mutual aid program led by industry, contract basis or some combination of the two. Many key challenges have been addressed but the call for implementing the NCP still remains. The work, though, will continue including expanding agreements for responding within the BoB.

## **ACKNOWLEDGEMENT**

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