

National Ballast Water Management Strategy for Jordan

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This document which is aimed to prepare a national strategy for ballast water management is a draft version. It will be finalized after the adoption of all stakeholders. This is to be achieved in collaboration with Protection of Environment of the Red Sea and Gulf of Aden (PERSGA) and in collaboration with IMO GloBallast Partnership Project. This draft of strategy provides the special regulations which provide the basis for implementation of policy and direct forming the initiatives preparing the ground and leading in the ratification of the BWM convention. It is crucial that Jordan lead the PERSGA counties as soon as ratify the convention, before the BWM convention enters into force.

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List of Appreviations

PERSGA: Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden

BWM: Ballast Water Managements

IMO: International Maritime Organization

IAS: Invasive Alien Species

PSU: Pressure Standard Unit

MARPOL: International Convention for the Prevention of Marine Pollution

ICES: International Council for the Exploration of the Sea

CME: Compliance Monitoring and Enforcement

PBBS: Port Biota Baseline Surveys.

CRIMP: Center for Research on Introduced Marine Pests

MSS: Marine Science Station.

UNESCO: United Nation Education Scientific and Culture Oorganization

IUCN: International Union for Conservation of Nature

IOC: Intergovernmental Oceanic Commission

LPIA : Legal, Policy, and Institutional Aspects

CFP: Country Focal Point

NTF: National Task Force

LA: Lead Agency

TF: Task Force

NGOs: Nongovernmental Organizations

NBWMS: National Ballast Water Managements Strategies

JMA: Jordan Maritime Authority

ASEZA: Aqaba special Economic zone Authority

1. Gulf of Aqaba:



The Gulf of Aqaba is a semi- enclosed water body located in the most southern part of Jordan and at the northern end of the Red Sea; a sub- tropical arid area between longitude $34^{\circ} 25'$ to $35^{\circ} 00'$ E and latitude $28^{\circ}00'$ to $29^{\circ}33'$ N. The Gulf is unique for its great depth (about 1830 m) in proportion to its width (maximum 25 Km); the mean depth of the Gulf is about 800 m. The Jordanian coastline runs south for about 27 Km from the northeast tip of the Gulf to the Saudi border. Rocky and sandy beaches are the major types of beaches along the Jordanian Gulf of Aqaba. Rocky beaches are mainly located in the southern coastal area while the sandy beaches are mainly found in the northern coastal area. The region is extremely arid, with high temperature and intense sunshine. The climate is affected by airflows from the Indian monsoonal trough and the RED SEA low-pressure systems. Most of the rainfall in the region of the Gulf occurs during the period November- May. The average rainfall in Aqaba town is about 35mm/yr. Daily temperature ranges between

14 °C in January to 45 °C in summer, Evaporation rates of sea water (200- 365 cm/yr) (Hulings, 1989). Seawater temperature in the northern Gulf of Aqaba ranges between ~21 °C in winter and 27 °C in summer (Manasrah et al., 2006b). Salinity is high with little annual variation (40.3 to 40.8 PSU) (Manasrah et al., 2004). The Gulf of Aqaba is characterized by clear water with high transparency. This due to little matter in suspension, low biomass, strong isolation, absence of rivers and low plankton productivity. The Gulf of Aqaba can be described as highly oligotrophic on the basis of chlorophyll *a* values (0.02-0.5mg m⁻³) and primary productivity measurements 160g C cm⁻² y⁻¹ carried out by several investigators (Al-Najjar et al Kimor and Golandsky, 1977). According to Manasrah et al. (2004) and Manasrah et al. (2007), the coastal current below 12 m depth is weak and fluctuate from east- northeastward to west- southwestward (parallel to the shoreline). The prevailing northerly winds and stratification conditions during summer and variations in generation and propagation associated with changes in thermocline strength and structure throughout the year were the main causes of the southward current.

Ballast Water Problem for Jordan:

Shipping moves over 80% of the world's commodities and transfers approximately 3 to 5 billion tones of ballast water internationally each year. A similar volume may also be transferred domestically within countries and regions each year and that 7,000 species are carried around in ballast water every day. Ballast water is absolutely essential to the safe and efficient operation of modern shipping, providing balance and stability to un-loaded ships. However, it may also pose a serious ecological, economic and health threat. Ballast is any material used to weight and/or balance an object. Ballast water is therefore water carried by ships to ensure stability, trim and structural integrity. Ships have carried solid ballast, in the form of rocks, sand or metal, for thousands of years. In modern times, ships use water as ballast. It is much easier to load on and off a ship, and is therefore more efficient and economical than solid ballast. When a ship is empty of cargo, it fills with ballast water. When it loads cargo, the ballast water is discharged.

It recognized that the uncontrolled discharge of ballast water and sediment from ships has led to the transfer of harmful aquatic organisms and pathogens,

causing injury to public health and damage to property and the environment. The introduction of invasive marine species into new environments by ships' ballast water attached to ships' hulls and via other vectors has been identified as one of the four greatest threats to the world's oceans. The other three are land-based sources of marine pollution, overexploitation of living marine resources and physical alteration/destruction of marine habitat. Organisms are transported much beyond their normal range and into new area, where they may find suitable environmental conditions and become established. The increasing volumes of shipping as well as the increasing speed in adding to the risk that species are moved as well as the risk that they survive. Most of species introduction result in no or little noticeable change in local ecosystem diversity and productivity, some introduced species may under suitable conditions become established and in the absence of natural controls such as predators, parasites or diseases, drastically change the ecosystem (Invasive Alien Species, IAS). This will cause a significant ecological and economic impact; the famous two examples on IAS are the zebra mussel and comb jelly fish.

coral reef ecosystem of Jordanian coast is one of the most sensitive area, we recording a 3 aline species of fish were origially from Meditteranean sea and other biota still needs scientific survay.

Scope Purpose and Objectives of the strategy

Scope of the strategy

Geographic scope

Ballast water implementations cannot be limited to the port implementations, in our monitoring and scientific studies we need a wide area of our coast. It is defined for the scope of the strategy the whole Jordanian coast which is about only 27Km.

Technical scope

Technical scope is defined as titles below

- National and International cooperation
- Training and scientific research
- Resources and Financing
- Public awareness
- Capacity building studies



Purpose of the strategy

The purpose of the strategy is planning of the future studies by establishing a work plan in order to minimize the harmful effects of alien species carried in ballast water to marine Environment, economic activities and public health. Also it is aimed to establish a system in order to monitor the implementation of this strategy and making revision in the future plans

Objectives of the strategy

1. Establish a ballast water management system with respect to the international Ballast water management convention.
2. Establish capacity building activities for Jordan Maritime Authority as the leading agency in order to;
 - Certification
 - Type of approval
 - biological port baseline surveys
 - port state control
 - supporting scientific studies
 - coordination with universities and research centers
3. Establish the national legislation concerning ballast water management and IAS
4. Establishing research and technology to assist port Authority
5. Coordination with the regional initiatives
6. Establish the cooperation with Regional and international partners
7. Minimize the risk of invasive species in order to protect the sustainability of the marine sector like fishing, agriculture and tourism.
8. Avoid unnecessary discharge of ballast water, where cargo handling demands uptake and discharge of ballast water within the port, water take up in another areas should not be discharged avoidable.

9. Establishing a suitable ballast water exchange method. Ballast water can be exchanged between ports, mid-ocean and in deep water, in order to reduce the risk of organisms carried in the water finding a suitable environment in discharge.
10. Establishing a suitable treatment method of ballast water. This includes the mechanical, physical, chemical and biological treatments or combination of these.
11. Discharge to reception facilities. Discharge the ballast water to reception facilities prevents organisms transported in ballast water from the release into the wild.

Strategic priorities

Strategic priorities 1:

Supporting the Ballast water management convention:

Jordan support the work of IMO and PERSGA, It is crucial that Jordan lead the PERSGA counties as soon as ratifying the convention, before the BWM convention enters into force.

Strategic priorities 2:

Maintain capacity building activities:

Jordan indeed supporting the efforts for capacity building, training and knowledge transfer before the national project in order to implement the ballast water management needs concerning the convention. A national introductory training course on ballast water management, using the GloBallast training package, has been delivered in Jordan, providing an excellent first step and foundation for all further activities in ballast water management. In addition to this introductory course, more specialized training activities should be developed in collaboration with recognized training institutions within the region, and delivered to respective target groups.

Strategic priorities 3:

Supporting the scientific studies on harmful invasive species:

Jordan specially AZESA supporting research and monitoring programmes concerning the invasive alien species in order to gain informations and forming a base line data and setting the grounds in which best measure on controlling the transfer of invasive aquatic species.

Strategic priorities 4:

Attend regional and international cooperation:

Jordan works collaboratively to adopt regional and international arrangements related ballast water water managements especially with PERSGA countries. For promoting the effective cooperation between Jordan and neighboring regional organizations, the Country National Coordinator (CNC) and Focal Point (CFP) and National Task Force (NTF) have been nominated responsible for promote sharing of information's and knowledge regarding BWM related activities and initiative taken in those regions.

Strategic priorities 5:

Use Risk assessment:

Jordan considered risk assessment as an important tool, recommended by IMO, a fundamental starting point for Jordan contemplating implementing a formal system to manage the transfer and introduction of harmful aquatic organisms and pathogens in ships' Ballast Water, and important tool for guiding a management measure and is committed to establish survey and monitoring programmes including reporting and alert mechanisms.

Strategic priorities 6:

Compliance Monitoring and Enforcement (CME):

Jordan Maritime Authority (JMA) and Aqaba Special Economic Zone Authority (ASEZA) are responsible for the implementation of the following key elements.

1. Requirement for ships to collect and record information about their BWM practices (i.e. uptake, management en route and discharge);
2. Means for ships to transmit this information to the Port States BWM regulatory authority and receive directions from them;
3. Provision for examination/auditing of the ships. official log books or other official records to ascertain compliance with the BWM requirements of the Port State;
4. Ability by the appropriate authority to take ballast water and sediment samples and carry out any necessary testing;
5. Legal provision for “enforcement”, where necessary, for non-compliance with the required BWM requirements and provisions for applying sanctions to violations;
6. Requirement for notification of arrangements to IMO; and
7. Effective communication arrangements on a regional level to ensure proper tracking of violations and exchange of experience during the application of the CME system on a national level.

Strategic priorities 7:

Port Biota Baseline Surveys (PBBS):

Jordan supporting baseline surveys as vital tool for assessing existing natural conditions and the presence or absence of introduced marine species. Such surveys should be conducted in accordance with internationally adopted protocol / guidelines such as the protocol used by GloBallast (CRIMP Protocol) and should be conducted on an on-going basis, as a long-term biological monitoring programmed of port. This will allow any existing introductions to be tracked and managed, and any new introductions to be detected and responded to.

Currently, ASEZA, supported Baseline Surveys in the proposed new port area at the most southern part of the Gulf of Aqaba, carried out by scientist from Marine Science Station (MSS), Jordan University and Yarmouk University. This considered the first actual activities of Port biota Baseline Surveys among *The Red Sea and Gulf of Aden Coastal States*. However, Jordan agrees on the following:

1. To Establish a Regional Scientific Committee to advise on appropriate PBBS activities as related to ongoing BWM initiatives not only in Aqaba but also, within the region;
2. To Develop and carry out regional activities to include further PBBS training and capacity building (workshops, equipment, taxonomy etc.) as well as pilot survey projects; and
3. To engage with appropriate international and regional organizations (e.g. UNESCO, IUCN and IOC) for potential technical assistance and support.

Strategic priorities 8:

Use Public Awareness:

Jordan promotes national programs for raising the awareness of the general public and target groups, including decision-makers, about the risks associated with introducing non-indigenous marine species into the region, using:

- 1- The public awareness materials already prepared by IMO Globallast translated to Arabic language.
- 2- Carry out seminars to raise awareness of the issue among various stakeholders.
- 3- Establishing special web page including invasive species database and information's about the ballast water materials and activities at the national and regional base.

Strategic priorities 9:

Maintain resources and financing:

Jordan stress the need to self-financing mechanisms, and will largely be handled at the national level; the Regional Task Force shall aid the review of opportunities for self-financing of the activities related to ballast water management to the extent possible. There are various possible for financing the Ballast water related activities by the state, these include:

- 1- State budget
- 2- Partnership with international institutions
- 3- Partnership with private sector, including in particular the shipping activities
- 4- Specific national funds financed through targeted fees of certain commercial activities.

The RTF will evaluate any opportunities for ongoing resource mobilization, collaborations or co-financing in order to help sustain ballast water management activities in the long-term.

Strategic priorities 10

Keep the strategy under review:

Jordan call for regular meetings with the NTF for the purpose of reviewing the ongoing relevance of the strategy, and overall effectiveness of activities carried out under the action plan.

Division of Labor

The following tables

STAKE HOLDER	RESPONSIBILITY
JMA	<p>It's the leading agency for ballast water implementations.</p> <p>JMA.</p> <ul style="list-style-type: none">- Implementing the national strategy.- Preparing the national legislation.- Implementing the port state & flag state rules.- Leading the national task force and direct the activities of task force.- Monitoring the implementation of the strategy.- Monitoring the implementation of the national legislation- Making the revisions on the strategy documents.- Participating in national and international studies on ballast water management.- Ballast water controls for the ships in Jordan water territories- Coordinating the installation of ballast water treatment equipments- Executing the ballast water management inspections- Giving permissions to ships with respect to ballast water reporting forms- Drafting new forms for ballast water discharging in

	Jordanian territorial waters and reporting to IMO.
ASEZA	<p>Aqaba Special Economic zone authority has general jurisdiction on whole coastal, marine zone. It responsible with JMA in implementing national strategy. ASEZA also responsible for protecting the environment in Aqaba zone including marine environment.</p> <ul style="list-style-type: none"> - Analyzing the ballast water samples using ASEZA laboratories - Participating the international studies in cooperation with JMA - Controlling the land based invasive and integrate the ballast water management system - Controlling the ballast water discharge forbidden zones - Assist JMA on inspection activities
ADC	<p>It is a company created by ASEZA to develop Aqaba and responsible about all marine ports.</p> <ul style="list-style-type: none"> - installation adequate reception facilities for sediments or another substances - Executing the sediments reception from ships - Reporting the activities to relevant parties - Coordinating the port master plan in cooperation with ASEZA - Informing JMA through ASEZA about implementations of the ballast water management activities
NGOs	<ul style="list-style-type: none"> - Informs the public and raise the awareness - Assist the parties in biological baseline survey and ballast water studies
Ministry of Health	<ul style="list-style-type: none"> - Controlling activities for ships for health diseases

Ministry of agriculture	<ul style="list-style-type: none"> - Controlling the land based invasives and integrate the ballast water management system - Controlling the invasives from ship farming
Royal Navel Force	<ul style="list-style-type: none"> - Assist all parties in monitoring Jordan territorial waters
MSS	<ul style="list-style-type: none"> - Consulting to the leading agency - Executing the port biological baseline surveys - Reporting the activities to all parties involved with ballast water subject - Report the parties about the new species
Ministry of Transport	<ul style="list-style-type: none"> - Follow up related legislations
Ministry of Environment	<ul style="list-style-type: none"> - Informs the public and raise the awareness
Shipping Agencies Association	<ul style="list-style-type: none"> - Participating in all meetings and assist lead agency - Inform ships calling Aqaba Ports regarding the implementation of the ballast water management activities

National task force

The national task force consists of the most of above mentioned stakeholders.

The working system and responsibilities of the task force is defined below:

Responsibilities of the task force

- Task force evaluates the ballast water implementation activities politically, strategically and legislatively and produces suggestions for revision.
- Task force revises the national strategy document.
- Task force implements the necessities of the national strategy
- Task force develops and implements an evaluation plan

- Task force potentially continues to work together after the development of the national strategy to provide guidance, oversight and advice on matters relating to harmful aquatic organisms and pathogens.

Working system of the task force

- Jordan Maritime Authority will lead task force.
- The task force meets whenever the need arises but not less than once yearly.
- After every task force meeting the leading agency will publish the minutes of the meeting signed by all if it contains decisions.

Action Plan

Table : Action plan

<p>Action 1. Ratify the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention)</p> <ul style="list-style-type: none"> • Finalize the ratification process as soon as possible
<p>Action 2. Adopt harmonized arrangements for ballast Water exchange in the red sea region and capacity building activities in Jordan</p> <ul style="list-style-type: none"> • Adopt harmonized voluntary arrangements for ballast water exchange in the red sea region • Supply inspection equipments • Education of the personnel
<p>Action 3. Establish a solid Compliance Monitoring And Enforcement (CME) System in the Red sea region. Adapt existing Port State Control & CME systems to integrate the harmonized BMW CME procedures</p>
<p>Action 4. Establish a survey, Biological monitoring and Risk assessment system For red sea ports.</p> <ul style="list-style-type: none"> • To organize a national port baseline biological survey workshop • To collaborate with the universities and promote them to make surveys • To collect all information together in order to prepare a reporting system for biological base line activities.
<p>Action 5. Enhance expertise Facilitate knowledge Transfer and capacity Building in the Red sea region.</p>

Investigate the possibility of including training programmes and other capacity-building activities in the regular programme of work of the relevant regional activity centers of MAP.

Action 6.

Prepare the raising awareness instruments

- Use IMO Globallast Public awareness materials for dissemination at national level
- Organize a ballast water management National Ballast Water Management Strategy for Jordan
- Preparing booklets, brochures, posters for circulating to public from harbor masters.

Action 7.

Set-up a web-based Red sea Mechanism for Exchanging information International coordination.

- Participate the regional and international meetings
- Contribute actively the drafting procedure for RED SEA and Red Sea Strategy documents

Action 8.

Incorporate the action plan evaluation within the Barcelona convention reporting system and Procedure

- Mandate PERSGA to coordinate and assist with the implementation of the Action Plan in the region, in collaboration with the Regional activity Center for specially protected Areas

Action 9.

Pilot implementations

- To extend the pilot implementations to gulf of aqaba region.
- Supply inspection equipment.

Action 10.

Adopt national legislations for Jordan

- Revise the draft legislations in order to finalize for adoption

Annex I

Jordanian Strategy and Action Plane on Ships' Ballast Water Management and Invasive Species

Work Plan and Implementation Timetable

Action Points	Activities	Year					
		2010	2011	2012	2013	2014	2015
1. Ratify the International Convention for the Control And Management of ships' Ballast Water and Sediments (BWM Convention).	a. Form a national policy working group to lead the process towards the ratification of the BMW Convention. b. Draft the instrument of ratification for adoption through the proper channels with the Government system. c. Develop national legislation including fines for violators, which will give effect to the BMW Convention once ratified, as well as secondary regulations and technical arrangements for its enforcement.		√				
			√	√			
			√	√	√	√	
2. Adopt harmonized arrangements for ballast Water exchange in the red sea region.	a. Adopt harmonized voluntary arrangements for ballast water exchange in the red sea region. b. Notify all interested parties of the adoption of harmonized arrangements for ballast water exchange in the red sea region through notices to shipping and instructions to surveyors.		√	√			
			√	√			
3. Establish a solid compliance Monitoring and Enforcement (CME) system in the Red sea region.	a. Adapt existing Port State Control & CME systems to integrate the harmonized BMW CME procedures. b. Establish and maintain a regional communication system possibly within a clearing house mechanism (CHM), to allow exchange of experience and tracking of violations utilizing existing control bodies such as the Paris MoU on port state control and the RED SEA MoU on port state control		√	√	√		
				√	√	√	√

<p>4. Establish a survey, Biological monitoring and risk assessment system for red sea ports.</p>	<p>a. Develop a regional standardized biological sampling and monitoring protocol for use of contracting parties in building the necessary biological and environmental databases to support the IAS management objectives.</p> <p>b. Collaborate, preferably following sub-regional approaches where relevant, on biological survey and monitoring activities, including to promote and ensure sharing of technical capacity, resources and results.</p> <p>c. Seek institutional support at the national level for port biological surveys and monitoring, as part of the national strategy for ballast water and IAS management.</p> <p>d. Adapt and use the regional CHM for sharing of data related to port surveys and ongoing biological monitoring.</p> <p>e. Produce a regional-level risk assessment based on the information made available through biological surveys, as well as the shipping movement and ballast water discharge databases.</p>		<p>√</p>	<p>√</p>	<p>√</p>		
<p>5. Enhance expertise; Facilitate Knowledge Transfer and capacity building in Red sea region.</p>	<p>a. Investigate the possibility of including training programmes and other capacity-building activities in the regular programme of work of the relevant regional activity centers of MAP.</p> <p>b. Seek and secure support, individually or through PERSGA, from the IMO Technical Cooperation division, in support of activities of the strategy and action Plane.</p> <p>c. Disseminate protocols and tools for standardization of technical approaches to</p>	<p>√</p>	<p>√</p>	<p>√</p>			
				<p>√</p>	<p>√</p>	<p>√</p>	<p>√</p>
							<p>√</p>
							<p>√</p>
							<p>√</p>

	<p>regional and national activities.</p> <p>d. Countries with specific expertise on ballast water management related activities help organize national, sub-regional or regional training sessions.</p> <p>e. Replicate such training on a national level through the establishment of a national training programme on ballast water management activities.</p>	√	√	√	√	√	√
6. Enhance public awareness on ships ballast water and invasive aquatic species issues.	<p>a. Use IMO Globallast Public awareness materials for dissemination at national level.</p> <p>b. Carry out national seminars and workshops to raise awareness about the issue among various stakeholders.</p> <p>c. Develop local case studies that may be used effectively for awareness and leveraging support within the RED SEA region and it's sub-regions.</p>	√	√	√	√	√	√
7. Set-up a web-based RED SEA Mechanism for exchanging information.	<p>a. Explore possible options and functionalities of the system and decide upon the body responsible for coordinating the development of the web-based regional information system.</p> <p>b. Set-up a steering committee for this project.</p> <p>c. Explore possible options and decide upon the body responsible for hosting and maintaining the web-based regional information system.</p> <p>d. Have the regional information system operational.</p>	√	√	√	√	√	√

Conclusions and recommendations

1. Control the Transfer of Harmful Aquatic Organisms and Pathogens in Ships` Ballast Water and sediment is very important needs.
2. The introduction of invasive marine species into new environments by ships` ballast water attached to ships` hulls and via other vectors has been identified as one of the four greatest threats to the world`s oceans.
3. Information sharing across sectors nationally is just as important as sharing resources and information across regional and international. Environmental problems do not stop at borders and thus must be worked on and solved in cooperation.
4. Regional cooperation and coordination between different countries is very important in implementation of BWM strategies in line with BWM convention, also, regional cooperation is necessarily for disseminate the lessons learned from the national level to regional level.
5. Self-financing mechanisms will largely be handled at the national level; the Regional Task Force shall aid the review of opportunities for self-financing of the activities related to ballast water management to the extent possible.
6. New policies and Legislative concerning BWM is required.

It is crucial that Jordan lead the PERSGA countries as soon as ratify the convention, before the BWM convention enters into force.

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