Ministry of Ports,
Shipping & Waterways

"Harit Sagar"

Green Port Guidelines

(Issued - May'2023, Rev-0)

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Green Port Guidelines

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Ministry of Ports, Shipping and Waterways,
Government of India

सर्बानंद सोणोवाल
SARBANANDA SONOWAL

सत्यमेव जयते

मंत्री
पत्तन, पोत परिवहन और जलमार्ग एवं आयुष
भारत सरकार
Minister
Ports, Shipping & Waterways and AYUSH
Government of India

MESSAGE

Climate change is the biggest challenge facing humanity today. Indian Ports will play an important role in contributing towards de-carbonization efforts of the country. Ports have to undertake Green initiatives and contribute to the efforts being made by the country for fulfillment of "Panchamrit" commitments announced by Hon'ble Prime Minister during COP-26 Conference at Glasgow.

"Harit Sagar" Guidelines-2023 provide a framework for the Major Ports for drawing out a comprehensive action plan for achieving targeted outcomes in terms of quantified reduction in carbon emission over defined timelines, through focused implementation and close monitoring of Green Initiatives. Guidelines cover all areas of port ecosystem that contribute to the carbon intensity of the Port.

These Guidelines aim to promote sustainability and minimize environmental impact of port operations and will act as a guiding tool for decision making in ensuring carbon neutral development with least disturbance to the surrounding aquatic and atmospheric environment.

I am confident that the "Harit Sagar" Guidelines-2023 will help Major Ports to become sustainable and contribute towards country's efforts in fulfilling "Panchamrit" commitments of reduction in Carbon emission and moving towards Net Zero by the targeted timeline. I extend my compliments to the team for bringing out a comprehensive document to provide guidance to the Major Ports for moving towards Sustainable and Green Port ecosystem.

(Sarbananda Sonowal)

Place: New Delhi
Date: 24 April, 2023

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श्रीपाद नाईक
राज्य मंत्री
पतन, पोत परिवहन, जलमार्ग एवं पर्यटन
भारत सरकार

SHRIPAD NAIK
Minister of State for
Ports, Shipping, Waterways & Tourism,
Government of India

सत्यमेव जयते

Azadi Ka Amrit Mahotsav

MESSAGE

Consistent rise in ambient temperature has been a cause of concern, both at national as well as international level. The rise in temperature has been attributed to increase in Green House Gas (GHG) emissions. The Emissions Gap Report (UNEP) 2022 recommends that the world must cut emissions by 45 per cent by 2030 to avoid global catastrophe and limit global warming to 1.5°C.

India, as a part of its commitment in COP 26 towards Climate Action, has pledged to reduce the emissions intensity per unit GDP by 45 percent by year 2030 and achieve 50 percent of energy requirements from non-fossil fuel-based energy resources by the year 2030.

Ports of the country will play an important role in contributing towards country's efforts for achieving five nectar elements "Panchamrit" as declared by our Hon'ble Prime Minister during COP 26. "Harit Sagar" Guidelines-2023 envisages ecosystem dynamics in port development, operation and maintenance while aligning with 'Working with Nature' concept and minimizing impact on biotic components of harbor ecosystem. It lays emphasis on use of Clean / Green energy in Port operation, developing Port capabilities for storage, handling and bunkering Greener Fuels viz. Green Hydrogen, Green Ammonia, Green Methanol / Ethanol etc.

I would like to acknowledge here the efforts of all the team for bringing out the much needed "Harit Sagar "Guidelines for the Major Ports of the country.

Shripad Y. Naik

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राज्य मंत्री
पत्तन, पोत परिवहन और जलमार्ग मंत्रालय
भारत सरकार

Minister of State
For Ports, Shipping and Waterways
Government of India

सत्यमेव जयते

शांतनु ठाकुर
SHANTANU THAKUR

Date:- 02.05.2023

MESSAGE

Restricting the rise of the average temperature of the earth by cutting down carbon dioxide emissions is the shared global goal of humanity. Ports and maritime sector would also need to reduce its share of carbon emission and become carbon neutral in the years to come. Ports around the world are making strategies and targets to become carbon neutral in future.

"Harit Sagar" Guidelines-2023 provide a framework to ensure Sustainability in Port Development by adopting environmentally compatible designs in constructing resilient infrastructure, meeting local energy dynamics and minimizing Carbon and other harmful emissions following Eliminate, Reduce, and Control (ERC) approach. Aim is to protect local community, ecology and environment in and around port areas.

The objective of guidelines is to minimize waste through Refuse, Reduce, Reuse, Repurpose and Recycle (5R concept) to attain zero waste discharge from Port operations and promote monitoring, based on Environmental Performance Indicators, in order to measure objectively identifiable progress in environmental port practices.

I hope that the measures listed in the documents will surely guide the way ahead towards development of Green and Sustainable Maritime Sector and add strength to the nations efforts towards achieving long term goal of reaching net-zero emission.

(SHANTANU THAKUR)

सुधांशु पंत
Sudhansh Pant

सत्यमेव जयते

सचिव
SECRETARY
भारत सरकार
GOVERNMENT OF INDIA
पत्तन, पोत परिवहन और
जलमार्ग मंत्रालय
MINISTRY OF PORTS,
SHIPPING AND WATERWAYS

MESSAGE

The Maritime sector plays a crucial role in the economic growth of the country and is also one of the major contributors to carbon emissions. Measures to reduce its share of carbon emissions and to ensure that Ports become more sustainable in future is a laudable objective whose time has come.

"Harit Sagar" Guidelines-2023 will provide comprehensive guidance to the Major Ports of the country for developing an action plan for achieving Sustainable Developmental Goals (SDG). These include obligations on developing resilient infrastructure for safe, efficient and sustainable Ports and to promote environmental reporting as a means of communicating environmentally good behavior to stakeholders.

These guidelines cover aspects of National Green Hydrogen Mission pertaining to Ports, development of green hydrogen facility, LNG bunkering, Offshore Wind Energy etc and provides provisions for adopting global Green Reporting Initiative (GRI) standards.

I am pleased to share the **"Harit Sagar" Guidelines-2023** to all stakeholders and hope that this document will be useful to the Major Ports for bringing a paradigm shift towards sustainability. This will decisively contribute towards fulfilment of the "Panchamrit Commitments" of our country in overcoming the ill-effects of global warming and climate change.

These guidelines would also be recommended to the State Governments and State Maritime Boards for adoption and use for the ports other than Major Ports.

Sudhansh Pant

(Sudhansh Pant)

SAGARMALA
PORT-LED PROSPERITY

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Vision

To reduce carbon intensity and to develop an environment friendly ecosystem at Major Ports with participation of all stakeholders including Terminal Operators, Logistics Service Providers, Partner Government Agencies, Shipping Lines etc. The aim is to position Major Ports as hubs of economic growth and development in a sustainable manner which has to be achieved through optimization of Port Procedures, inducting Green Technologies, reducing wastages, taking steps for reducing the Carbon Intensity per unit of cargo handled and initiatives for achieving the de-carbonization benchmarks set out in the Government's Panchamrit Commitments.

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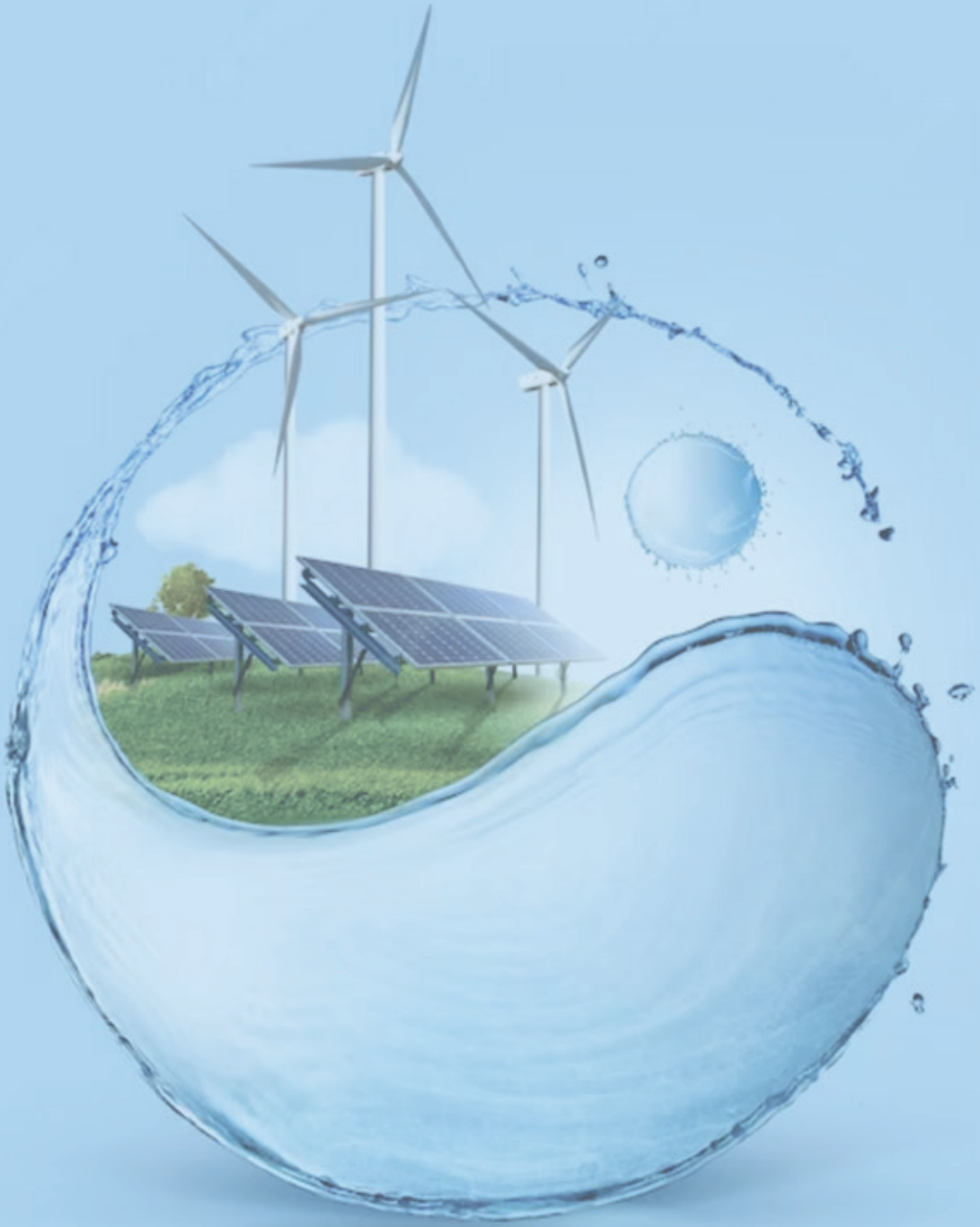

1. Introduction:

1.1 The country's maritime sector plays a crucial role in the overall trade and growth with 95% share in trade volume and 65% share in trade value. Maritime India Vision (MIV) 2030, the roadmap prepared by the Ministry of Ports, Shipping and Waterways for the maritime sector in the country, aims to strengthen the maritime sector through concerted interventions. There are over 150 initiatives identified under the MIV 2030 to take forward the vision under each segment. 'Sustainable and Green Maritime Sector' is one of the focus areas under the MIV 2030.

1.2 India, as a part of its commitment in COP 26 towards Climate Action, has pledged to reduce the emission intensity per unit GDP by 45 percent by year 2030, from 2005 level and achieve about 50 percent cumulative electric power installed capacity from non-fossil fuel-based energy resources by the year 2030.

1.3 Indian Ports will play an important role in contributing towards de-carbonization efforts of the country. Ports are, therefore, required to undertake green initiatives in line with the broad vision of the country and contribute to the efforts being made by the country in moving towards achieving India's long term goal of reaching net-zero emission by 2070. This will also help in contributing towards moving closer to the UN Sustainable Developmental Goals (SDG) which includes obligations on developing resilient infrastructure for safe, efficient and sustainable ports.

1.4 Key interventions, including promoting use of renewable energy, reducing air emissions, optimizing water usage, improving solid waste management and reducing carbon emission per ton of cargo handled by 30 percent by the year 2030 and 70 percent by the year 2047, have been envisaged by the Ministry in its plan for de-carbonizing the sector.

1.5 The Green Port Guidelines document provides guidance to the Major Ports for drawing out a comprehensive plan of action, covering all the components of the Port ecosystem contributing to the carbon footprint, for achieving targeted outcomes in terms of quantified reduction in carbon emission over defined timelines, through focused implementation of Green Interventions.

1.6 These Guidelines will act as a guiding tool for decision making in ensuring sustainability in development and operation of the Port and establishing frameworks towards attaining carbon neutrality with zero disturbance to the ecosystem dynamics of the surrounding aquatic and atmospheric environment. The guidelines will inculcate sustainability within the framework of the organization and promote use of sustainable materials, practices and technologies.

2. Principles of Green Port Guidelines:

2.1 Ensuring Sustainability (Environmental, Economical and Social) in Port Development by adopting environmentally compatible designs in constructing resilient infrastructure meeting local energy dynamics.

2.2 Ensuring sustainability in Port operation by adopting best practices and employing best available carbon neutral and environment friendly technologies.

2.3 Employing an ecosystem dynamics in Port development, operation and maintenance aligning to 'Working with Nature' concept and 'Panchamrit Commitments', minimizing impact on biotic components of harbor ecosystem.

2.4 Maximizing use of Clean / Green energy in Port operation. Developing Port capabilities for storage, handling and bunkering Greener Fuels viz. Green Hydrogen, Green Ammonia, Green Methanol / Ethanol etc.

2.5 Minimizing Carbon and other harmful emissions following Eliminate, Reduce, and Control (ERC) approach to protect local community, ecology and environment in and around Port areas. Reduction in Carbon intensity by 30 percent per ton of Cargo handled, from the current levels (Baseline FY 2022-23), by the year 2030 and 70 percent by year 2047.

2.6 Minimizing waste through Refuse, Reduce, Reuse, Repurpose and Recycle (5R concept) to attain zero waste discharge from Port operations.

2.7 Conduct appropriate environmental impact assessments for both Port projects and Port development plans.

2.8 Stimulate continuous improvement in the Port environment and its environmental management.

2.9 Promote monitoring, based on Environmental Performance Indicators, in order to measure objectively identifiable progress in environmental Port practices.

2.10 Promote environmental reporting as a means of communicating environmentally good behavior to stakeholders.

2.11 Intensify the communication about environmental improvements achieved by Ports.

3. Applicability:

These guidelines shall be applicable to all Major Ports of India.

4. Focus Areas for Implementation:

Focus areas, which have potential to contribute towards improving thesustainability component of the Port ecosystem and in achieving the "Green Port" benchmarks, have been summarized below. Ports shall make efforts toimplement best practices through induction of environment friendlytechnologies and adopting resilient designs to achieve the global benchmarks for development of sustainable Green Port.

4.1 Green Cover:

Ports shall increase the green area cover to capture the fugitive emissions and attenuate the noise generated in the Port surroundings by carrying out effective plantation, developing landscapes etc. The green belt area shall be increased by more than 20 percent by year 2030 and 33 percent by 2047 of the port area. Green belt will help in -

- Supporting the biological diversity.
- Retaining soil moisture.
- Erosion control and coastal protection.
- Recharging ground water and act as Carbon Sink.

4.2 Electrification of Port Equipments (including Vehicles):

(i) Ports shall make efforts to achieve the target for Electrification of Vehicles/Ports equipments as envisaged in MIV 2030 / Blue Economy 2047 and accordingly, should target more than 50 percent electrification by the Year 2030 which is to be further increased to more than 90 percent by the year 2047.

(ii) Ports should target retro-fitment / conversion of Diesel powered equipments / cranes / forklift / pay loader / vehicles etc. to electrically powered in a phased manner by making suitable plans.

(iii) All future procurements of Port vehicles and cargo handling & other equipments shall preferably be electrically driven / electrically powered or should be compatible with low carbon greener fuels viz., CNG, Methanol, Ethanol, Ammonia, Hydrogen Fuel Cell etc.

4.3 Port crafts:

(i) Ports shall make efforts to retrofit Port Crafts (including Tugs, Pilot Boats, Mooring Boats, Survey Boats etc.) with available technology for propulsion on cleaner and greener fuel viz., Green Ammonia, Green Hydrogen (through Fuel Cell), Green Methanol etc in phased manner.

(ii) Ports shall make an action plan and implement the projects to achieve the targets set for the Ports / Port Crafts in the "National Green Hydrogen Mission", including creation of infrastructure at select Ports for storage, bunkering and refueling of Green Hydrogen and its derivative, within the targeted timelines.

(iii) Green Ammonia bunkers and refueling facilities shall be established at all Major Ports by 2035.

4.4 Renewable Energy:

(i) All Ports shall make efforts to achieve the target of Renewable Energy as envisaged in MIV 2030 / Blue Economy 2047 documents. Share of renewable energy at Ports should exceed 60 percent by the Year 2030 and 90 percent by year 2047.

(ii) Ports shall establish at least one LNG bunkering station by the Year 2030 and adequate number of EV charging stations in port campus or nearby area by the year 2025.

(iii) Select Port(s) shall upgrade / augment their Infrastructure to support Offshore Wind Energy projects by facilitating and providing services to the industry for

assembly, staging, fabrication, storage, and loading of Wind Turbine Generator (WTG) components for offshore installation. V.O. Chidambaranar Port has been selected for a pilot project on offshore wind farm to be executed by Ministry of Power.

4.5 Shore to Ship Power Supply:

All Ports shall develop the infrastructure to provide "Shore to Ship" power in a phased manner:

- 1St Phase- To Port Crafts (By 2023)
- 2nd Phase- To Coast Guard/Navy and small coastal vessels (By 2024)
- 3rd Phase- To EXIM vessels (By 2025)

4.6 Resource Utilization:Ports shall:

(i) Make efforts to increase the capacity of Water Treatment Plants and usage of treated water.

(ii) Achieve more than 20 percent reduction in fresh water consumption / ton of cargo and 100 percent recycle and reuse the waste water by year 2030.

(iii) Install Sewage Treatment Plant (STPs) and to use the treated water for all permissible non potable purposes such as horticulture, sprinkling of water on roads and yards etc., thereby reducing the consumption of fresh water quantity.

(iv) Explore possibility of installation of "Desalination Plants" if not installed as an alternate of ground / surface water.

(v) Explore possibility of utilization of condensed water generated from the chilling plants installed at LNG terminals.

(vi) Make adequate arrangements for "Rain Water Harvesting" for effective collection of rain water wherever possible.

4.7 Use of Energy Efficient equipments:

(i) Ports shall use energy efficient equipments / material viz. LED smart lighting system, highest energy rating equipments such as AC, Fans, Electronic devices etc. to reduce the energy consumption demand.

(ii) No vehicles to be permitted inside the port area without PUC certificate.

(iii) The Ports shall use the digital infrastructure i.e. Sagar Setu-NLP-Marine, EBS, RFID etc. to increase the efficiency of Port operation and in turn reduce the carbon footprint.

(iv) All new buildings shall be built by adopting "Green Building" concept.

(v) All Ports shall achieve more than 20 percent reduction in energy consumption / ton of cargo by year 2030 (Baseline – Year 2023).

4.8 Promotion of Coastal Shipping:

Promotion of "Coastal Shipping" is a cost & energy efficient alternative mode for transportation that can help address the challenges of carbon emission and help to achieve the target of national carbon footprint reduction. Ports shall facilitate coastal shipping through creation of infrastructure and suitably designed mechanisms to make the transport viable for the users.

4.9 Effluent Discharge:

(i) Effluent discharge from the ships calling at ports, shall be monitored closely as per the IMO (MARPOL Annex-IV) /DG Shipping Rules.

(ii) Ships equipped with Exhaust Gas Cleaning Systems, to meet IMO emission standards, should switch to the closed-loop mode of operation if fitted with hybrid type of scrubbers, whereas, the vessels fitted with open-loop scrubbers, would need to switch over to compliant fuel.

(iii) Discharge of any wastewater/ bilge water/ oily bilge/ wastewater generated from ships shall be prohibited in the Port waters.

(iv) Ships calling to the Port shall compulsorily declare type (as per MARPOL) and approximate quantity of waste on board and seek Port's assistance in disposing the same.

4.10 Marine Ecosystem:

(i) To develop programs that will protect and conserve the shore, mangrove forest and habitats.

(ii) To prepare an Emergency Oil Pollution Response Management as per the NOS-DCP (National Oil Spill Disaster Contingency Plan) to combat oil pollution in the event of oil spill within the port limits.

(iii) To implement Ballast Water Management by all ships (as applicable) calling ports as per IMO/DG Shipping Guidelines.

4.11 Waste Management:

All Ports shall provide shore reception facility, with approved vendors, for discharging the waste by ships calling at ports as per the Indian Rules.

4.12 Environment Management:

(i) All Ports shall have approved Environment Management Guidelines, Environment Management Plan & a dedicated Environment Cell to review and monitor the environment compliance in the Port.

(ii) Environment Cell, a dedicated unit of competent trained personnel for sustainable and environment friendly Port operation, to give suggestions/

recommendation to management for effective implementation of environment compliance.

(iii) All Ports to carry out an Independent Annual Environment Audit by a credible agency and report of the same shall be uploaded on the Port's website annually before 30th April of every year**.**

4.13 All Ports shall strive to earn Carbon Credits by reducing Green House Gas (GHG) emissions.

4.14 Incentive Measures:

(i) To promote sustainability, the Green Ship incentives may be introduced at Ports to motivate the green culture at ports. The ships (EXIM/Coastal), which are using cleaner fuel, as compared to conventional fuel, and vessels having shore power reception facility to accommodate the full running load at berth, including cargo handling equipment, may be incentivized in terms of queue priority or rebate in berth dues.

(ii) Private Craft Operators at port using alternate fuel (green fuel) such as Methanol, Ethanol, Hydrogen Fuel Cell technology etc. may also be suitably incentivized.

(iii) Private operators / stevedores / agents /exporters / importers at Port who are running their equipment / vehicles with green fuel / electric for all its fleet may be identified and recognized through green certification and may be suitably incentivized.

(iv) All truck operators who use the green fuel i.e. CNG/LNG/Hydrogen and its derivative or electric fleet may be identified and incentivized.

(v) Ports shall ensure that the Green and Sustainability aspects are suitably incorporated in the DPR (Detailed Project Report) while formulating PPP (Public Private Partnership) projects.

(vi) For the existing PPP Concessionaires, Ports shall devise suitable mechanism(s) to incentivize the concessionaires to adopt greener and carbon neutral designs and procedures in line with the spirit of these guidelines.

4.15 Applicable laws and Rules for protection of environment have been listed in **Annexure-A.** In addition, compliance with other Rules applicable in the matter, as issued by the Government of India, CPCB, State Pollution Control Boards (SPCB) and other such agencies from time to time, shall be ensured by all the Ports.

4.16 Environment Performance Indicators (EPIs):

(i) Environment Performance Indicators (EPIs) pertaining to air quality, water quality, effluent and noise pollution are listed in **Annexure-B.**

(ii) Environment Performance Indicators (EPIs) pertaining to waste management are listed in **Annexure-C.**

(iii) Environment Performance Indicators (EPIs) for sustainability are listed in **Annexure-D.**

5. Methodology for Implementation & Compliance:

5.1 All Ports shall prepare an action plan for developing a monitoring system in reference of **EPIs** listed in **Annexure-B** and formulate Targets/Action plan in reference of **EPIs** listed in **Annexure-D** within a **period of two months from** the date of launch of the guidelines.

5.2 With reference to the EPIs as mentioned in Annexure-B, all Ports shall make suitable efforts to develop the real time Continuous Ambient Air Quality Monitoring Stations (CAAQMS) as per applicable MoEF&CC/CPCB guidelines with digital dashboard and, if already installed, the same to be calibrated with the approved lab showing the real time value with reference to the permissible limit and to be hooked with MoPSW server/portal/Sagarmanthan dashboard for real time monitoring and feedback. Suggested timelines for the above activities are as under:

(i) Ports which are not dealing with dry bulk cargo such as iron ore, coal may install CAAQMS within a period of **6 months** from the date of launch of these guidelines.

(ii) Other Ports may install the CAAQMS within a period of **18 months** from the date of launch of these guidelines. Suitable infrastructure to mitigate the air pollution from dry bulk will have to be created before installing CAAQMS.

5.3 All Ports may make suitable efforts to develop and install real time Continuous Marine Water Quality Monitoring Stations (CMWQMS) as per MoEF&CC/CPCB guidelines with digital dashboard and if already installed the same is to be calibrated by an approved lab showing the real time value with reference to the permissible limits and to be hooked with MoPSW server/portal/ Sagarmanthan dashboard for real time monitoring and feedback within a tentative period of **12 months** from the date of launch of guidelines.

5.4 All Ports may make suitable efforts to develop and install real time Online Continuous Effluent Monitoring system (OCEMS) with reference to the effluent parameter as mentioned in Annexure-B as per MoEF&CC / CPCB guidelines with digital dashboard and if already installed the same is to be calibrated by the approved lab showing the real time value with reference to the permissible limit and to be hooked with MoPSW server/portal/Sagarmanthan dashboard for real time monitoring and feedback within a tentative period **of 12 months** from the date of launch of guidelines.

5.5 Noise level and DG set Noise level monitoring may also be integrated in real time dashboard as mentioned above.

5.6 Till the online platform as stated above is developed in reference of EPIs as listed in Annexure-B, the regular reports may be prepared by credible Independent Environment Auditor and uploaded on the port website before **30th of April** each year.

5.7 Other EPIs as listed in Annexure-C shall be monitored and recorded in scientific manner and annual statement of the same showing real quantity and permissible quantity shall be uploaded on port website annually before **30th of April** each year.

5.8 All Ports shall conduct a baseline study, by engaging an expert agency, in respect of EPIs as listed in Annexure-D, taking FY2022-23 as base year, and submit the report to MoPSW within a period **of 3 months** from the date of launch of these guidelines. The study shall establish baseline, using internationally/nationally accepted protocols/ methods, for:

(i) GHG emission and carbon footprint. The fuel consumption is to be estimated for each piece of machinery i.e. ships calling at port, harbor crafts, port crafts, all cargo handling equipment and other equipment engaged in port operations, trucks used for cargo transportation etc. and calculate the emissions using emission factor.

(ii) Total emissions of different air pollutants from port related sources throughout the entire year to be estimated and annual emissions are then to be scaled to monthly averages and used to simulate the impact on air quality.

5.9 **MoPSW** shall recognize and award the best three Green Performing Ports of the year on the basis of an evaluation criteria.

6. Interpretation & Relaxation of Provisions:

6.1 In case of any ambiguity or doubt regarding any provision of the Guidelines, Ministry of Ports, Shipping and Waterways (MoPSW) has the power to interpret and clarify within the overall framework and spirit of the Guidelines.

6.2 MoPSW is empowered to relax the provisions of these guidelines, in public interest, within the overall framework and spirit of the guidelines, in case of difficulties in implementation.

7. Review of Guidelines:

Ministry of Ports, Shipping & Waterways may renew / amend / modify the provisions of these guidelines from time to time.

8. Green Reporting Initiative (GRI)

Ports shall make all efforts to adopt the Green Reporting Initiative (GRI), a global standard for reporting to communicate and demonstrate accountability for their impacts on the environment, economy and people.

Annexure-A

S. No.	Pollution Element	Applicable Laws
1	Air	National Ambient Air Quality Standards (NAAQS), Central Pollution Control Board Notification (CPCB), dated 18th November 2009 under TheAir (Prevention and Control of Pollution)Act, 1981 as amended in 1987.
2	Noise Level	Noise Pollution (Regulation and Control) Rules, 2000 under Environment (Protection) Act, 1986.
3	DG Set Noise	Environment (Protection) second Amendment Rules vide GSR 371(E), dated 17th May 2002 at serial no.94 and its amendments vide GSR No 520(E) dated 1st July 2003; GSR 448(E), dated 12th July 2004; GSR 315(E) dated 16th May 2005; GSR 464(E) dated 7th August 2006; GSR 566(E) dated 29th August 2007 and GSR 752(E) dated 24th October 2008; G.S.R. 215 (E), dated 15th March, 2011 under the Environment (Protection) Act, 1986)
4	Water	Water (Prevention and Control of Pollution) Act, 1974 and as amended in 2003 (General Standards for Discharge of Environmental Pollutants from CPCB).
5	Waste	
5.1	Hazardous Waste	Hazardous & other Wastes (Management & Transboundry Movement) Rules, 2016 and Hazardous Wastes (Management, Handling& Transboundry Movement) Rules, 2008 under Environment (Protection) Act, 1986
5.2	E-Waste	E-Waste (Management) Rules, 2022 to become effective from 1st April 2023 under Environment (Protection) Act, 1986
5.3	Solid Waste	Solid Waste Management Rules, 2016.
5.4	Bio Medical Waste	Bio-Medical Waste Management Rules, 2016 under Environment (Protection) Act, 1986
5.5	Plastic Waste	Plastic Waste Management Rules, 2016 under Environment (Protection) Act, 1986
5.6	Battery Waste	Battery Waste Management Rules, 2022, under Environment (Protection) Act, 1986
5.7	Construction & Demolition Waste	C&D Waste Management Rules 2016 and latest Guidelines issued by Central Pollution Control Board
6	Environment Clearance	Environment (Protection) Act, 1986.

Annexure-B

Environment Performance Indicator (Air, Water, Noise & Effluent)

Sr. No.	Pollutants
1.	Air
1.1	SO2 (Sulphur dioxide)
1.2	NO2(Nitrogen dioxide)
1.3	PM10 (Particulate Matter-10)
1.4	PM2.5 (Particulate Matter-10
1.5	O3 (Ozone)
1.6	Pb(Lead)
1.7	CO(Carbon Mono Oxide)
1.8	NH3(Ammonia)
1.9	Benzene(C6H6)
1.10	Benzo(a) pyrine (BaP)
1.11	Arsenic(As)
1.12	Nickel(Ni)
2.	Water
2.1	Ph (Alkalinity)
2.2	Dissolved oxygen
2.3	Fecal Coliform
2.4	Biochemical Oxygen Demand (BOD)
	Chemical Oxygen Demand (COD)
2.5	Hg (Mercury)
2.6	Pb(Lead)
2.7	temperature
2.8	Total Dissolved Solids (TDS)
2.9	Conductivity
2.10	Nitrate
2.11	Turbidity
2.12	Salinity
3.	Noise Level
3.1	LAeq (Continuous Noise Level for a particular period)
3.2	LAmax(Maximum Noise Level)
4.	Noise Level DG set
5.	Effluent Discharge (STP)
5.1	Ph
5.2	COD
5.3	BOD
5.4	Total Suspended Solids
5.4	Nitrate
5.5	Ammonia
5.6	Fecal Coliform

Annexure-C

Environment Performance Indicator (Waste Management)

Sr. No.	Waste Type	Source of Generation	Qty. Generated in MT in Last FY	Quantity Disposed off in MT in Last FY	Qty. Remaining in MT	Permissible limit, if any
1	Hazardous Waste					
2	E-Waste					
3	Solid Waste					
4	Plastic Waste					
5	Battery Waste (In Nos.)					
6	Construction & Demolition Waste					
7	Bio Medical Waste					

Annexure-D

Environment Performance Indicator for Sustainability

Sr. No.	EPIs	Target by 2030	Target by 2047
1	% share of Renewable energy consumption at ports (self generated + procurement from grid)	>60%	>90%
2	% Port equipment/vehicles electrified	>50%	>90%
3	% area under green belt	>20%	>33%
4	% reduction in CO2 emission / ton of cargo (Baseline Year 2023)	>30%	>70%
5	%GHG emission reduction in all coastal/ EXIM vessels	>10%	>50%
6	% reduction in fresh-water consumption / ton of cargo (Baseline Year 2023)	>20%	-
7	% recycle and reuse of consumed water	>100%	-
8	% reduction in energy consumption / ton of cargo (Baseline Year 2023)	>20%	-
9	One no. of LNG bunkering station	By year 2030	-
10	Green hydrogen / Ammonia bunkers and refueling facilities	By year 2035	
11	Adequate number of EV charging stations	By year 2025	-

सत्यमेव जयते

Ministry of Ports, Shipping & Waterways

Government of India