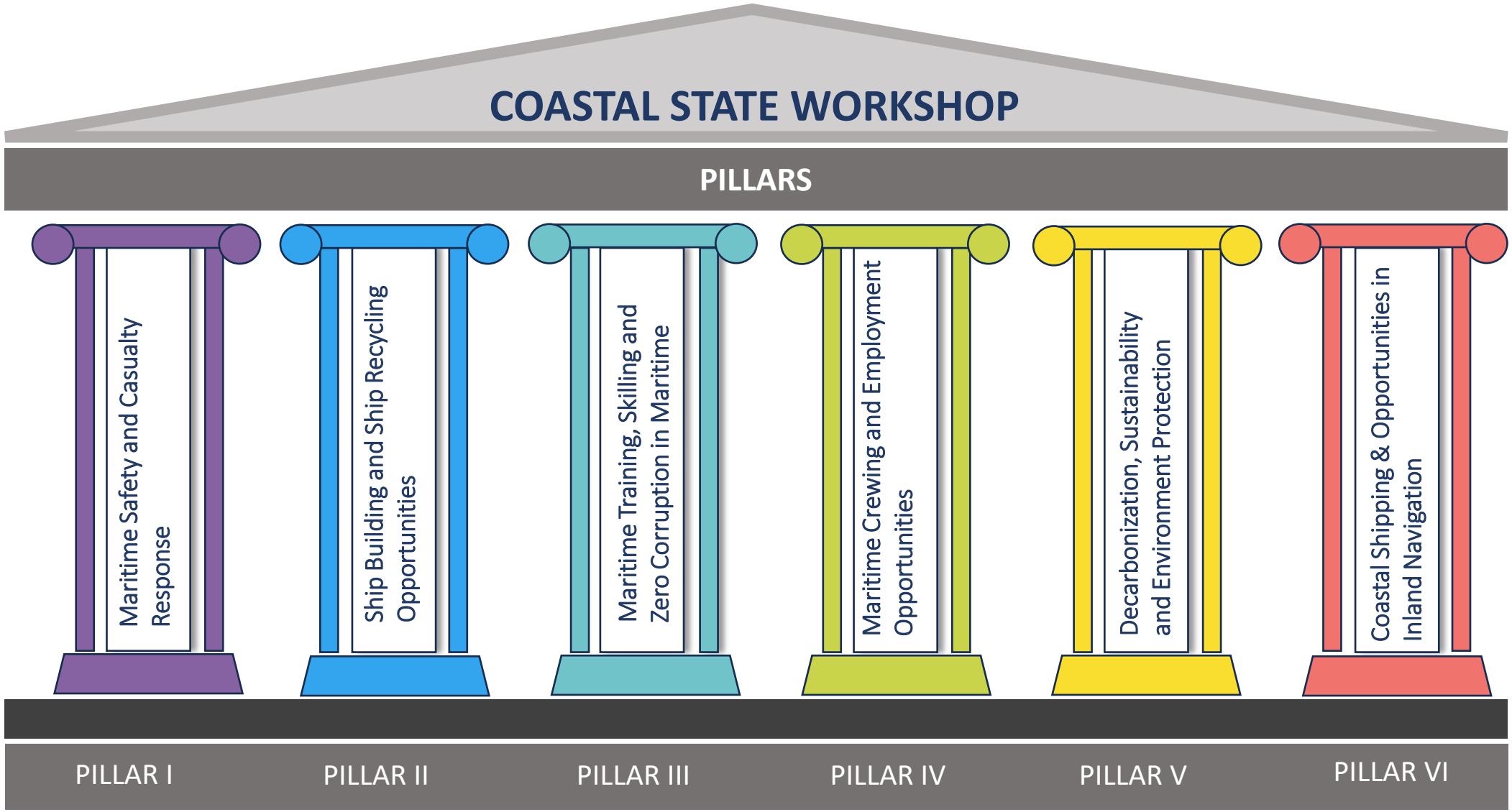
COASTAL STATE WORKSHOP- GOA

Directorate General of Shipping |
Ministry of Ports, Shipping and Waterways

22nd December 2025

6 PILLARS OF THE COASTAL STATE WORKSHOP



Summary of Coastal State Workshop Pillars & Nodal Officers

Pillar	Key Discussion Aspects	Nodal Officers
Pillar 1 – Maritime Safety & Casualty Response	1. Fishing Vessel Collisions & Safety Awareness 2. Maritime casualty legal advisory 3. Disaster preparedness & port involvement	Capt. Harinder Singh, Capt. Anish Joseph
Pillar 2 – Shipbuilding & Ship Recycling	1. Shipyard development – Brownfield & Greenfield opportunities 2. Ship Recycling Opportunities	Shri Pradeep Sudhakar, Shri Ravi Kumar M, Shri Gopikrishna
Pillar 3 – Training, Skilling & Zero Corruption in MTIs	1. MTI quality enhancement 2. State support frameworks 3. Zero-tolerance for corruption	Shri Praveen Nair, Shri Deependra Bisen
Pillar 4 – Crewing, Employment & Zero Tolerance in Manning	1. RPSL network 2. Maritime employment opportunities in the state	Capt. P. Meena, Capt. Nitin Mukesh
Pillar 5 – Sustainability, Environment & Decarbonisation	1. Port-led sustainability 2. Modal shift strategies	Shri Satish Kamath, Shri Pravin Roy
Pillar 6 – Coastal Shipping, Inland Navigation & Multimodal Linkages	1. Optimising ports & inland waterways 2. Multimodal logistics integration	Shri Ravi Kumar M, Shri Nebu Ommen

PILLAR 1

Maritime Safety and Casualty Response

Pillar 1 – Maritime Safety and Casualty Response

Enhance Safety Governance

Standardize Reporting & Coordination

Build Legal & Technical Capacity

Promote Equipment & Compliance Upgradation

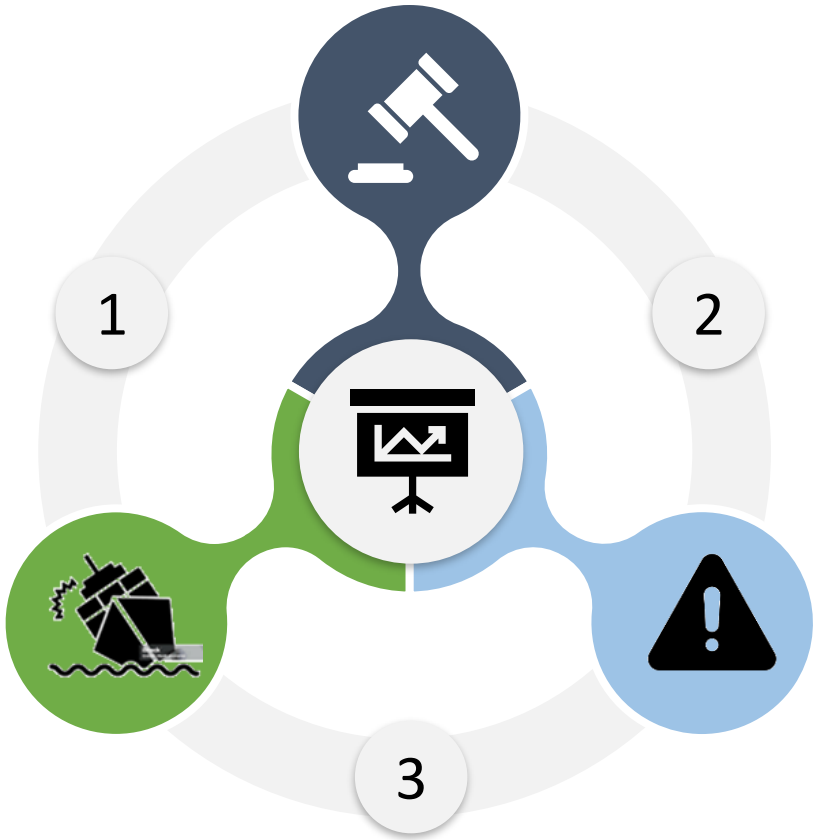
Strengthen Cyclone & Disaster Preparedness

Facilitate Stakeholder Awareness & Coordination

Agenda for the Workshop

Fishing Vessel Collisions & Safety Awareness

- Overview of collision trends (2023–2024)
- Reporting delays
- Equipment gaps (AIS/VHF)
- Awareness on COLREGs and safe navigation practices



Maritime Casualty Legal Advisory & Institutional Roles

- Legal framework under Merchant Shipping Act 2025 and Admiralty Act 2017
- Claims procedures
- Insurance and liability systems; inter-agency coordination

Cyclone Preparedness and Port Disaster Response

- Implementation of DGS SOP
- SITREP procedures & communication protocols
- Case of Cyclone Montha (2025)

Agenda 1

Fishing Vessel Collisions & Safety Awareness

Location of Fishing Vessel Collisions between 2023-2025

Total Number of Collision

27

Annual Distribution of Collisions

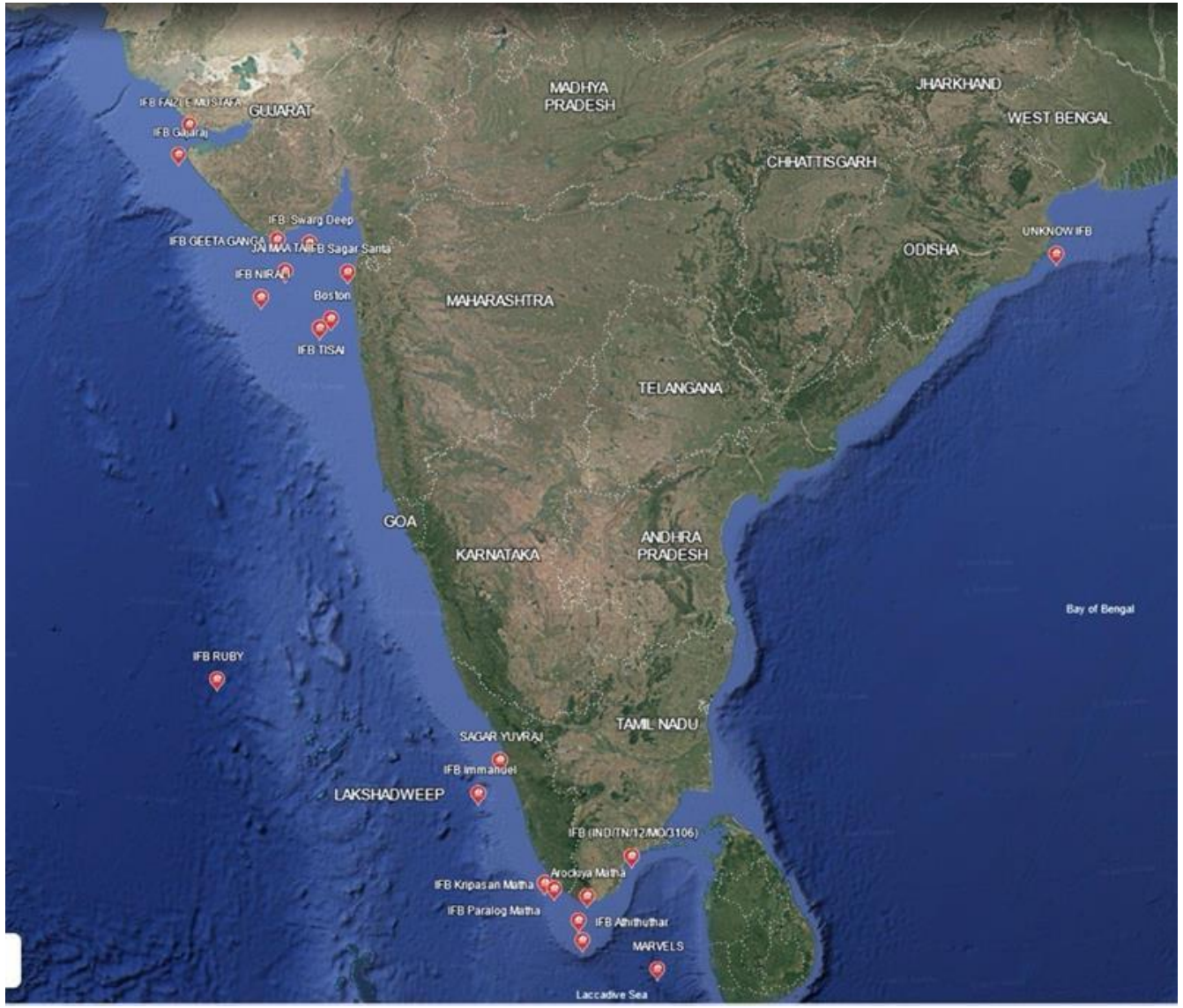
8	9	10
Collisions in 2023	Collisions in 2024	Collisions in 2025

Resulted in

2023	
Fatality	2
Injury	6

2024	
Fatality	2
Injury	2

2025	
Fatality	5
Injury	0



Gaps and Issues Identified

1

Delayed Reporting

Incident notifications delayed up to **196 hours**, impeding rescue and investigation

2

Low Detectability

Many vessels lack **radar reflectors, AIS, and navigation lights**, reducing visibility to merchant traffic

3

Weak Communication Framework

No **centralised reporting or distress channel** between fishing boats and merchant ships

4

Incomplete Data Collection

High incident frequency under specific MMD jurisdictions (Kandla, Kochi, Chennai) indicates need for localised strategies

5

Mixed-Flag Involvement

Collisions involve both Indian and foreign-flag vessels, requiring better flag-state and port coordination.

6

Inadequate Insurance cover and oversight & Inadequate inspection and certification regime of fishing vessels by the Fisheries department

Fishing Vessel Collisions – Recommended Actions

Unified Reporting Protocol:

Establish a **single-window system via MRCC** for reporting collisions and near-miss incidents

Integrate Vessel Database:

Link fishing vessel registries with DG Shipping's central database for traceability and real-time coordination with MMDs and ICG

Mandatory Navigational Equipment:

Enforce fitting of radar reflectors, VHF sets, and navigation lights on all mechanised and motorised fishing vessels

Zone-Based Monitoring:

Deploy coastal radar and AIS tracking in high-traffic areas, especially the Visakhapatnam–Kakinada corridor, for enhanced surveillance

Capacity Building for Fishermen:

Conduct regular safety workshops through Fisheries Departments and Port Authorities on navigation, communication, and emergency response

Foreign-Flag Coordination:

Strengthen enforcement of COLREGs and establish joint investigation mechanisms for foreign vessel incidents

Purpose and Intent

To establish an **integrated legal and operational framework** for managing marine casualties at the **state level**, ensuring clarity, coordination, and accountability

1. Clarify Legal Framework

Define the legal basis and procedural structure governing marine incidents

2. Define Institutional Roles

Specify responsibilities of **central, state, and port authorities** for effective coordination

3. Guide Stakeholders

Provide direction to **shipowners, operators, and coastal communities** on reporting, documentation, and claims

4. Standardize Coordination Protocols

Ensure **uniform implementation** and consistent accountability across coastal states

Objectives and Scope

To define the **legal, technical, and operational framework** for effective marine casualty management at the **state level**

Preparedness Standards	• Establish minimum benchmarks for **technical readiness, response infrastructure**, and coordination capacity across state and district levels
Role Clarification & Stakeholder Mapping	• Define responsibilities of **DGS, State Maritime Boards, ICG, Ports, SDMAs, SPCBs, and Fisheries Departments**. • Recognise the role of **shipowners, insurers, and P&I Clubs** in liability and compensation.
Incident Reporting & Communication	• Standardise **reporting formats** and create **real-time communication channels** linking DGS, MRCCs, and State Crisis Management Groups
Insurance & Liability Regimes	• Apprise coastal state authorities about **mandatory insurance**, **liability limits**, and **compensation procedures** under national laws and international conventions (MSA 2025, CLC, IOPC).
Multi-Agency Coordination & Enforcement	• Define escalation mechanisms and ensure **synchronized action** among maritime, environmental, and disaster-management agencies.

Legal Framework – Admiralty Act, 2017

Provides the **legal foundation for instituting and adjudicating maritime claims** following marine incidents. **Key Provisions (Section 4)** – Recognised Maritime Claims

1. Wreck Removal Costs

- Covers expenses for **raising, removing, recovering, or rendering harmless** a wrecked, stranded, or abandoned vessel.
- Subject to limitation under the **LLMC Convention, 1996**

2. Salvage Services

- Compensation for salvage operations, including special compensation for preventing or mitigating environmental harm.

3. Environmental Damage

- Claims for **damage or threat of damage** to the environment, coastline, or related interests.
- Includes costs of **preventive or remedial actions** and **third-party losses** arising from the incident.

Insurance and Liability Framework

Ensure **financial accountability and compensation** for maritime incidents through a structured multi-layered insurance regime

Key Components

- **Protection & Indemnity (P&I) Insurance:**
  Mandatory for vessels >300 GT; covers **third-party liabilities** — death, injury, pollution, wreck removal, and cargo damage.
- **Hull, Machinery & Freight Insurance:**
  Covers **direct physical and operational losses** to vessels.
- **Domestic P&I Club Development:**
  Initiative to create **sovereign coverage** and reduce reliance on foreign insurers.

International Alignment

In line with global conventions:

- **LLMC 1976** – Limitation of Liability for Maritime Claims
- **CLC 1992** – Civil Liability Convention
- **Bunker Oil Convention 2001**
- **Wreck Removal Convention 2007**

Claims and Adjudication

Processed through **High Courts with admiralty jurisdiction**, ensuring **transparency and timely resolution**.

Technical and Legal Preparedness of Coastal States

Ensure coordinated **technical readiness** and **legal compliance** for effective marine casualty management with the following key roles

State Maritime Boards/ Port Authorities:

- Maintain incident registers
- Coordinate with DGS and ensure harbour safety

State Disaster Management Authority (SDMA):

- Aligning coastal disaster management plans with Plan for Marine Incidents and Emergency Response by jointly working with DGS

Indian Coast Guard:

- Lead pollution control and oil spill response under NOS-DCP

State Pollution Control Board (SPCBs):

- Oversee shoreline protection, waste management, and post-incident monitoring

Fisheries and Local Administrations:

- Facilitate early reporting and mobilisation of coastal resources

Claims, Compensation, and Role of Nodal Authorities

Claims Framework

(Under Admiralty Act & Merchant Shipping Act, 2025)

Affected parties may file claims for:

- Loss of life or personal injury
- Damage to property or cargo
- Environmental degradation and remediation costs
- Wreck removal and salvage expenses
- Economic losses due to disruption of port or fishing activity

Adjudication and Compensation

- Claims filed before High Courts with admiralty jurisdiction
- Priority of settlement follows the Admiralty Act hierarchy
- Pollution-related claims addressed through IOPC Fund and international compensation conventions

Nodal Authority: Directorate General of Shipping (DGS)

- Coordinates central and state response during maritime incidents
- Oversees deployment of pollution-control resources
- Ensures statutory compliance in reporting and insurance
- Supervises claim settlement and post-incident legal actions

Cyclone Coordination Framework and Objectives

Central Coordination:
The **Directorate General of Shipping (DGS)** acts as the **nodal authority** during cyclone events.
Ensures real-time communication among:

- **IMD**, **Indian Navy**, **Indian Coast Guard (ICG)**, **MRCC**
- **DGH**, **OISD**, **Port Authorities**, and **Shipping Companies**

Framework Objectives:

1. **Timely Dissemination** of IMD weather advisories to all maritime stakeholders
2. **Real-Time Coordination** through the **DGComm Centre** for unified response
3. **Mandatory Preparedness Actions** by ports and operators as per approved SOPs
4. **Regular SITREP Reporting** to monitor evolving situations
5. **Inter-Agency Review Meetings** chaired by the Director General of Shipping
6. Compliance with **MoPSW Cyclone Preparedness Checklist** and **Casualty SOP**

Cyclone Preparedness and Port Disaster Response

Standard Operating Procedures (SOP) for Cyclones DGS, 2021

Provide a structured operational framework for **early warning, coordination, monitoring, and post-event reporting** during cyclonic events

Key SOP Actions:

- **Weather Warnings:**
  - **DGComm Centre** circulates **IMD advisories** to shipping companies, ports, Maritime Boards, DGH, ONGC, and OISD.
  - Parallel alerts sent to **ICG**, **MRCC**, and **Navy**.
- **Local Coordination:**
  - **Principal Officers (POs)** designate **MMD Surveyors** as local coordinators.
- **Port & Operator Roles:**
  - Ports issue vessel advisories; **ICG enforces compliance** if necessary.
- **High-Risk Vessels:**
  - Identification of **non-propelled, passenger, arrested, or low-powered vessels** for priority sheltering.
- **SITREP Reporting:**
  - Issued **every 12 hours**; increased to **6–8 hours** for severe cyclones.
- **Coordination Meetings:**
  - **DG Shipping** chairs meetings with **oil companies, ports, INSA, ICCSA, MASSA, FOSMA, MANSASHIP**, and government agencies.
- **Emergency Towing Vessels (ETVs):**
  - Mobilised to **strategic locations** for rapid salvage and rescue readiness.
- **Standing Orders & Enforcement:**
  - Reviewed **every six hours**; vessels within **50–70 NM** of cyclone path monitored by **ICG**.
- **Action Taken Reports:**
  - Ports submit detailed reports on **marine, land, personnel, and infrastructure safety** post-event.

Safety in Port Operations: Entry into Enclosed Spaces

Fatal port incidents revealed unsafe entry into oxygen-deficient cargo spaces due to lapses in marking, coordination, and procedures.

Mandatory Safety Measures (as per DGS Circular):

Access Control:

Enclosed cargo spaces to remain locked; entry only upon authorisation by ship staff

Marking and Identification:

All access points (booby hatches, ladders) must be numbered and clearly identified.

Interface with Shore Personnel:

Cargo briefings to cover restricted areas and emergency procedures.

Medical Equipment & Training:

Maintain oxygen resuscitators onboard; ensure crew trained in first aid and CPR.

Briefing of Shore Workers:

Mandatory safety induction on confined-space hazards before work begins.

Emergency Support:

Ports to provide ambulance and trauma services at operational berths.

Training & Recordkeeping:

Maintain updated records of authorised stevedores and ensure mandatory training on enclosed-space entry.

Integration with National and International Frameworks

Ensure that India's maritime disaster preparedness and cyclone response mechanisms operate in full alignment with national mandates and international maritime protocols

Aligned Frameworks

- **National Disaster Management Plan (NDMP-2019)** —
Provides the overarching national framework for **disaster prevention, preparedness, and coordinated response**.

- **DGS Disaster Management Plan & SOP for Cyclones (2021 & 2022 Updates)** —
Establishes **maritime-specific procedures** for cyclone monitoring, early warning, and coordinated action.

- **IMD Cyclone Warning SOP (2021)** —
Standardises **four-stage alerts**: *Pre-Cyclone Watch*, *Cyclone Alert*, *Cyclone Warning*, and *Post-Landfall Outlook* for uniform communication across agencies.

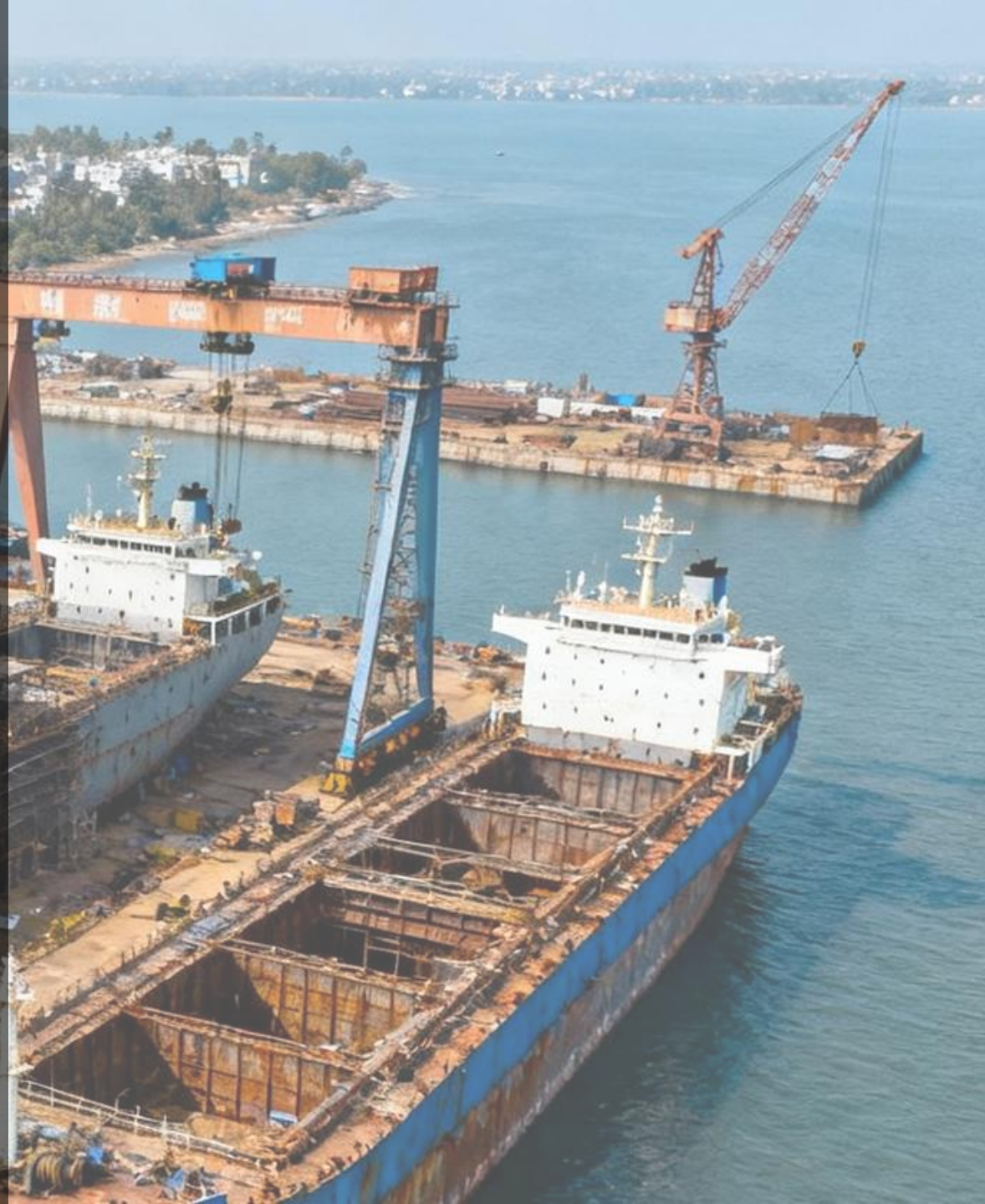
- **IMO & WMO Protocols (WWMIWS Framework)** —
Ensure **global coordination** under the **Worldwide Met-Ocean Information and Warning Service**, enabling ships to **receive and transmit storm data** as per **SOLAS obligations**.

Goa

COASTAL STATE WORKSHOP

Pillar II – Shipbuilding and Ship Recycling

Contents



WHY SHIPBUILDING IS CRITICAL?

Mother Industry for Heavy Engineering

Employment Generation

Creation of Strategic Assets

Increasing Indian Tonnage in Energy imports

Reduce Dependability & Outflow of FOREX

National Vision for Shipbuilding

MIV 2030	TARGETS	MAKV 2047
Top 10	Global Ranking	Top 5
0.6 Mn GT	Annual Production	4.5 Mn GT
20+ Lakh jobs	Employment Generation	1.5 Crore jobs
₹3 Lakh - 3.5 Lakh Cr	Investment Required	₹75 Lakh - 80 Lakh Cr

Four Pillar Approach

Total Allocation

₹69,725 Cr.

01

Shipbuilding Financial Assistance scheme

Allocation: ₹24,736 crore

(Shipbreaking Credit Note – 4,001 Cr)

02

Maritime Development Fund

Allocation: ₹25,000 crore

(Maritime Investment Fund – ₹20,000 crore Interest Incentivisation Fund – ₹5,000 crore)

03

Shipbuilding Development Scheme

Allocation: ₹ 19,989 crore

(Capacity & capability development and credit risk coverage)

04

Legal, Policy and Process Reforms

Shipbuilding Financial Assistance

₹ 24,736 Cr.

01

Shipbuilding Financial Assistance scheme

01	₹ 20,554 Cr.	Extension of Shipbuilding financial assistance scheme
02	₹ 4,001 Cr.	Shipbreaking credit note
03	₹ 181 Cr.	Establishment of National Shipbuilding Mission

Shipbreaking credit note

40% of ship's scrap value to be issued to the ship-owner when the vessel is scrapped in an Indian yard. Credit note would be reimbursable against cost of construction of new vessel at an Indian shipyard.

Assistance Rate Structure

Non-specialized – Small Vessel
- Up to ₹100 crore → 15% of actual value

Non-specialized – Large Vessel
- First ₹100 crore → 15%
- Value above ₹100 crore → 20%

Specialized Vessel
- First ₹100 crore → 15%
- Value above ₹100 crore → 25%

Domestic Content Requirement

< 30% Domestic Content
- No SBFAS support

30% to < 40% Domestic Content
- Pro-rata support

≥ 40% Domestic Content
- Full support

Shipbuilding Development Scheme

₹ 19,989 Cr.

Shipbuilding Development Scheme
(Capacity & capability development and credit risk coverage)

01	₹ 9,930 Cr.	Capital support for greenfield capacity expansion
02	₹ 8,261 Cr.	Capital assistance to existing/ brownfield shipyards towards the expansion of production capacity
03	₹ 305 Cr.	Capability development initiatives: set up the India Ship Technology Centre (ISTC)
04	₹ 1,443 Cr.	Shipbuilding risk coverage: Pre-Shipment Insurance, Post-Shipment Insurance and Vendor Default Insurance
05	₹ 50 Cr.	Administrative Expenses

Shipbuilding Development Scheme

BROWNFIELD EXPANSION

Objective

Facilitate capacity augmentation, modernization, and technological upgradation of existing shipyards to enhance competitiveness and efficiency.

Components Funded

1. Channel & Basin Development,
2. Dry Dock,
3. Slipway,
4. Shiplift,
5. Floating Dock,
6. Pier / Jetty,
7. Cranes,
8. Block / Modular Fabrication Facility

Highlights

- **Eligibility:** Existing Indian shipyard, operational ≥3 years; expansion allowed under same legal entity.
- **Capital Assistance:** Limited to 25% of fair assessed project cost (DPR/IEA appraisal/CA-certified).

GREENFIELD CLUSTERS

Objective

Develop world-class shipbuilding clusters with shared infrastructure and advanced technologies to enhance competitiveness, drive economic growth, and generate jobs.

Components Funded

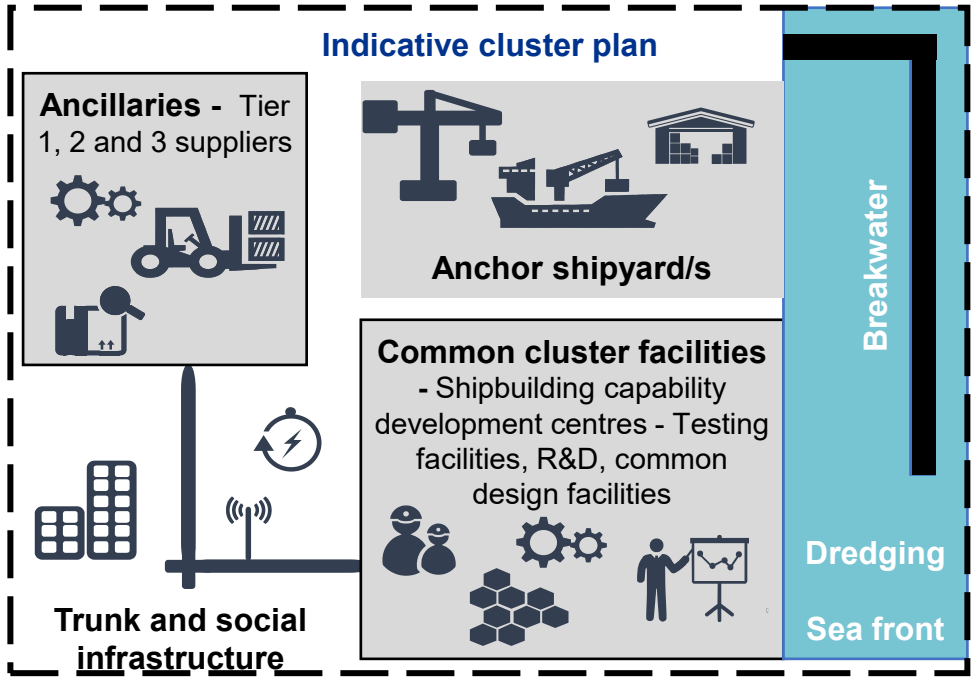
1. Breakwaters/Tide-independent basins/Wave breakers,
2. Channel and basin development,
3. Internal infrastructure
4. Common maritime assets,
5. Regional Shipbuilding Capability Centres

Highlights

- **Anchor Shipyard:** Minimum annual capacity of 0.5 million GT
- **Funding:** 100% upfront grant for eligible components
- **SPV Structure**: Includes Central/State Govt agencies + Shipyard partner contributions
- **Infrastructure:** Trunk infra to be developed by SPV

Cluster Based Approach to Greenfield Capacity and Capability Creation

A cluster-based approach makes an attractive proposition for both the shipyards as well as the ancillaries as it will allow for efficient utilization of common assets and connectivity infrastructure



Ulsan Shipbuilding cluster in South Korea

Konkan Maritime Cluster

Konkan Maritime Cluster is **the 1st Maritime Cluster of India** set up by a corporation of Goan companies in Goa, a Company having its registered office at Vasco, Goa and duty registered under Ministry of Company Affairs, Government of India.

Key Highlights

- To strengthen India's maritime manufacturing ecosystem through clustering of MSMEs
- To enhance global competitiveness of small and medium shipyards
- To support Atmanirbhar Bharat by reducing dependence on imported marine equipment
- Established at Verna Industrial Estate, Goa
- Land area: 14,380 sq. m
- Supported by:
  - Government of Goa
  - MoPSW(through DGS)
  - Ministry of MSME
- Anchored in Goa's legacy of MSME-led shipbuilding and marine manufacturing

Common Facility Centre (CFC)

The **Common Facility Centre (CFC) at the Konkan Maritime Cluster** is a shared industrial infrastructure created **to support MSMEs and start-ups engaged in shipbuilding**, marine equipment manufacturing, and allied maritime activities. It provides access to advanced fabrication, testing, and processing facilities that individual enterprises may not be able to establish independently due to high capital costs. By enabling **shared use of modern machinery and services at affordable rates**, the CFC helps improve product quality, ensure compliance with national and international standards, reduce project timelines, and enhance the overall competitiveness of maritime MSMEs within the cluster.

Comprehensive Shipbuilding Portal

The comprehensive shipbuilding portal will serve as a centralized digital hub, bringing together industry capabilities, stakeholder collaboration, technical resources, and innovation for India's shipbuilding and repair sector

Modules

1. **Capability Insights**
   Display capabilities, projects & achievements, CAF
2. **Collaboration Hub**
   Interactive tools for industry professionals to network.- QnA, Posts & Closed Groups
3. **Training & Certifications**
   Information on Training courses and Institutes
4. **Finance & Insurance**
   Information on funding schemes and insurance solutions
5. **Innovation Centre**
   Showcase innovative technologies and R&D projects.
6. **Technical Library**
   Repository of technical documents, standards, and guidelines.
7. **Regulatory & Compliance**
   Updates on maritime regulations and safety standards.
8. **Industry Directory**
   Comprehensive listing of shipbuilding stakeholders.

Objectives

1. Increase global competitiveness of Indian shipbuilding industry

2. Enhanced collaboration between stakeholders (design agency, shipyards, ancillaries and equipment suppliers, regulators etc.).

3. Workforce development through training and certification.

4. To promote R&D and innovation.

5. To provide centralized access to technical information, standards, and guidelines.

6. To provide assistance on financial schemes.

Pillar II – Ship Recycling

Goa

Environmentally Sensitive Maritime State with Strong Governance Framework

Key Highlights :

- **193.95 km coastline** with riverine and estuarine navigation
- Maritime administration led by the **Captain of Ports, Government of Goa**
- Network of **minor ports, jetties and inland waterways**
- Predominance of **small and medium coastal vessels** (barges, tugs, fishing craft)
- Existing **ship repair yards and marine services ecosystem**
- Strong focus on **environmental protection and CRZ compliance**
- Availability of **skilled and semi-skilled maritime workforce**
- Strategic **west coast location** supporting coastal shipping and offshore activity

Goa – End-of-Life Vessel Management Context

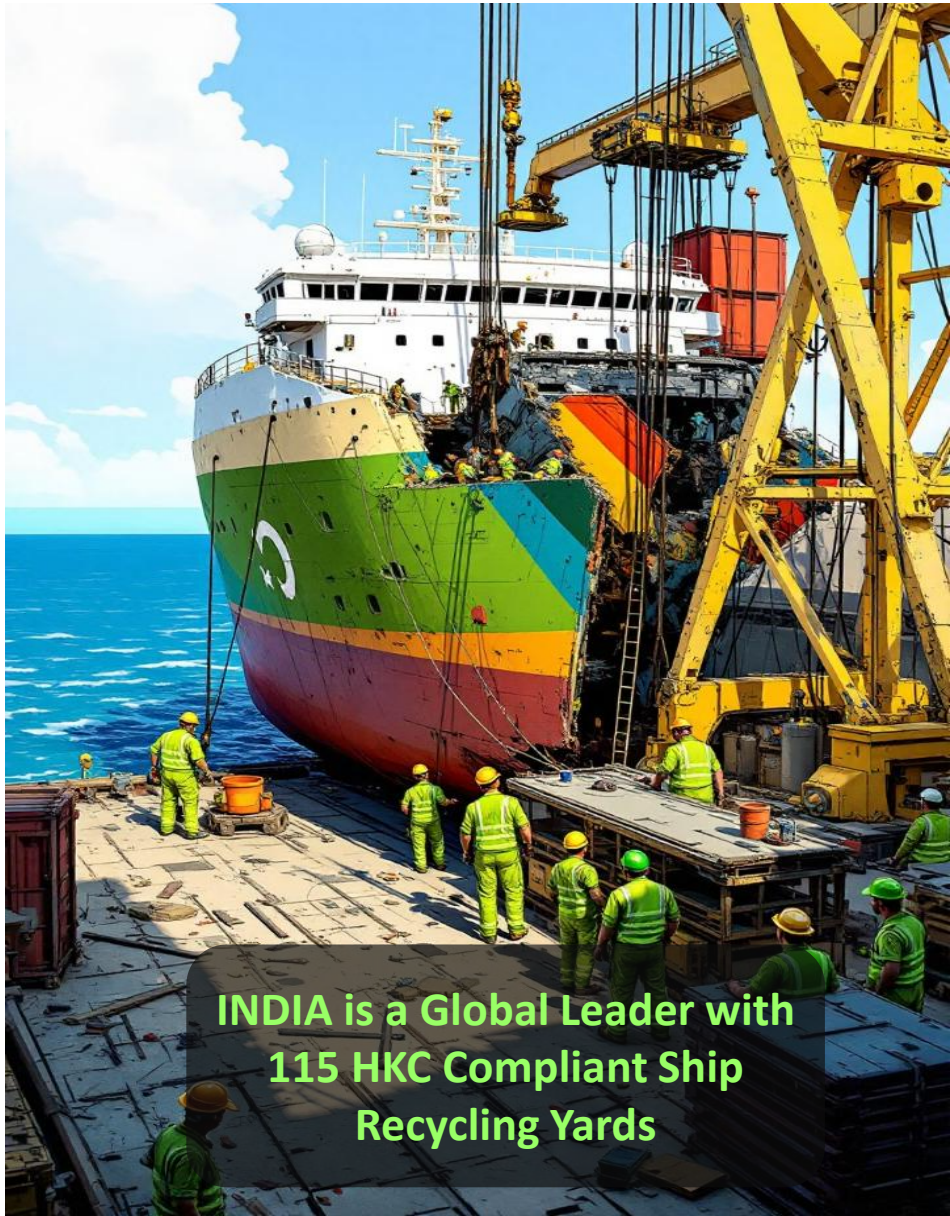
- **No authorized ship recycling or end-of-life vessel facilities** in Goa
- Decommissioned vessels face **lay-up or long-distance towing**
- Risk of **informal or unregulated dismantling practices**
- Clear case for **controlled, non-beaching dismantling** within Goa's maritime ecosystem

Ship Recycling

- Process of dismantling end-of-life ships to recover **steel and other valuable materials**.
- India is a **global leader**, with Alang–Sosiya in Gujarat being the **world's largest ship recycling cluster**.
- Governed internationally by the **Hong Kong Convention (HKC)**, which came into force on **26 June 2025**.
- Integral to the **circular economy**, reducing the demand for virgin raw materials. 97-98% Materials recoverable

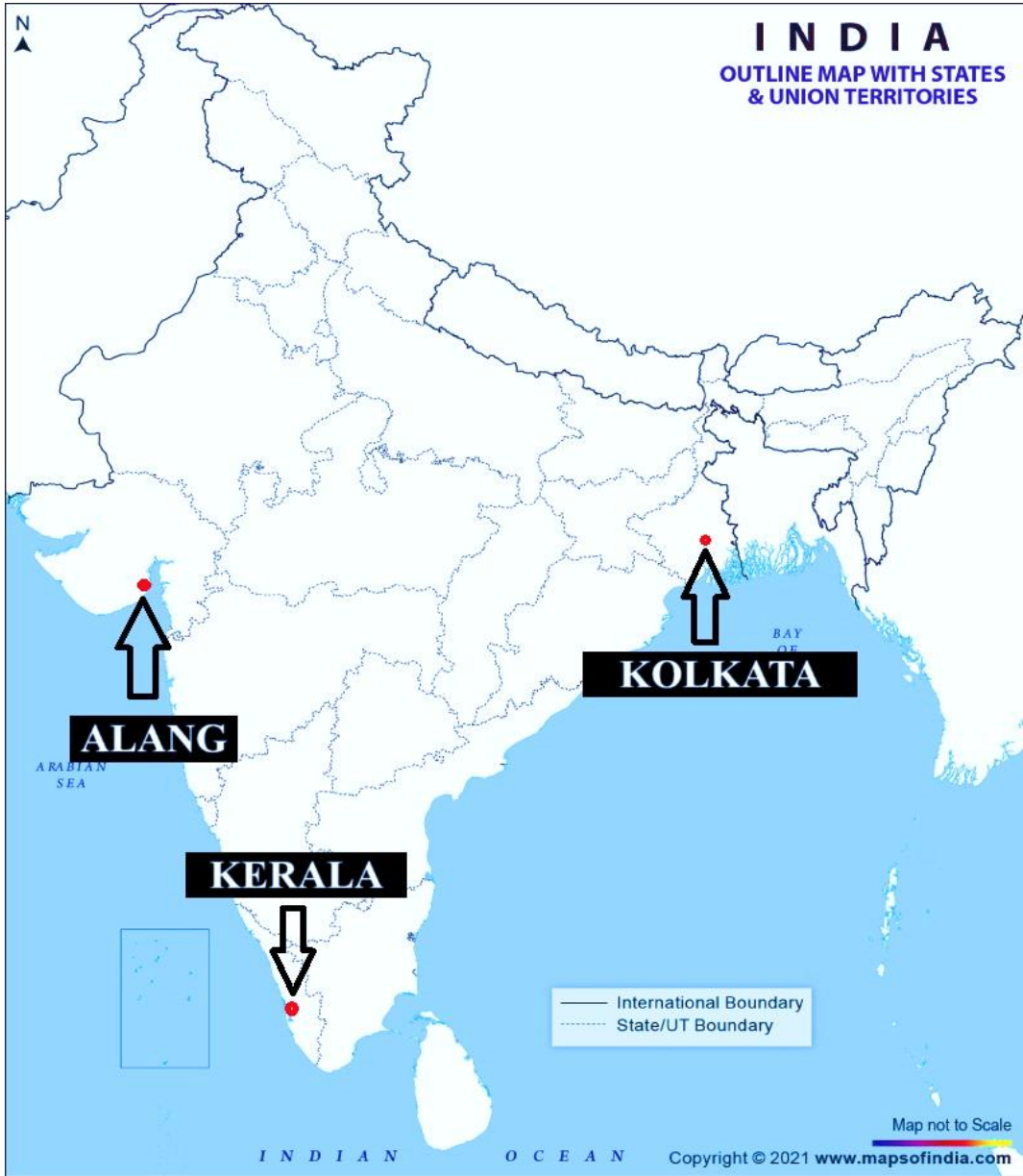
India's Role & Importance

- Handles **30% - 35% of global ship recycling tonnage** annually. (~800 vessels anually)
- Provides **20 - 25% of India's ferrous scrap requirement**, reducing dependence on imports.
- India is the **only country with 100+ HKC Compliant Recycling Yards.** Supplies input material for the **Green Steel ecosystem**, boosting India's low-carbon transition.
- Generates **direct employment for 15000+ workers** and **indirect livelihood opportunities** for thousands more in logistics, scrap processing, and allied services.
- Strengthens India's position in **global maritime sustainability.**



Ship Recycling Yards in India

Yard	Total Number of Plots	Operational Plots	HKC Compliant yards
Alang, Bhavnagar (Gujarat)	150	128	115
Steel Industries Limited (Kerala)	1	1	0
Amar Iron Udyog, Kolkata (West Bengal)	1	1	0



Regulatory Framework for Ship Recycling in India

1

Ship Breaking Code, 2013

Consolidated guidelines for hazardous waste disposal, worker safety, and environmental protection. (Superseded by Ship Recycling Act)

2

Recycling of Ships Act, 2019

Mandates facility certification and prohibits hazardous materials in line with HKC standards.

3

Ship Recycling Rules, 2021

Provides a comprehensive legal framework for governing ship recycling activities.

4

Ship Recycling Regulation (To be Notified)

Being developed to ensure both Indian and foreign ships comply with international standards.

Entry into Force of HKC

- Hong Kong Convention (HKC) entered into force on 26 June 2025.
- Sets legally binding global standards for environmentally sound and safe ship recycling.
- India plays a central role as home to the world's largest ship recycling cluster at Alang (150 yards ; 115 HKC Compliant)
- A one-day workshop marking the enforcement was held at Bhavnagar on 30 June 2025.

Adoption by IMO, 2009

Accession by India, 2019

Notification of National Authority December 2020

Framing of Ship Recycling rules, 2021

Notification of Ship Recycling Regulations, July 2025

Enactment of Ship Recycling Act, February 2021

Entry in force of HKC 26th June, 2025

Infrastructure and Compliance Standards

HKC & ISO-Aligned Facility Standards

- Impermeable aprons and zero-discharge drainage
- Oil–water separators and hazardous-waste sheds
- Ship-lift/drydock containment systems
- Real-time environmental monitoring
- Emergency-response & worker welfare systems

Technology Components for HKC-Compliant Yards :

Component	Function	HKC Requirement
Ship-Lift/Drydock	Safe containment & handling	Prevents leakage & contamination
Digital Material Tracking	Waste traceability	Ensures transparency (MEPC 210(63))
Plasma Cutting & Robotics	Safer dismantling	Improves worker safety
VR-Based Training	Worker drills	Meets HKC Annex 1 standards

Ship Recycling Concentration and Limitations

- India leads globally in ship recycling with HKC entering into force but **98% capacity is concentrated in Gujarat**.
- This geographic imbalance introduces several structural constraints.

Key Challenges:

1. **Geographic & Operational Gap**
   - Decommissioned vessels often require **long-distance towing** to Gujarat or prolonged lay-up.
   - Higher costs, navigational risk and port-side congestion.
2. **Absence of Local Authorised Facilities**
   - No HKC-aligned or authorised **end-of-life vessel management facilities** in the State.
   - Limited options for safe disposal of barges, tugs and inland craft.
3. **Environmental & Regulatory Risk**
   - Risk of **informal or ad-hoc dismantling** in sensitive CRZ and riverine zones.
   - Increased compliance and enforcement burden on state authorities.
4. **Prolonged Vessel Lay-up**
   - Decommissioned or obsolete vessels remain laid-up for extended periods within ports and waterways.
   - Occupies valuable berthing space and creates navigational constraints.

Regional Diversification Benefits:

1. **Governance & Compliance Support**
   Enables **regulated, in-state end-of-life vessel management** for domestic vessels.

2. **Environmentally Compatible Models**
   Supports **non-beaching, berth / drydock-based dismantling** suited to Goa's ecological context.

3. **Maritime Safety & Administration**
   Facilitates timely removal of obsolete vessels, improving **navigational safety**.

4. **Lifecycle Integration**
   Complements Goa's existing **operate → repair → retire** maritime ecosystem without large industrial expansion.

Environmental & Economic Opportunities

India's Maritime Gateway to the East

Parameter	Current (National)	Goa Perspective (End-of-Life Vessel Management)
Annual Recycling Capacity	6.2 million GT	**Limited, controlled capacity** focused on small and medium domestic vessels
CO_2 Emissions Avoided	20 million tonnes/year	**Indirect contribution** through compliant recycling and avoidance of informal dismantling
Steel Scrap Supplied	4–5 million tonnes/year	**Marginal volumes**, compliance-driven material recovery
Jobs (Direct + Indirect)	1.7 lakh	**Localised skilled and semi-skilled employment** in dismantling, safety and waste handling
GDP Contribution	₹30,000 crore/year	**Governance, environmental protection and maritime safety value**, not scale-driven

Why Goa is a Strategic Candidate

Parameter	Details
Coastline	**193.95 km coastline** with extensive riverine and estuarine navigation
Ports & Waterways	Network of **minor ports, jetties and inland waterways** supporting coastal and riverine operations
Maritime Administration	**Captain of Ports, Government of Goa** as the nodal maritime authority
Vessel Profile	High concentration of **small and medium coastal vessels**, barges, tugs and fishing craft
Existing Ecosystem	Established **ship repair yards and marine service providers**
Environmental Context	Strong emphasis on **CRZ compliance, coastal protection and sustainable maritime activities**
Human Capital	Availability of **skilled and semi-skilled maritime workforce** supported by ITIs and technical institutions

Strategic Suitability for End-of-Life Vessel Management

Focus Area	Goa Perspective
Governance Readiness	Clear institutional framework enabling **regulated and monitored operations**
Environmental Compatibility	Suitable for **non-beaching, berth / drydock-based dismantling models**
Lifecycle Integration	Complements **operate → repair → retire** vessel lifecycle within the State
Maritime Safety	Supports timely removal of obsolete vessels, improving **navigational safety**
Scalability Approach	**Controlled and limited scale**, focused on compliance rather than volume

Infrastructure and Compliance Model for Goa

Design Philosophy

- **Compliance-first and environmentally sensitive** approach
- **Non-beaching, controlled dismantling** aligned with CRZ and riverine conditions
- Focus on **small and medium domestic vessels**, not large industrial throughput

Infrastructure Elements

- **Berth / drydock-based dismantling** with full containment
- **Impermeable work surfaces** and zero-discharge drainage systems
- Designated **hazardous-waste handling and storage areas**
- On-site **emergency response, firefighting and medical facilities**

Compliance & Monitoring

- Alignment with **HKC** and relevant **ISO standards**
- **Real-time environmental monitoring** (effluents, emissions, waste streams)
- **Digital material tracking** linked to IHM and waste-chain documentation
- Periodic audits by **Recognised Organisations** under DGS oversight

Operational Safeguards

- Strict **worker safety protocols and PPE compliance**
- Controlled cutting methods suitable for confined and riverine settings
- Clear demarcation from tourism, fishing and recreational zones

Skill Development & Capacity Building

In alignment with the **National Skill Development Policy** and **Hong Kong Convention (HKC)** provisions, **targeted training and capacity-building programmes** may be undertaken to support regulated end-of-life vessel management in Goa, in partnership with:

- **Indian Maritime University**
- **Classification Societies / Recognized Organizations**
- **Industrial Training Institutes (ITIs)**

Integration & Outcomes:

- Alignment with **Skill India** and **NSQF accreditation**
- Creation of a **locally skilled, HKC-aware workforce**
- Strengthening Goa's **maritime safety, compliance and governance capacity**

Focus Training Areas:

- Safe dismantling techniques for **small and medium vessels**
- Hazardous-waste handling and **occupational health & safety**
- Emergency response and rescue preparedness
- Supervisor-level **HKC compliance and documentation**
- Digital traceability and incident-reporting systems

Ferrous Scrap Development Fund

A central fund managed by the **Ship Breaking Scrap Committee** under the Ministry of Shipping, aimed at driving **safe, sustainable, and welfare-linked ship recycling**.
It supports both Central and State-level interventions, primarily focused on yard infrastructure, worker welfare, environmental safety, and skilling.

Purpose of the Fund

- Channel ship recycling-linked revenue into **visible welfare outcomes**
- Supplement State Maritime Boards efforts in developing Ship Recycling cluster
- Improve overall **eco-system quality** around ship recycling operations

Focus Areas:

Yard Infrastructure Upgradation
(capital expenditure only)

Welfare Projects
Worker housing, sanitation, trauma & medical response units, fire safety

Skill Development
Structured training, certification, and capacity building

Environmental Infrastructure
ETPs, incinerators, hazardous waste yards

Community & Social Facilities
Crèches, canteens, rest zones, gender-focused spaces

Secondary Steel Sector Support
(as approved)

Research & Consultancy
Safety protocols, green practices, ESG studies

Other activities
(as approved by the Committee)

How it Works:

DPRs to be prepared by State Maritime Boards → Grants released post Committee approval & MoPSW clearance → Monitored by DGS; utilisation certificates & audits mandatory → Non-recurring capital grants only: no O&M funding

Ship Recycling Credit Note

- Introduced under **Ship Building Financial Assistance Scheme 2.0 (SBFA 2.0)**
- Incentivizes ship owners to **recycle in India** and **build new ships in Indian shipyards**

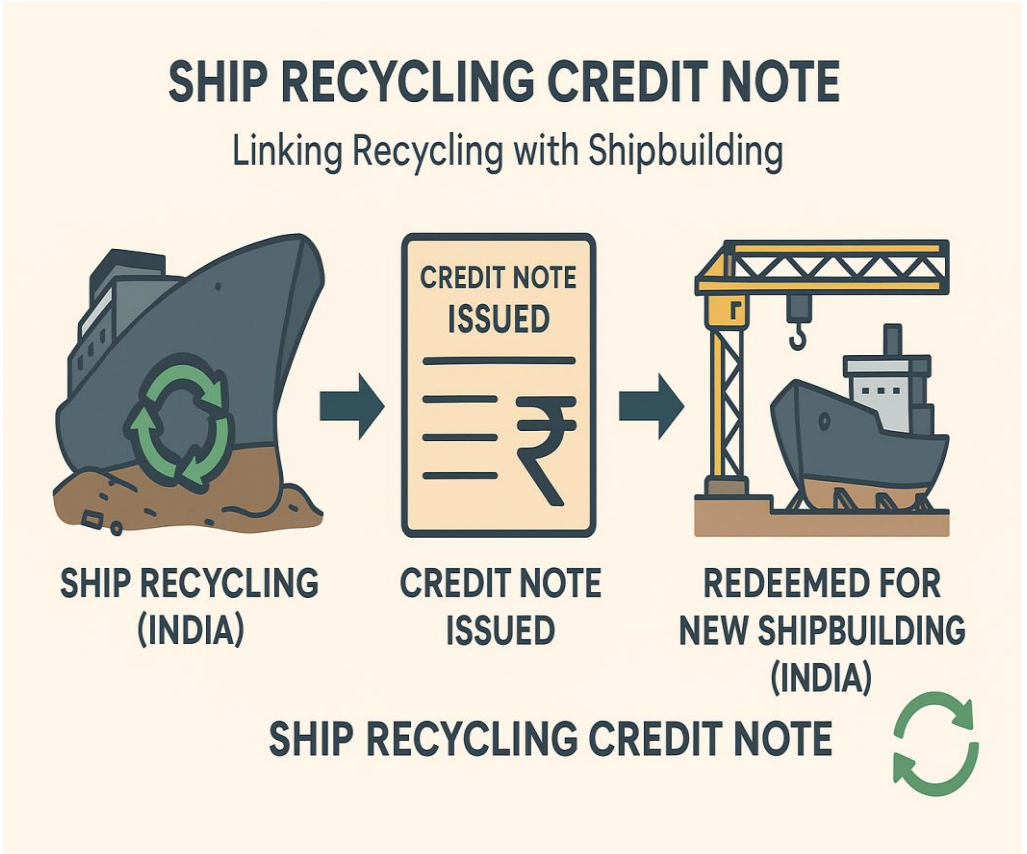
Allocation of : ₹ 4,001 crore
(under SBFA)

How It Works

- When a vessel is recycled in a certified Indian yard, the ship owner receives a **Credit Note for 40% of scrap value.**
- The Credit Note remains valid until the owner builds a new vessel/ ship in an Indian shipyard
- Redeemed as **financial assistance/ subsidy** under SBFA 2.0

Expected Benefits

- Encourages **safe and HKC compliant ship recycling** in India
- Provides direct **business boost for Indian shipyards**
- Attracts **new players** to India's ship recycling and shipbuilding ecosystem
- Strengthens India's **circular economy** : recycling feeds into new shipbuilding
- Positions India as a leader in **Green and Sustainable Maritime Growth**



Suggestive Implementation Roadmap

Phase	Tentative Timeline	Indicative Activities	Supporting / Advisory Agencies
I – Baseline Assessment and Scoping	0–6 months	Identification of end-of-life vessel categories; assessment of existing shipyards, berths or drydock facilities; CRZ and environmental screening; stakeholder consultations	Captain of Ports (Lead), GSPCB, DGS
II – Regulatory and Operational Framework	6–12 months	Development of approval pathways; preparation of compliance templates; alignment with HKC requirements for small and medium vessels; identification of authorised waste-handling chains	Captain of Ports (Lead), DGS, GSPCB
III – Facility Readiness and Pilot Operations	12–24 months	Upgradation of selected facilities for controlled dismantling; implementation of safety, containment and monitoring systems; initiation of pilot dismantling operations	Facility Operators under State oversight
IV – Authorisation and Compliance Stabilisation	24–36 months	HKC-aligned authorisation processes; third-party audits; operational fine-tuning; documentation and reporting systems	DGS, Recognised Organisations
V – Review and Optimisation	36+ months	Review of environmental performance; refinement of procedures; consideration of replication or scaling within defined limits	Captain of Ports, DGS, GSPCB

Way Ahead

- Towards Responsible End-of-Life Vessel Management in Goa

The Government of Goa, through the Captain of Ports and allied maritime authorities, is well positioned to strengthen regulated end-of-life vessel management as part of the State's maritime governance and coastal sustainability agenda, with a focus on appropriately scaled, HKC-aligned, non-beaching dismantling models integrated with existing ship repair and port operations while safeguarding environmental and social sensitivities.

Indicative Strategic Next Steps :

- **Baseline Assessment & Screening**: Identify end-of-life vessel categories and assess suitable berths, shipyards or drydocks, including CRZ and environmental considerations.
- **Regulatory Integration**: Embed end-of-life vessel management within Goa's maritime and port framework, aligned with HKC and national regulations.
- **Stakeholder Engagement**: Consult shipyards, port users, waste handlers and enforcement agencies to develop compliant operating models.
- **Capacity Building**: Partner with IMU, ITIs and Recognised Organisations to create a certified, safety-focused workforce.
- **National Coordination**: Maintain alignment with DGS and MoPSW on compliance templates, authorisation and reporting.

संगच्छध्वं संवदध्वं सं वो मनांसि जानताम्।

“Move together, speak together, may your minds be in harmony.”
(Rigveda 10.191.2)

सत्यमेव जयते
Ministry of Ports, Shipping & Waterways
Government of India

सागराः सुपन्थानः सन्तु

PILLAR 3

Training, Skilling and Zero Corruption in Maritime

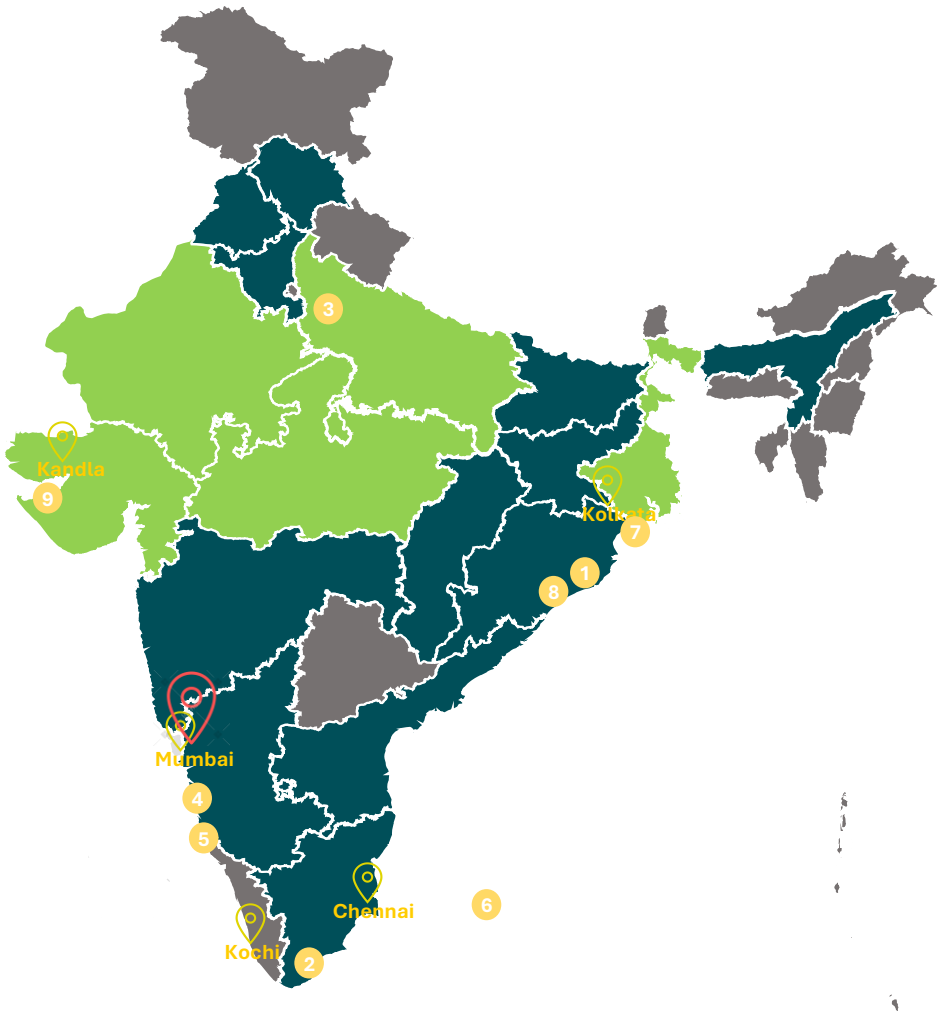
Directorate General of Shipping (DGS)

The **Directorate General of Shipping (DGS)** is India's central authority for merchant shipping, under the **MoPSW which** serves as the central administrative body for **regulating and developing India's maritime sector**.

Our Responsibilities

- Safety of life and ships at sea.
- **Promotion of maritime education and training**, in coordination with the International Maritime Organization (IMO).
- Regulation of **employment and welfare of seamen**.
- Development of **coastal shipping and augmentation of shipping** tonnage.
- Examination and certification of Merchant Navy Officers.
- Supervision and control of allied offices under its jurisdiction.

Our Footprint across India



Directorate Office MMDs 1.Vishakhapatnam 2. Tuticorin 3. Noida 4. Goa 5. Mangalore 6. Port Blair 7. Haldia 8. Paradip 9. Jamnagar

About Training Branch - DGS

Administration of all MTI's	Approval, regulation, and oversight of MTI's, ensuring seafarer training meets STCW and international standards through policies, accreditation, inspections, and compliance monitoring.
MTI Module	Online system for managing courses, records, and certifications, ensuring compliance with DG Shipping and STCW standards. New Module is being developed, as the old module built on an outdated stack, struggles with data volumes, usability, integration, and scalability.
CIP Improvement	Detailed evaluation by RO or MMD under a three-year cycle with Initial, Annual, and Renewal inspections as per QMS standards.
STCW Compliance Board	A strategic advisory body to DGS that strengthens governance in maritime training, reviews MTI compliance with STCW standards, and meets bi-weekly for evaluations.
MTI Exit examination + Ratings Exit Examination	Initiatives like Learning Management System (LMS), Web based simulator, Centralized Attendance System (CAS), Faculty Development Program (FDP) are initiated to ensure efficient learning and examination process.

Rationale for the Coastal State Workshop – DGS & Govt. of Goa

Seafarers - 12% to 20%

India aims to raise its **12%** share of global seafarers to **20% by 2030**, with Goa playing a key role through youth engagement and maritime career awareness in coastal areas.

Trade and Coastal Strength

With its **long coastline and ports**, Goa plays a vital role in India's maritime sector and can strongly support the national maritime growth and skill-development vision..

Strategic State Advantage

Goa, with **ports**, **shipyards**, and **maritime training institutions**, can **strengthen its maritime policy** to attract **investment in shipbuilding, port-led skilling, & coastal logistics.**

Skilling Potential

The state offers strong potential to expand **maritime skilling and training aligned with DGS quality standards**, integrating state skill departments and **ITIs** with DGS-approved courses to build a unified maritime ecosystem.

Collaborative Governance

The workshop strengthens **DGS–CPD Goa** coordination, with Govt. of Goa supporting through a joint group to enhance monitoring, transparency, and digital compliance in training.

National Vision Alignment:

By aligning with DGS and Maritime India Vision 2030, **Goa can lead in developing a skilled, ethical, and globally employable seafaring workforce.**

Vision and Focus Areas of the Directorate General of Shipping

National Alignment

Align state-level maritime skilling initiatives with ***Maritime India Vision 2030*** and the **Maritime Amrit Kaal Vision 2047** to build a unified national approach.

Transparency & Governance

Promote a **corruption-free training ecosystem** through **e-Governance, digital monitoring**, and data-driven oversight of maritime institutes.

Innovation & Collaboration

Foster **industry–academia partnerships**, encourage **technological innovation**, and adopt **modern training methods** including simulation and e-learning.

Human Element & Ethics

Strengthen the **human element** by focusing on **quality skilling, welfare, ethics, and professionalism** among seafarers and training providers.

Workshop Objectives and Expected Coordination Mechanism

Integrity and Compliance

Reinforce **zero tolerance toward malpractice and corruption** in maritime training, certification, and institutional governance through **digital oversight and accountability mechanisms.**

Joint Institutional Framework

Establish a structured **coordination mechanism between DGS and the Government of Goa** for joint planning, monitoring, and implementation of maritime training and skilling initiatives.

Career Promotion & Awareness

Promote the **Merchant Navy as an aspirational career path**, especially among coastal youth, through targeted awareness campaigns and counselling initiatives.

Global Skill Alignment

Enhance the **employability of seafarers** by aligning state-level training programs with **emerging international maritime standards and technologies.**

State-Level Collaboration:

Strengthen coordination for **awareness drives, youth outreach, and integration** with national programs such as **Skill India Mission** and **Maritime India Vision 2030**

Coordination between DGS and Goa

The **Directorate General of Shipping (DGS)** is exploring the establishment of a **structured coordination framework** with the **Government of Goa and Captain of Ports Department** to strengthen maritime training, skilling, and institutional oversight across the state.

Uniform Standards

Working towards ensuring that all maritime training institutes in the state operate in accordance with **DGS's regulatory approvals, inspection protocols, and quality assurance framework**.

Joint Monitoring

Exploring mechanisms for **coordinated inspections, data exchange, and performance tracking** between DGS and CPD to uphold high standards of safety, integrity, and competence in training delivery.

Capacity Building & Awareness

Considering **joint initiatives such as workshops, faculty training, and outreach programs** to promote maritime careers, enhance skill awareness, and strengthen ethical training practices.

Integrity & Governance

Collaborating to prevent fraudulent practices in maritime training, certification, and placement through improved oversight and transparent systems.

Through this collaboration, **DGS would provide technical and regulatory guidance**, while **CPD would support state-level implementation, infrastructure, and policy alignment** in line with national maritime standards and vision.

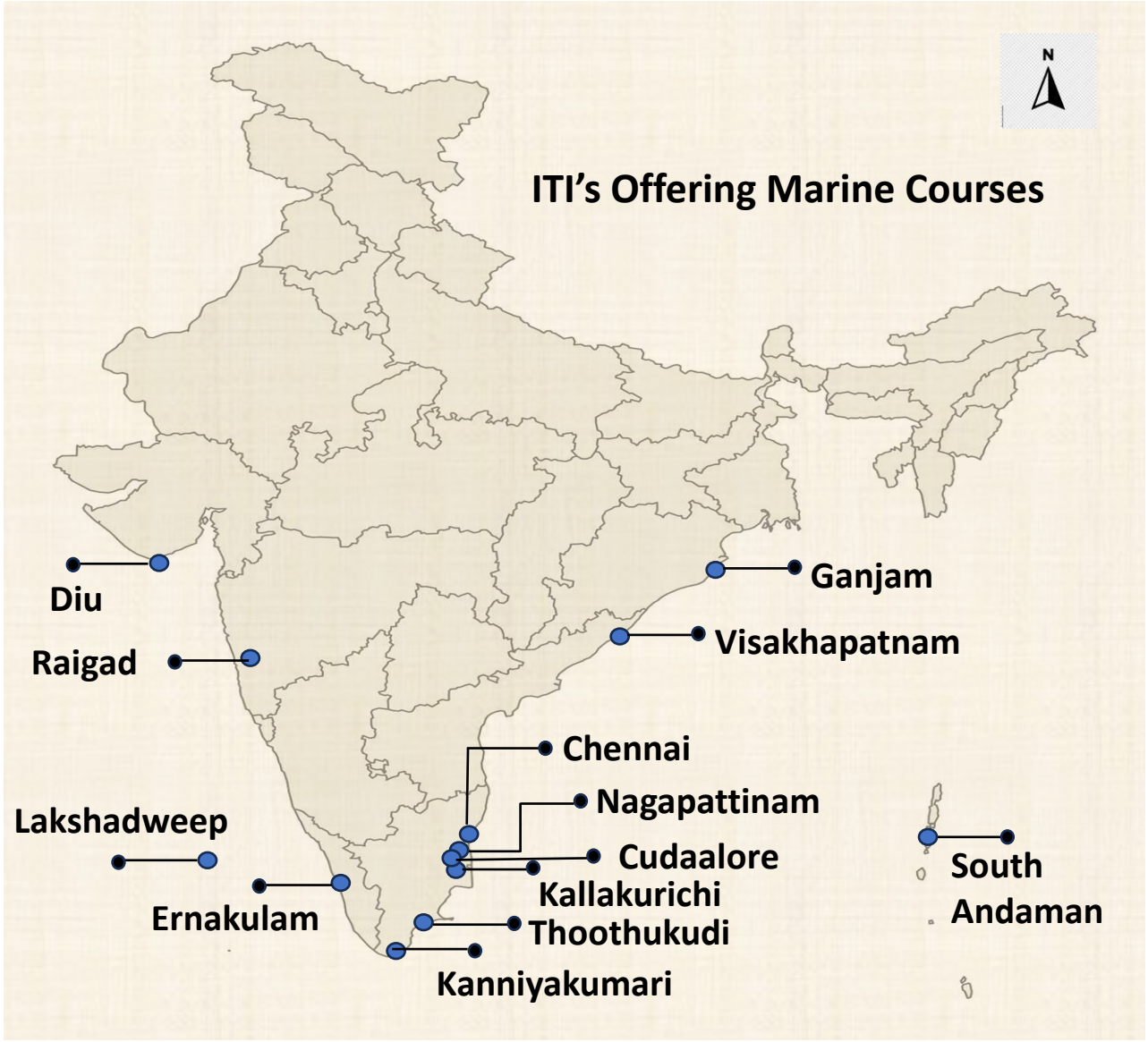
Integration of ITI Ecosystem with Maritime Training

MTI's in Goa

MTI Name	Type	District
SEA SCAN MARITIME FOUNDATION	PRESEA	South Goa
NUSI Maritime Academy	POSTSEA	SOUTH GOA
Institute of Maritime Studies	PRESEA	SOUTH GOA
SEASCAN MARINE FOUNDATION	POST SEA	SOUTH GOA
Kamaxi Maritime Academy	POST SEA	Salcette
The Institute of Marine Engineers (India), Goa	POST SEA	Goa

1. **Introducing Maritime Modules in ITIs:**
   Explore the inclusion of maritime-focused skill modules such as basic seamanship, marine safety, welding, and electrical maintenance within Industrial Training Institutes (ITIs) across Goa.
2. **Creating Career Pathways:**
   Develop structured linkages between ITI vocational programs and DGS-approved maritime courses, allowing students to transition from general trades to seafaring and port-related careers.
3. **Faculty Development & Standardization**
   Organize faculty orientation and capacity-building programs to align teaching practices, course content, and assessment methods with DGS quality and competency standards.
4. **State–Central Coordination:**
   Encourage coordination between the Captain of Ports Department (CPD) and DGS for curriculum design, certification alignment, and recognition of maritime vocational skills.
5. **Outcome & Impact:**
   Enable coastal youth to access maritime careers through locally available skill infrastructure, ensuring industry relevance, employability, and contribution to India's global seafarer pool.

ITI's Offering Marine Courses under Craftsmen Training Scheme (CTS)



- The integration of the ITI ecosystem with maritime training aims to introduce maritime-focused modules in ITIs, create clear career pathways into seafaring and port-related roles, and align teaching standards with DGS guidelines.

- Through coordination between DGS and CPD Govt. of Goa the initiative enhances faculty capacity, ensures curriculum alignment, and enables coastal youth to access industry-relevant maritime careers.

ITI's Offering Marine Courses under Craftsmen Training Scheme (CTS)

Sr. No.	District Name	Name	Name Of Course	Duration	Entry Qualification	NSQF LEVEL	Seating Capacity	Enrolment (2024-25)
1.	SOUTH ANDAMANS, Andaman And Nicobar Islands	Government Industrial Training Institute	Marine Engine Fitter (NSQF)	1 Year	10th Passed	3.5	20	20
			Marine Fitter (NSQF)	2 Years	10th Passed	4	40	20
			Vessel Navigator (NSQF)	2 Years	10th Passed	4	40	20
2.	VISAKHAPATNAM, Andhra Pradesh	Central Institute of Fisheries Nautical Engg. Training Unit	Marine Fitter (NSQF)	2 Years	10th Passed	4	20	20
			Vessel Navigator (NSQF)	2 Years	10th Passed	4	20	20
3.	ERNAKULAM, Kerala	Central Institute of Fisheries Nautical and Engineering Training	Marine Fitter (NSQF)	2 Years	10th Passed	4	20	20
			Vessel Navigator (NSQF)	2 Years	10th Passed	4	20	20
4.	LAKSHADWEEP DISTRICT, Lakshadweep	Dr B R Ambedkar ITI	Marine Engine Fitter (NSQF)	1 Year	10th Passed	3.5	40	40
5.	RAIGAD, Maharashtra	Anjumane Waseeul Taleem Edu.Trust Raigad	Marine Fitter (NSQF)	2 Years	10th Passed	4	20	20
6.	GANJAM, Odisha	Govt Industrial Training Institute, Berhampur	Marine Engine Fitter (NSQF)	1 Year	10th Passed	3.5	60	20
7.	CHENNAI, Tamil Nadu	Central Institute Of Fisheries Nautical & Engineering Training Institute	Marine Fitter (NSQF)	2 Years	10th Passed	4	20	20
			Vessel Navigator (NSQF)	2 Years	10th Passed	4	20	20
8.	CUDDALORE, Tamil Nadu	Government Industrial Training Institute, Cuddalore	Marine Engine Fitter (NSQF)	1 Year	10th Passed	3.5	40	40
9.	KALLAKURICHI, Tamil Nadu	Government Industrial Training Institute, Sankarapuram	Marine Engine Fitter (NSQF)	1 Year	10th Passed	3.5	40	38
10.	KANNIYAKUMARI, Tamil Nadu	Government Industrial Training Institute, Nagercoil	Marine Engine Fitter (NSQF)	1 Year	10th Passed	3.5	40	37
11.	NAGAPATTINAM, Tamil Nadu	Goverment Industrial Training Institute,Nagapattinam	Marine Engine Fitter (NSQF)	1 Year	10th Passed	3.5	40	21
12.	THOOTHUKKUDI, Tamil Nadu	Government Industrial Training Institute,,Thoothukudi	Marine Engine Fitter (NSQF)	1 Year	10th Passed	3.5	40	25
13.	THOOTHUKKUDI, Tamil Nadu	Govt. ITI, VEPPALODAI	Marine Engine Fitter (NSQF)	1 Year	10th Passed	3.5	40	28
14.	DIU, The Dadra And Nagar Haveli And Daman And Diu	Govt Industrial Training Institute, Ghoghala	Marine Engine Fitter (NSQF)	1 Year	10th Passed	3.5	20	18

Pathways to Join Merchant Navy

Education Level	Course / Route	Eligibility	Duration & Training Focus	Career Path / Progression
After 10th Standard	**GP Rating Course** (General Purpose Rating)	10th pass with 40% aggregate and 40% in English. Age: 17.5–25 years.	**6 months** – Basic seamanship, firefighting, first aid, survival, and engine room safety.	Starts as **Ordinary Seaman (Deck)** or **Wiper (Engine)** → **Able Seaman / Bosun / Officer** through DGS-approved competency exams.
After 12th (Science Stream)	**Deck Cadet** (Navigating Officer)	10+2 (PCM) with 60% aggregate and 50% in English.	**B.Sc. Nautical Science (3 years)** or **Diploma in Nautical Science (DNS, 1 year)** leading to B.Sc. (Applied Nautical Science).	Starts as **Deck Cadet → Third Officer → Second Officer → Chief Officer → Master (Captain)** after DGS/IMO exams.
After 12th (Science Stream)	**Engine Cadet** (Marine Engineering)	10+2 (PCM) 60% or Degree in Mechanical/Marine Engineering.	**B.Tech Marine Engineering (4 years)** or **GME (1-year pre-sea)** for Mechanical Engineers.	Starts as **Junior Engineer (JE)** → **Fourth → Third → Second Engineer → Chief Engineer** after competency exams.
After Diploma	**Lateral Entry** (Deck or Engine Side)	Diploma in Nautical, Marine, or Mechanical/Shipbuilding Engineering.	**Lateral Entry:** DNS/B.Sc. Nautical Science or 2nd Year Marine Engineering (DGS-approved institutes).	Fast-track route to join as **Deck/Engine Cadet**, progressing to **Officer/Engineer** ranks.
After Degree	**Electro-Technical Officer (ETO)**	B.E./B.Tech. in Electrical, Electronics, or Instrumentation.	**4 months Pre-Sea ETO Course (DGS approved)** – Electrical & automation systems training.	Starts as **Trainee ETO → ETO → Senior ETO / Chief Electrical Engineer**.
	Graduate Marine Engineer (GME)	B.E./B.Tech. in Mechanical or Naval Architecture.	**1-year Pre-Sea GME Course (DGS approved)** – Marine systems and machinery training.	Starts as **Trainee Engineer → Fourth → Third → Second → Chief Engineer** after sea service and exams.

Basic Courses for Entry into Merchant Navy

- As per **STCW 2010 Convention** and **DGS Circular 12/20**, all seafarers irrespective of rank or department must complete **five mandatory basic safety courses** before joining a ship.

- These courses ensure every seafarer is trained to handle emergencies, operate safely, and protect life, property, and the marine environment.

Sr. No	Course Name	Purpose & Outcome
1	**Personal Survival Techniques (PST)**	Trains seafarers to **survive at sea during emergencies**, including ship abandonment and rescue procedures.
2	**Fire Prevention and Fire Fighting (FPFF)**	Equips trainees to **prevent, control, and extinguish onboard fires** safely and efficiently.
3	**Elementary First Aid (EFA)**	Enables seafarers to **provide immediate medical care** in case of accidents or health emergencies onboard.
4	**Personal Safety and Social Responsibilities (PSSR)**	Develops awareness of **safe working practices, teamwork, and shipboard discipline**.
5	**Security Training for Seafarers with Designated Security Duties (STSDSD)**	Prepares seafarers to **recognize and respond to shipboard security threats** in line with the ISPS Code.

Skill Development and Training for Safe Operations

"While compliance with standards is essential for serving on board ships, the skills and competence of seafarers can only be adequately underpinned, updated and maintained through effective **Maritime Education, Training , Assessment and reliable Certification of their Competency**"

- Koji Sekimizu (Ex- Secretary-General of IMO)

Who is a Competent \Seafarer?

Continuous Skill Upgradation

Regular **refresher & revalidation courses** as per STCW and DGS norms.

Includes **Advanced Fire Fighting, PSC&RB, Tanker Familiarization**, etc.

Focus on **competency-based and simulation training** for real-time learning.

Encourages adaptability to **emerging technologies and alternate fuels**.

Emerging Areas in Maritime Skilling

Green and Alternate Fuel Competencies

LNG (Liquefied Natural Gas)
Safety in bunkering, cryogenic handling, and fuel transfer

Methanol & Ammonia
Training for low-emission fuels, safe handling, and toxicity management.

Hydrogen
Understanding storage, flammability risks, and new firefighting procedures. Supports to reduce ship emissions.

Technology-Driven Training

Simulator-Based Learning
- Full-mission simulators for navigation, cargo handling, and engine operations.
- Enables realistic, risk-free training and emergency decision-making.

Digital Competency
- Training on ECDIS, voyage management, and shipboard digital systems.
- Builds skills in data handling, communication, and system automation.

Automation & Smart Ships
- Familiarization with Integrated Bridge Systems (IBS), remote monitoring, and AI tools.
- Prepares crew for smart, semi-autonomous, and connected vessels

Curriculum Modernization

Upgrade MTIs with **digital simulators, e-learning, and cyber safety modules**.

Include **green technology and automation** in course syllabus.

Collaborate with **industry, DGS, IMU, and classification societies** for advanced training content.

Expected Outcomes of the Workshop

Roadmap for Maritime Skilling in Goa	Transparent & Corruption-Free Training Ecosystem	Improved Compliance and Employability
• Define a state-level maritime skilling strategy aligned with Maritime India Vision 2030 and Maritime Amrit Kaal Vision 2047. • Identify priority skill areas in port operations, shipbuilding, and seafaring. • Integrate ITIs and state skilling institutions with DGS-approved maritime training.	• Reinforce zero tolerance for fraud in training, certification, and placement. • Develop a DGS–CPD coordination framework for institute monitoring and digital oversight. • Use helplines and awareness campaigns to promote transparency and accountability.	• Strengthen institute compliance with DGS regulations and quality standards. • Enhance industry linkages for practical training and global employability. • Build a competent and ethical seafaring workforce from Goa.

PILLAR 4- Maritime Crewing and Employment Opportunities in Maritime Domain

What Goa Offers

Ports in Goa

Goa, with a coastline of ~**105 km**, is a strategically located maritime state on India's west coast, anchored by the **Mormugao Port Authority**, a key gateway for iron ore, coal, and container traffic. The port supports coastal shipping, cruise tourism, offshore services, and maritime trade, contributing significantly to logistics and blue economy activities. With growing focus on cruise tourism, coastal connectivity, and sustainable maritime development, Goa is strengthening its role in regional trade and marine-based economic growth.

Category	Key Ports	Description
Major Port	Mormugao Port Authority (MPA)	• One of India's 12 major ports • Handles bulk cargo such as iron ore, coal, fertilizers, containers, and cruise vessels • Located in **South Goa**
Non-Major / Private Ports	• **Panaji** • **Chapora** • **Betul** • **Talpona** • **Tiracol**	• Goa has several minor ports administered by the **Goa Ports Department**, mainly supporting fishing, coastal shipping, barges, and tourism

Maritime Landscape in Goa– Mercantile Marine Department (MMD)

MMD Goa

About

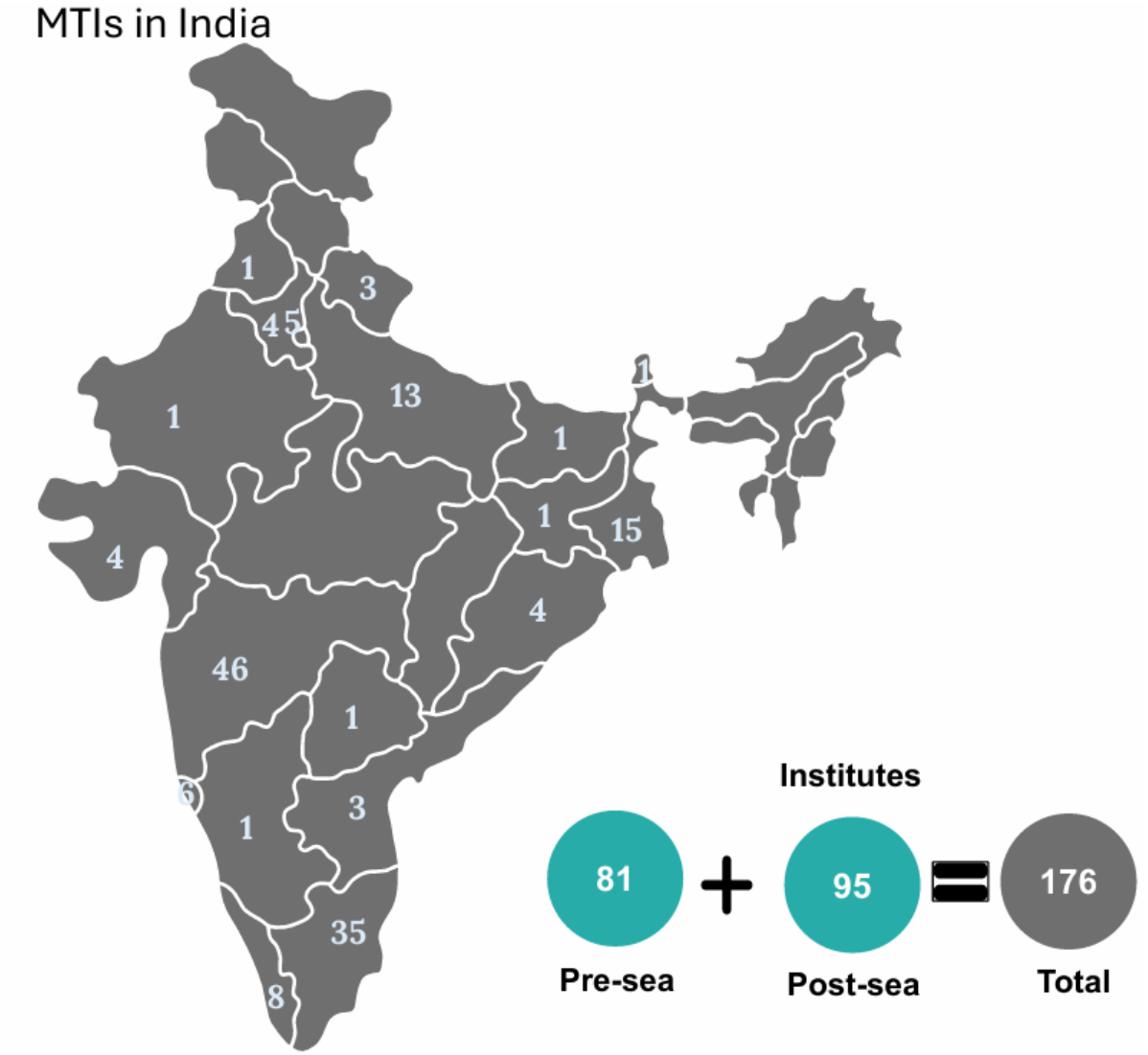
MMD Goa is a sub-office of the **Mercantile Marine Department (MMD), Mumbai** under the Directorate General of Shipping (DGS), Ministry of Ports, Shipping & Waterways, Government of India.
MMD Goa functions as a **subordinate office to MMD Mumbai**, with its office located at Headland Sada, Goa

- **Jurisdiction:** Over the state of Goa

Functions

- **Survey and certification of ships** — ensuring vessels meet statutory safety requirements
- **Inspection of maritime equipment and installations** — including lifesaving, firefighting, and navigational systems
- **Ensuring compliance with Merchant Shipping laws and international conventions** adopted by India (SOLAS, MARPOL, etc.)
- Acts as **local representative of MMD Mumbai** for technical and regulatory maritime tasks within its jurisdiction

Maritime Landscape in Goa– Maritime Training Institutes (MTI)



MTIs in Goa

- There are **06 DG** Shipping-approved MTIs in Goa, with **04** post-sea training MTIs and **02** pre-sea course

1. Institute of Maritime Studies
2. Kamaxi Maritime Academy
3. NUSI Maritime Academy
4. Sea Scan Maritime Foundation, Verna
5. Seascan Maritime Foundation, Vasco
6. The Institute of Marine Engineers

Career prospects in the Merchant Navy in Goa

Goa contributes **nearly 5.8% of India's total seafarers** and has a strong port-led growth and employment potential. The limited presence of active RPSL operators indicates a **need for greater compliance support and capacity building** in the state.

Valid RPSL Companies in Goa	Invalid RPSL companies in Goa
Joncia Marine Services, Goa	METI Shipping Mgmt
Crest Maritime Services	Anchorjobs Goa Private Limited
M/S.Seafarers	M/S. Sasas Manpower Serivces Private Limited
QShip Maritime Management Pvt. Ltd.	M/S. New Era Shipping Private Limited
Marinetech Ship Managers And Surveyors	M/S. Siyaram Marine Services Private Limited
Kamaxi Overseas Consultants	Regal International Private Limited
M/S Shipteck Marine Solutions Pvt. Ltd.	Shirodkar Ocean Empire Private Limited
M/S. Aark Shipping & Manning Pvt. Ltd.	
Ouvert Marine Solutions Private Limited	
Kamaxi Overseas Consultants LLP	

- *While Goa provides a promising career in the Merchant Navy, yet the limited presence of RPSL companies suggest a need for strong regulations.*
- *DG Shipping is proactively managing the maritime ecosystem to provide fruitful Merchant Navy careers.*

Awareness and monitoring initiatives

- Prevent **fraudulent recruitment** and exploitation of aspiring seafarers
- Promote **ethical and transparent recruitment practices**
- Ensure engagement **only with licensed and verified RPSL operators**

Seafaring as a lucrative career for youth in Goa

With a growing talent pool that ranks seventh nationally, contributing approximately **38,669** seafarers as on date, Goa possesses immense human capital potential

Strategies to realise the full potential of the human capital of the state

- Addressing governance challenges, particularly the prevalence of fraudulent recruitment, unregistered crewing agents, and exploitation of aspiring seafarers
- Aggressively expand its ethical recruitment network
- Explore employment opportunities in the cruise tourism sector in Goa
- Strengthening regulatory oversight through the existing MMD Goa
- Strengthening of state-specific welfare and insurance scheme (Comprehensive Goa Welfare/Pension Scheme)
- Build a conducive environment for on-shore employment opportunities post retirement of the seafarers

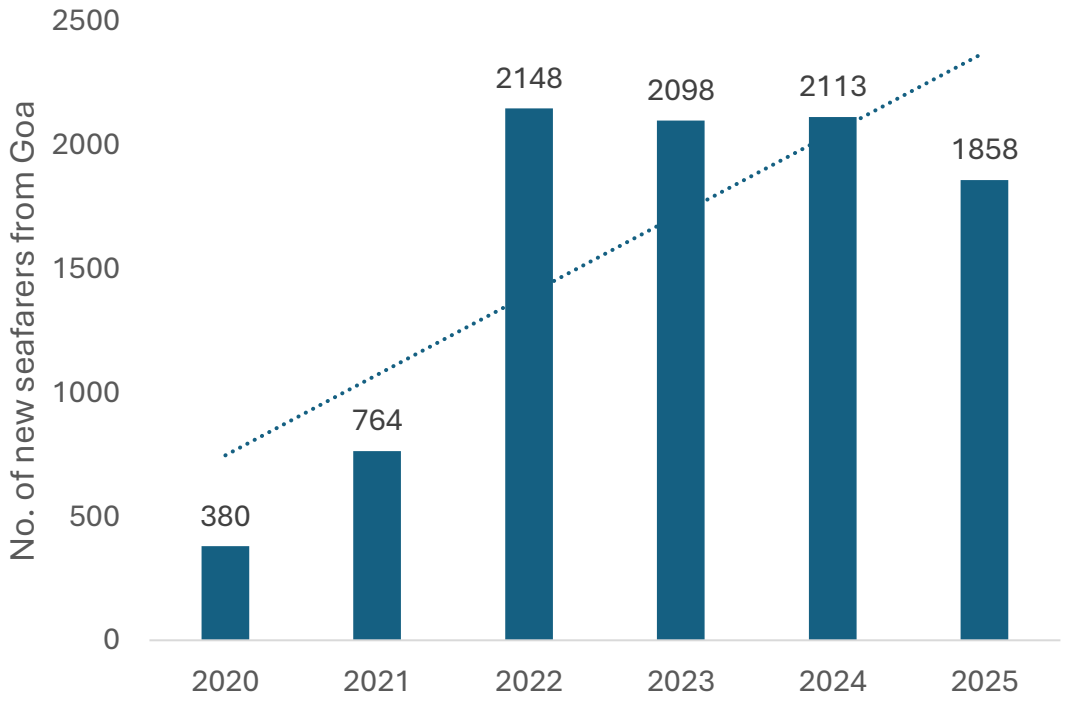
Growing number of seafarers require a better training and placement ecosystem

As on date, Goa ranks **seventh** among Indian states in seafarer supply, contributing around **5.8% of India's total seafaring workforce**. The state's maritime talent pool has shown steady growth at a rate of **37% from 2020,** reaching a cumulative strength of **38,669 seafarers**.

With rising seafarer numbers, the **demand for Maritime Training Institutes (MTIs)** is expected to increase.

The existing and new MTIs shall also prioritize on-

- Equipped with **modern simulators and digital training tools**
- Supported by **qualified and industry-experienced faculty**
- Focused on producing **competent, future-ready seafarers** aligned with emerging technologies and global standards



Multiple steps are being taken to improve the lives of Goan seafarers – Home Department, Government of Goa

Case Study: Goa Welfare / Pension Scheme for Seafarers, 2023

- A state government initiative by the Home Department, Government of Goa, designed to provide financial security to retired seamen.
- **Eligible Beneficiaries:**
  - Must be an Indian citizen and a bona fide resident of Goa (by birth or parentage).
  - Retired or medically invalidated seafarer, aged 60 years or above.
  - Minimum 10 years (120 months) of sea service; up to 6-month break allowed.
  - Widows of deceased seafarers eligible if Goan residents for 15+ years and annual income below ₹1.2 lakh.
- **Financial Assistance:** A monthly gross pension of ₹2,500/- directly through Direct Benefit Transfer (DBT)
- **Aim:** To help retired seafarers and, on compassionate grounds, the widows of deceased seamen, maintain a decent standard of living during their retirement.

Steps are being taken by the DG Shipping, Government of India for the welfare of seafarers

DG Shipping has taken multiple steps for the welfare of seafarers, including provisioning of welfare schemes, development of seafarers welfare infrastructure, and other welfare initiatives.

No.	Welfare Schemes	No. of Benef.	Amt. (01.04.2024 - 30.11.2025)
1	Survivor's Benefit Scheme	97	₹ 3,15,80,000.00
2	Old Age Benefit Scheme	439	₹ 2,19,50,000.00
3	MEMA Assistance	135	₹ 16,87,500.00
4	Invalidity Benefit Scheme	1	₹ 2,00,000.00
5	Family Benefit Scheme	8	₹ 3,25,000.00
6	Maternity Benefit Scheme	1	₹ 25,000.00
7	COVID-19 Assistance Scheme	1	₹ 65,000.00
8	Spouses of Deceased Seafarers	3,246	₹ 8,11,50,000.00
9	Super Senior Indian Seafarers	1,278	₹ 3,19,50,000.00
10	Death on Board Benefit Scheme	34	₹ 65,60,000.00
	Total	**5,240**	**₹ 17,54,92,500.00**

- *The DG Shipping, along with port authorities and funding from the SWFS, is building or revamping seafarers' welfare facilities across India*
- *Seafarers' Club is being re-constructed in Mormugao Port complex at a cost of INR 12.5 crores.*

Leverage economy of Goa to build alternate career pathways post Merchant Navy careers

Goa may build a conducive environment for seafarers who have completed their on-sea careers and help them reintegrate with on-shore careers post retirement.

Port-led development	Ship repair and maintenance	Cruise Tourism
• Marmugao Port Authority is being targeted for targeted investments in modernisation, mechanisation, and hinterland connectivity to expand its role in regional trade, cruise, costal shipping etc.	• Goa has considerable presence of shipyards and technical institutions • Potential to develop ship repair, dry docking, and ancillary marine services	• Strong and competitive advantage for cruise tourism in Goa • Strong competitive advantage with presence of high number of domestic and international tourists

Marine Surveying and Classification	Logistics, Supply Chain, and Port-based Industries	Maritime Entrepreneurship
• Roles in ship survey, marine inspection, and statutory certification processes, leveraging their hands-on operational expertise	• Leadership roles in coastal shipping, logistics parks, and multimodal transport hubs	• Entrepreneurship through incubation and financial support for startups in ship repair, marine equipment services, green shipping technologies, and coastal tourism

Maritime events regularly being held to improve careers in the Merchant Navy

Maritime Skill Conclave 2025 – Panjim – November 2025

Focus Areas-

- **Talent** – Building the Global Maritime Workforce
- **Training** – Standards, Certification & Competency Pathways
- **Technology** – Smart Shipping & Digital Transformation
- **Teamwork** – Industry–Academia–Government Collaboration
- **Thrive** – Sustainability & Blue Economy

Day of the Seafarers, Margoa–June 2025

Focus Areas-

- Recognizing and celebrating the contribution of Indian seafarers
- Highlighting skill development, STCW compliance, and career growth
- Showcasing innovations in shipping and maritime operations
- Strengthening industry–academia–government collaboration
- Promoting welfare, safety, and sustainability in the maritime sector

“Mighty Mariner” – Maritime Career Guidance Summit (Goa Edition) - July 2025

Focus Areas-

- Inspiring and Guiding the Next Generation of Seafarers
- Regulatory Awareness, Standards & Career Pathways
- Professional Ethics, Resilience & Career Growth
- Diverse Opportunities Across the Maritime Sector
- Aligning Education with Evolving Industry Needs

- Focus on building employability and competency frameworks by addressing concerns of technological and regulatory shifts
- Focus on building respectful and safe working environments aboard ships
- To inspire and guide aspirational youth to take up role in the maritime industry, including seafaring

Coastal State Workshops
Pillar 5 – Decarbonization & Sustainability

Directorate General of Shipping

6th November 2025 | Coastal State Workshops, Andhra Pradesh

Pillar 5 Importance for Goa

Environmental Sustainability as a Foundation of the Blue Economy

Why Pillar 5 is Critical

- **Ports and shipping as Blue Economy enablers**, but with a direct environmental footprint
- **High relevance for Goa** due to:
  - Tourism-led coastal and riverine economy
  - Passenger ferries, inland vessels and fishing activity
- **Environmental performance directly affects**:
  - Clean seas and beaches
  - Fisheries and river health
  - Coastal livelihoods and tourism perception
- Pillar 5 enables **clean growth without compromising ecology**

National Policy & Regulatory Backbone

- Harit Sagar – Green Port Guidelines (2023)
- National Green Shipping Policy (forthcoming)
- Maritime Amrit Kaal Vision 2047 (MAKV 2047)
- Alignment with IMO Net-Zero 2050 MARPOL compliance, emissions reduction and global environmental credibility

Goa

Environmentally Sensitive Maritime State with Strong Governance Framework

Key Highlights :

- **193.95 km coastline** with riverine and estuarine navigation
- Maritime administration led by the **Captain of Ports, Government of Goa**
- Network of **minor ports, jetties and inland waterways**
- **High share of inland-waterway and near-shore traffic**, including ferries, tourism vessels, barges and fishing crafts
- **Tourism-linked maritime economy**, making clean seas, low emissions and noise control critical
- **Ecologically sensitive coastline** with mangroves, estuaries, fish-breeding grounds and turtle-nesting beaches
- **Strong convergence potential** between maritime operations, environmental regulation and urban/local governance

Environmental Sustainability Opportunities

- Clean seas as a tourism and economic asset
- Expanded PRFs and authorised vendors across rivers and jetties
- Full MARPOL Annex I–VI coverage
- OPS for ferries and passenger jetties
- Protection of mangroves, fish nurseries and turtle habitats
- Environmental controls for shipyards and repair clusters

Present State in Goa – Environmental Sustainability

Environmentally Sensitive Maritime State with Strong Governance Framework

- **Port Reception Facilities (PRFs):**
  PRF arrangements operational across Mormugao Port, government and private jetties and inland-waterway facilities, aligned with MARPOL and Swachh Sagar requirements.
- **MARPOL Compliance Framework:**
  Environmental compliance enforced through coordinated oversight by the **Captain of Ports Department** and the **Goa State Pollution Control Board (GSPCB)**, covering ports, jetties and inland vessels.
- **Clean Fuels & Low-Emission Initiatives:**
  Early adoption and feasibility initiatives for **electric, CNG/LNG and hybrid vessels**, particularly for inland waterways, ferries and tourism crafts.
- **Environmental Monitoring & Reporting:**
  Environmental monitoring implemented under state and national frameworks, with progressive integration into **Swachh Sagar** and emerging **Green Port Index (GPI)** systems.

Suggestive Opportunities for Goa under Pillar 5

Environmental Sustainability in Ports & Maritime Operations

Clean Seas for a Tourism-Led Maritime Economy

Safeguarding coastal waters, rivers and beaches as critical economic and ecological assets

High-Standard MARPOL Compliance across Dispersed Operations

Uniform application of MARPOL Annexes across ports, jetties, ferries, fishing and inland vessels

Low-Emission Inland and Tourism-Oriented Maritime Operations

Decarbonization of ferries, tourism crafts and harbour vessels through OPS and clean fuels

Biodiversity-Sensitive Maritime Development

Port and jetty operations aligned with mangroves, estuaries, fish breeding grounds and turtle habitats

Opportunities in Waste Management & Circular Economy

- **Riverine-Centric Waste Profile**

Dispersed waste generation from ferries, tourism vessels, fishing craft and inland navigation across the Mandovi, Zuari, Chapora and Sal river systems

- **Tourism, Public Health & Clean-Seas Imperative**

Effective maritime waste management directly supports Goa's tourism image, coastal water quality and public health outcomes

- **Cluster-Based PRF Opportunity**

Shared PRFs serving multiple jetties and harbours enable cost-efficient compliance and uniform service coverage

- **Circular Economy Potential**

Recovery of oils, plastics and scrap for authorised recycling reduces landfill burden and creates green local value chains

India's Marine Plastic Pollution & Waste Discharge

A Growing Maritime Concern

- **India Among Top Global Contributors** to marine plastic leakage due to mismanaged coastal waste (~ **3.5 million tonnes of plastic waste)**
- Fishing nets, single-use plastics and microplastics persist in ocean ecosystems for decades

Maritime Impact

- **Navigational hazard** due to floating debris in shipping channels
- **Plastic ingestion and entanglement** harming marine species
- **Increased maintenance & dredging cost** at ports due to litter accumulation

IMO Global Action – RegLitter & Marine Plastic Initiatives

- Recognises ship-based & fishing-related waste
- **IMO RegLitter** initiative to regulate discharge of plastic and waste from ships (Asia Region Specific)
- Focus on fishing gear marking, port reception facilities & marine litter reporting

DGS as RegLitter National Focal Point

- DGS designated as **National Focal Point** to Participation in IMO working groups on **marine plastic regulation & garbage discharge (MARPOL Annex V)**
- Need for national maritime strategy on plastic waste under NGSP & Blue Economy policy

Way Forward for India

- Mandatory **Port Reception Facilities** for plastic & ghost nets
- Integration with **fisheries departments & coastal states**
- National monitoring protocol for **sea-based litter discharge**

Cluster-Based PRFs and PRF Vendor Expansion in Goa

Cluster-Based PRF Model

- **Riverine clusters** along Mandovi, Zuari, Chapora and Sal
- **Shared facilities** serving multiple jetties, fishing harbours and inland terminals
- Covers diverse vessel types: ferries, tourism crafts, fishing and harbour vessels
- **Cost-efficient and scalable** alternative to stand-alone PRFs at every location

Expanding the PRF Vendor Ecosystem

- **Increase in authorised PRF service providers** across ports and jetties
- **Reduced service bottlenecks** during peak tourism and fishing seasons
- Improved **geographic coverage** for dispersed inland-waterway operations
- Competitive vendor ecosystem enabling **timely, compliant waste collection**

Together, cluster-based infrastructure and a broader vendor base ensure reliable, compliant and tourism-aligned waste management across Goa's maritime network.

Swachh Sagar Portal

A national digital system enabling end-to-end traceability of maritime waste, fuels and environmental compliance under MARPOL and green-port frameworks.

Port Reception Facility

- Module for vessel waste declaration, vendor linkages and disposal coordination

Fuel Consumption Reporting

- Enables MARPOL Annex VI fuel consumption reporting for vessels.

Single Use Plastics

- Enables ships to report plastic usage and disposal via SEP plans, ensuring compliance with National sustainability mandates

E- BDN & Bunker Suppliers

- Central database of approved bunker suppliers with electronic BDN records for transparency and fuel quality assurance

Ballast Water Reporting

- Real time Ballast Water data submission by all ships and compliance oversight

Strengthening MARPOL Compliance & Governance in Goa

Context

- Dispersed maritime activity across ports, jetties and inland waterways
- High interaction with tourism zones, rivers and coastal communities
- Necessitates coordinated, state-level compliance mechanisms

Why it matters for Goa

- Direct linkage between MARPOL compliance and clean seas
- Visibility of pollution impacts in riverine and near-shore environments
- Reputational importance for a tourism-led coastal state

State MARPOL Facilitation & Capacity Framework for Goa

State MARPOL Facilitation Cell (Concept)

- Coordinated mechanism involving:
  - Directorate General of Shipping (DGS)
  - Captain of Ports, Government of Goa
  - Goa State Pollution Control Board (GSPCB)
- Unified oversight covering **all MARPOL Annexes (I–VI)**
- Consolidated inspections, data sharing and digital reporting

Inspection & Training Capacity (Goa-specific)

- Focus on:
  - Passenger ferries and tourism vessels
  - Inland and riverine crafts
  - Fishing and harbour support vessels
- Priority compliance areas:
  - Sewage, garbage and plastics management
  - Air emissions and fuel quality
  - Riverine spill-prevention and response readiness
- Periodic training and refresher programmes for officers and operators

Shipbuilding, Repair & Dockyards – Environmental Opportunity for Goa

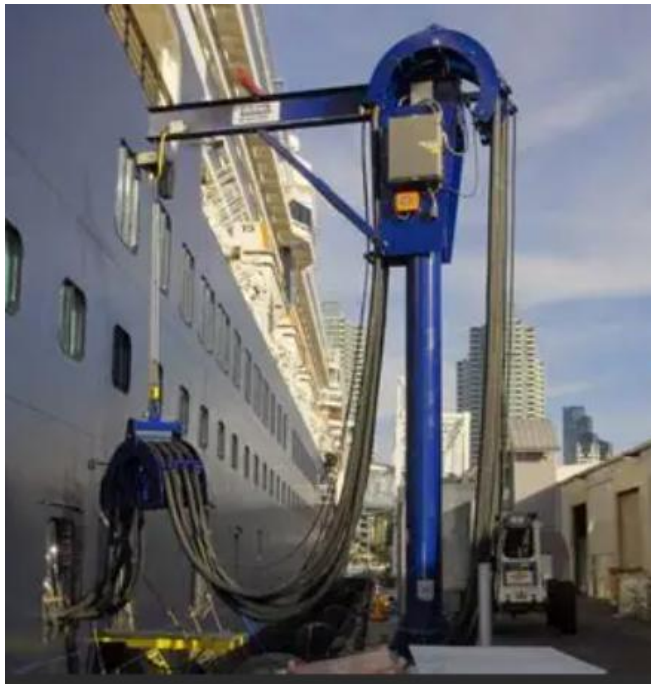
Environmental Management of Shipyards & Dockyards

- Presence of **boat-building, repair and dry-dock clusters** supporting tourism vessels, fishing crafts and inland fleets
- Opportunity to strengthen **waste, emissions and surface-runoff controls** from hull cleaning, painting and repair activities
- **Integration of shipyards and dockyards with PRF systems** for oily waste, sludge, paint residues and solid waste disposal
- Expansion of **authorised waste vendors** to cover non-operational maritime activities
- Extending **Clean Seas objectives beyond vessel operations** to the full maritime value chain

Positions Goa as a state addressing environmental performance across the entire maritime ecosystem, not only ports and vessels.

Shore to Ship

What is Shore Power?
Electricity supplied from the shore to berthed ships, allowing engines to be switched off and eliminating fuel combustion while docked.



Why It Matters

- Cuts **CO_2, NOx, SOx and Particulate Matter** emissions in port zones
- Improves **Air Quality and ESG scores** for Indian ports
- Supports compliance with **IMO CII, GHG & Green Port Index**

Implementation Status in Indian Ports

- **Kamarajar Port** - 500 kW, 400V, 50-60 Hz in Coal Berth 1 & 2
- **VO Chidambaranar Port** - 305 kW, 400V 60Hz in VOC Berth 2 & 3
- **Jawaharlal Nehru Port Authority** - SPS used for Tugs. SPS for all terminals planned (45MVA; INR 600 crore expected)

Possible Financing options

Blended finance → *govt + MDBs + private capital.*

Green/blue bonds → *specifically earmarked for OPS infra.*

PPP models → *private players co-invest in OPS roll-out.*

Shore Power (OPS) for Inland Waterways & Tourism Operations in Goa

Why OPS Matters for Goa

- Maritime operations occur **close to urban centres, heritage zones and tourist areas**
- **Emissions and noise from berthed vessels** directly affect air quality and visitor experience
- High relevance for **passenger ferries, patrol boats and harbour crafts** with frequent port calls

OPS as a Practical Early Win

- **Ideal for Phase I implementation** under Harit Sagar – Green Port Guidelines (2023)
- Enables **immediate reduction in air emissions and noise** at jetties and ferry terminals
- Improves **passenger comfort and safety**, supporting Goa's clean-tourism narrative
- Complements electrification and clean-fuel initiatives for inland and near-shore vessels

Alternate Fuels for Maritime

LNG

- **Current Use:** Operational for select Indian coastal and LNG carriers; IGF Code compliant
- **Infrastructure:** LNG terminals at **Dahej, Hazira, Kochi**; feasibility for bunkering at JNPA
- **Maritime Role:** Transition fuel till 2035 under IMO GHG transition
- **Limitation:** Methane slip & future carbon costs reduce long-term advantage

Biofuel

- **Marine Trials:** Successfully tested on marine engines
- **Supply Base:** Drop in Blends. Domestic production. **Blending with FAME, HVO**
- **Distribution:** Can use existing bunkering infrastructure without port redesign
- **Advantage:** Short-term compliance option for Indian fleet under CII/GHG without retrofits

Ammonia

- **Export Positioning: Kandla to produce green ammonia** (L&T + Itochu JV) for **Singapore bunkering**
- **Maritime Use:** Target fuel for deep-sea vessels (tankers, bulk carriers) post-2035
- **Challenges:** High Toxicity, safety standards, crew training, IMO safety code under development
- **Strategic Role:** India positioning as **future fuel exporter**, not just consumer

Methanol

- **Marine Use**: Dual-fuel methanol engines already ordered by global majors
- **Breakthrough: India's first Green Methanol Bunkering Hub** under construction at **VOC Port (Tuticorin)** – 750 m^3 terminal (SOPAN Group)
- **Production Shift:** India transitioning from coal-based brown methanol to green methanol (hydrogen + CO_2 capture)
- **Maritime Suitability:** Engine-ready (Maersk, MAN ES technology) – early adopter fuel under IMO
- **Role:** Likely first large-scale alternative fuel to enter Indian ports post-2030

Hydrogen

- **Port Pilot: VOC Port launched India's first Green Hydrogen Pilot Plant** (5 Sep 2025)
- **Use in Maritime:** Not direct – used to produce ammonia/methanol as bunkering fuels
- **Infrastructure Need:** Electrolysers, Liquefaction, port pipelines; **High CAPEX**

Long-Term Role: Backbone fuel for synthetic maritime fuels; export market focus

Green Fuels & Clean Propulsion for Inland and Near-Shore Operations in Goa

Goa's Operational Reality

- Inland waterways and near-shore operations dominate vessel traffic
- Short routes, fixed schedules and frequent turnaround
- Strong linkage with tourism, passenger comfort and urban environments

Transition Pathways

Transitional Fuels (Immediate)

- Biofuels and CNG/LNG
- Suitable for ferries, patrol boats and harbour crafts
- Minimal retrofit and faster adoption

Zero-Emission Options (Progressive)

- Battery-electric ferries for short routes
- Hydrogen pilots for higher power or extended duty cycles

Integrated Outcomes

- Cleaner air and reduced noise at jetties and urban stretches
- Improved passenger and tourism experience
- Alignment with OPS, renewable power and national decarbonisation goals

Green Ports

Driving Sustainable Maritime Growth

Concept of Green Ports

- Ports designed & operated with minimal environmental impact.
- Integration of clean energy, efficiency, and circular economy practices.

Key Initiatives in India

- Harit Sagar Guidelines (2023): National framework for green port development.
- Proposed National Port Sustainability Code (NPSC): Metrics for emissions, energy, waste, and community impact.
- Onshore Power Supply (OPS): Cut ship emissions at berth by connecting to shore electricity.
- Waste & Plastics Management: Port reception facilities for MARPOL Annex V compliance.

Benefits

- Reduces GHG emissions & pollution.
- Improves air quality in port cities.
- Promotes India's Blue Economy & Green Economy transition.
- Aligns with IMO decarbonization goals & India's Viksit Bharat 2047 vision.

Sustainable Indicators for Indian Ports

Green Port Index (GPI)

Evaluates ports based on carbon footprint, alternative fuels adoption, energy efficiency, sustainable logistics, and waste management practices.

Port Readiness Level (PRL)

Assesses ports' preparedness for energy transition, digitalization, and compliance with global environmental regulations.

Shore Power Readiness Indicator (SPRI)

Measures infrastructure for cold ironing and renewable energy integration to reduce emissions from berthed ships.

Environmental Ship Index (ESI)

Incentivizes ship operators to reduce emissions through a rating system that evaluates NOx, SOx, and CO_2 emissions.

These indicators create a robust framework to measure and enhance the environmental performance of Indian ports. By institutionalizing them, India positions itself as a global frontrunner in green maritime logistics & unlocks access to international green shipping corridors and drive long-term net-zero ambitions.

GHG Emission Scope at Ports

Scope 1 : Direct Emissions

- From port owned/controlled sources
- Diesel generators, cranes, dredgers, tugs, vehicles, fuel machinery

Scope 2 : Indirect Emissions (Purchased Electricity)

- Power consumed but generated elsewhere (state grid)
- Lighting, pumps, reefer containers, terminal operations
- Coal-based power grid

Scope 3 : Other Indirect Emissions (Value Chain)

- Ships at berth using auxiliary engines
- Trucks, trains, barges transporting cargo
- Business travel, investments, waste treatment

Green Tug Transition Program

To replace/retrofit conventional diesel-powered tugs with *green tugs* powered by **alternative fuels** (like LNG, methanol, hydrogen, or hybrid-electric systems).

- At least **50% of all tugs in major ports to be green tugs by 2030**.
- 100% transition by 2047

Current Status

~ 400 + tugs are operating in Indian Waters (Coastal & Offshore Tugs)
~ 45% of tugs are 20 + years
~ 20% of tugs are 30 + years

Problem

Older tugs generate higher emissions and operate with lower efficiency compared to modern green tugs.

Opportunity and Way Forward

- Replacing / retrofitting old fleet
- Deployment of hybrid & green-fuel powered tugs
- Incentivize adoption of LNG, Methanol, Hydrogen & Electric tugs

Ecology, Biodiversity & Sustainable Maritime Planning in Goa

Ecological Sensitivity of Goa's Coast and Rivers

- **Mangrove ecosystems and estuaries** supporting fisheries and shoreline stability
- **Fish breeding and nursery grounds** in riverine and near-shore waters
- **Turtle nesting beaches** and **wetlands supporting bird habitats**
- High overlap between ecological zones and navigation, tourism and fishing activity

Planning for Balance and Resilience

- Adoption of **Ecosystem-Based Management (EBM)** to balance:
  - Port and jetty operations
  - Inland navigation and fisheries
  - Biodiversity conservation
- **Marine Spatial Planning (MSP)** to guide:
  - Jetty siting and expansion
  - Dredging schedules and navigation routes
- Application of **"Working with Nature" principles** in dredging, sediment management and shoreline works

Enablers for Sustainable Maritime Operations in Goa

Energy, Capacity and Capital as Cross-Cutting Enablers

Renewable Energy & Energy Efficiency

- Rooftop and shade-top solar at ports, ferry terminals and jetties
- Floating solar at suitable water bodies, subject to environmental safeguards
- Battery Energy Storage Systems (BESS) and jetty-level microgrids for resilience
- Direct linkage of **OPS with renewable power** to ensure zero-emission berthing

Training & Capacity Building

- **Maritime Sustainability Training Framework (Goa)** for port, jetty and inland-waterway personnel
- Focus areas:
  - MARPOL Annex I–VI compliance
  - PRFs and waste-management operations
  - Shore Power (OPS), clean fuels and electric vessels
- Community and youth engagement on clean seas, marine litter and biodiversity

Financing & Partnerships

- Green Port Fund, FSDF and carbon-finance mechanisms for PRFs, OPS and clean energy
- PPP and performance-linked models for waste, OPS and renewable assets
- Partnerships with **IMO GreenVoyage 2050, GIZ, World Bank and bilateral agencies** for pilots, grants and technical support

Way Forward for Goa – Opportunities Under Pillar 5

Clean Seas & Environmental Sustainability

Topic / Agenda	Opportunity Focus for Goa
Clean Seas & Tourism Alignment	Treat clean rivers, beaches and coastal waters as a **core economic asset** for Goa's tourism-led maritime economy; strengthen linkage between port/jetty operations, riverine traffic and coastal water quality; prioritise visible clean-seas outcomes in high-footfall tourism zones.
Waste Management & Circular Economy	Implement **cluster-based waste management** for riverine and dispersed operations (Mandovi–Zuari–Chapora–Sal); integrate ports, jetties and inland vessels fully with **Swachh Sagar**; link recovered oils, plastics and scrap to authorised recyclers; strengthen **marine litter and LADFG recovery** with port–municipal–fisheries coordination.
Port Reception Facilities (PRFs)	Expand **authorised PRF vendor ecosystem** across ports, jetties and inland waterways to avoid service bottlenecks during peak tourism seasons; deploy **cluster-based PRFs** serving multiple jetties and vessel types; standardise digital reporting and audits through Swachh Sagar.
Strengthening MARPOL Compliance (Annex I–VI)	Establish a **State MARPOL Facilitation mechanism** involving DGS, Captain of Ports and GSPCB; ensure coverage of **all MARPOL Annexes (I–VI)** across ferries, tourism vessels, fishing crafts and inland vessels; focus on sewage, garbage, plastics and air-emission compliance in riverine environments.

Way Forward for Goa – Opportunities Under Pillar 5

Clean Seas & Environmental Sustainability

Topic / Agenda	Opportunity Focus for Goa
Shore Power (OPS)	Implement **OPS at ferry terminals and high-footfall jetties** as early wins under Harit Sagar Phase I; reduce emissions and noise in urban, heritage and tourism-sensitive locations; align OPS with clean electricity supply to support low-emission passenger operations.
Green Fuels & Clean Propulsion	Promote **biofuels and CNG/LNG** as transitional fuels for ferries, patrol boats and harbour crafts; deploy **electric ferries** on short, fixed routes; explore future hydrogen pilots for higher-power applications; align clean propulsion with tourism, clean-mobility and OPS initiatives.
Shipbuilding, Repair & Dockyards	Bring **boat-building, repair yards and dockyards** within the clean-seas framework; integrate these clusters with PRFs and authorised waste vendors; strengthen controls on waste, emissions and surface runoff from repair and maintenance activities.
Marine Ecology & Biodiversity Protection	Protect **mangroves, estuaries, fish nurseries, turtle nesting beaches and wetlands**; integrate ecological sensitivity into jetty siting, dredging and navigation planning; adopt **"Working with Nature"** principles and community-based conservation initiatives.
Environmental Monitoring & Digital Governance	Strengthen **digital monitoring** of air, water, effluent and waste systems; integrate GSPCB datasets with **Swachh Sagar and GPI** dashboards; enable transparent, data-driven oversight of environmental performance across maritime operations.

Way Forward for Goa

Suggestive Priority Action Areas

Institutional Alignment

- DGS–Captain of Ports–GSPCB coordination
- Pillar 5 embedded across ports, jetties and inland waterways

Infrastructure Interventions

- Cluster-based PRFs and OPS at ferry terminals
- Focus on tourism and passenger-intensive locations

Clean Seas & Biodiversity

- Marine litter and LADFG recovery
- Ecological sensitivity in jetty works and dredging

Digital Monitoring

- Swachh Sagar and GPI coverage
- Data-driven oversight of waste and emissions

Conclusion

- Goa demonstrates how **clean seas, green ports and sustainable tourism** can progress together
- Pillar 5 offers a **practical, scalable framework** linking governance, infrastructure and ecology
- With coordinated implementation, Goa can emerge as a **lighthouse coastal state** for sustainable maritime operations under the National Green Shipping and Green Port framework

संगच्छध्वं संवदध्वं सं वो मनांसि जानताम्।

“Move together, speak together, may your minds be in harmony.”
(Rigveda 10.191.2)

सत्यमेव जयते
Ministry of Ports, Shipping & Waterways
Government of India

सागराः सुपन्थानः सन्तु

पत्तन, पोत परिवहन
एवं जलमार्ग मंत्रालय
MINISTRY OF
PORTS, SHIPPING
AND WATERWAYS

सत्यमेव जयते

PILLAR 6

Coastal Shipping and Opportunities in Coastal Segment and Inland Navigation and Multimodal Linkages

November 2025

State Profile

Snapshot of Goa's strategic Initiatives

Current Infrastructure

- **01 Major Port :** Mormugao Port
- **Non Major ports :** Tiracol (Non Functional) Chapora (Non Functional) Panji (Functional), Betul (Non Functional),Talpona (Non Functional)
- **6 National Waterways**: NW-68 NW-111, NW-27, NW-27, NW-25, NW-71, NW- 88 covering Mandovi, Zuari, Chapora, Sal and other rivers.
- **It has around 255+ km of navigable inland waterways** for cargo and tourism.
- Goa offers multimodal connectivity comprising 1.4 lakh km of roads, a broad rail network, and air connectivity through 02 operational airports Dabolim and Mopa.

Strategic Initiatives

- Installation of **Mooring Bouys** at Miramar, Panji Goa
- **Interstate Ferry Services** : Mumbai-Goa Ferry service is under study.
- Development of Islands and Submarine Tourism
- **Hull superstructure & outfitting** : Construction of concrete jetty with highly advanced crane of 200 tons, is planned at betim to construct vessels with superstructure of higher air draft
- **Mini Harbour Jetty at Cortalim**.
- **Marine Slipway development** at Britona for ship repair facility in Mandovi River.
- **River information system/VTMS** to enhance operational security and control.
- **Dredging across major waterways** to ensure safe and efficient Navigation for inland vessels and cargo transportation.

Opportunities

- **9 coastal jetties** in Goa
- Installation of **26 Floating Jetties** across Various Rivers
- **Island** Development Project
- **River Information System**
- Establishment of **Ro-Ro ferries & Terminal**
- Establishment of **Green Shipbuilding & Repair Cluster**
- Establishment of **Water Taxi**
- **Linking inland industrial zones** to ports via waterways and freight corridors..
- **Private sector participation** in developing terminals, jetties, and cargo handling infrastructure.

Policy & Incentives

- Development of 07 costal community jetties at various locations in the state - **sagarmala scheme on 50%-50% sharing basis**
- Installation of 10 concrete floating jetties at river mandovi and zuari - **project fully funded by IWAI**
- Implementation of river information system - **100% funded by IWAI**

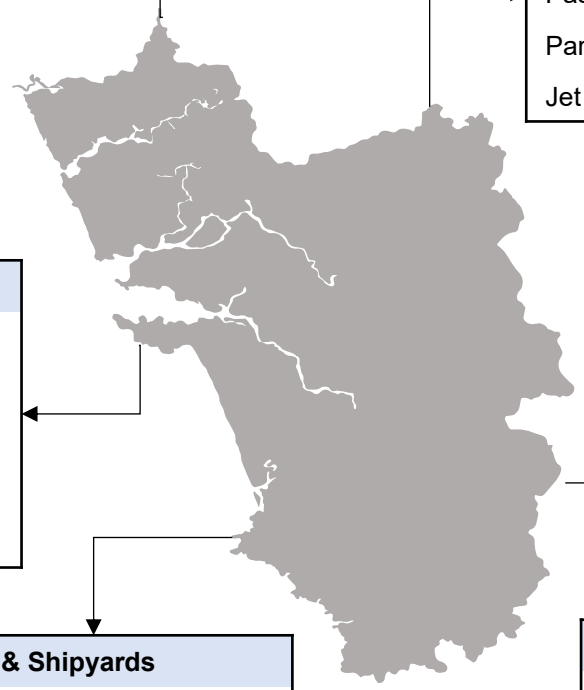
State Maritime Infrastructure

Maritime Profile

Goa has strong maritime backbone supporting trade, tourism, fisheries and Inland waterways

Floating assets	
Government Jetties	35
Fishing Jetties	08
Ore Loading Jetties	48
Cruise Terminal	41

Water sports	
Kayaks	514
Passenger Boats	1426
Parasailing	304
Jet Skies	405



Inland Vessels	
Passenger Vessels	189
Cruise Vessels	107
Ore carrying barges	81
Gaming Vessels	06
Utility Vessels	43

Docks & Shipyards	
Ship Repair Facilities	22
Dry Dock	11
Workshop	10

Navigational Aid	
Lighthouse	07
Beacons @Mandovi	07
Beacons @Zuari	07

Infrastructure is strategically distributed to enable efficient operations, safety and multi-sectorial growth across the coastline

35 Government Jetties

Department	Port Reception	Cruise	Fishing	Community	Total
Captain Of Ports	01	7	2	0	10
River Navigation Dept.	0	1	0	15	16
Fisheries Department	0	1	6	0	7
Tourism Department	0	2	0	0	2

89 Private Jetties

Type	Loading unloading	Cruise
Concrete	48	0
Wooden	0	6
Floating, Pontoon, Steel	0	35

State Profile

Maritime and Trade Profile

Key Initiatives/Investment/Infrastructure Plans

- Over the past five years, projects worth **INR 1,016 crore** have been completed through **Government Budgetary Support, Internal Resources, and Public–Private Partnership (PPP) models**
- Allocation of **INR 200 crore** for National Waterways projects in Goa by Inland Waterways Authority of India (IWAI).
- A **INR 3,500 crore** agreement with Atlantic & Pacific LNG Inc. for establishing LNG infrastructure at Mormugao Port Authority
- The **Goa Maritime & Waterways Infrastructure Development Vision** Document positions Goa as a model for sustainable maritime development with emphasis on **"Blue Growth with Green Responsibility"**.
- Inland waterways and green fuel bunkering are emerging as strategic enablers.
  Redevelopment of Goa Institute of Maritime Excellence for training and certification of Seafarers on PPP mode .

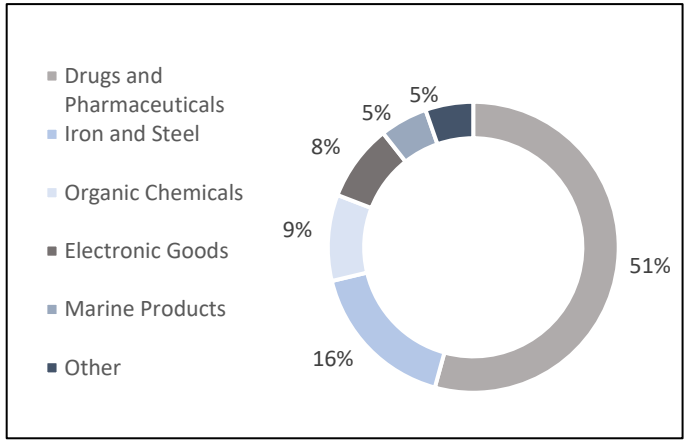
Investment Commitments :

Sr	Name of MoU	Name of the Stakeholder	Investment
1	Setting up of LNG Facilities	M/s Atlantic & Pacific LNG	3,500
2	Redevelopment of Berth No.9 on EPC mode.	M/s Gammon Engineers and Contractors Private Limited	1,000
3	Development of Vasco Bay infrastructure includes construction of Fishing harbour, Passenger Jetty, Coastal cargo berth & Berths for Indian Navy and Indian Coast Guard.	M/s. Indian Port Rail & Ropeway Corporation Ltd,	1,000
4	Capital Dredging of Approach Channel and inner Basin for handling of Capesize Vessels at Mormugao Port.	M/s International Seaport Dredging Private Limited (ISDPL)	500
5	Berthing facilities at Finger Jetties 1,2 & 3	M/s Indian Coast Guard	250
6	Development of LPG Facilities	M/s Cisterina	100
7	Development of Berth-3	M/s. Indian Port Rail & Ropeway Corporation Ltd	25
8	Design, Supply, Installtion, & Commissioning of 2MWp Solar Power Plant at MgPA	M/s Oriana Power Ltd	20

Nodal Agency: Captain of Ports

CAPTAIN OF PORTS DEPARTMENT
GOVT. OF GOA

Principal Commodities Exports in FY25



Coastal Cargo*

Discussion Points: Key Enablers to support Coastal Shipping and IWT

- **Promoting multimodal movement**

➢**Streamlining operational & policy elements to ensure level playing field for all the modes**

- Freight subsidy is linked to rail distance (disincentive for other modes such as coastal / IWT
- Issues related delays in reimbursement of subsidy in coastal movement
- Address issue of higher GST (12%) on multimodal movement vis a vis single mode

➢ Movement of imports to port hubs (like Haldia/Kolkata) with IWT connectivity and then onward movement by barges

➢ Alignment of supply schedules and demand patterns for coastal districts to aggregate and plan for Scheduled services via containerized coastal movement

➢ Multimodal movement and optimization

Coastal movement share increase to 7% from current 0.5%
IWT movement for east and NE region increasing IWT share to ~2%
Overall modal optimization

Promote standardization through containerization of fertilizers

➢ **Containerized movement in coastal shipping can be 20-25% cheaper than bagged, jumbo bag based coastal movement**

• Making policy recommendations for leveling tariffs and promotion of containerized movement

➢ **"Bulk in -Bulk out" movement of fertilizers, and movement through automated (pumping) bulk loading of fertilizers in containers**

•Concept of "Bulk in-Bulk out" movement of fertilizers from ports and plants a way forward in reducing congestions at the ports/ plants, increasing turnaround time of ships / rakes, while saving on fertilizer subsidy through reducing the port charges, warehouse rent etc.

Road/Rail connectivity to Ports

➢ Connectivity gaps leads to increase in logistics and handling cost thereby increasing the overall transportation cost.

➢ Apart from ongoing Sagarmala projects, new 60 road connectivity and 61 rail connectivity projects have been identified after consultations with MOR, MORTH, State Maritime Boards, Port Authorities

➢ Comprehensive Port Connectivity Plan prepared by DPIIT

*Source: Industry Feedbacks

Coastal Cargo*

Discussion Points: Key Enablers to support Green Shipping

- Shift cargo from road/rail to sea to reduce emissions and logistics cost.
- Transition ships to green fuels and install Energy Saving Devices (ESDs) – requires funding support.
- Policy incentives for cargo movement on vessels meeting green compliance standards.
- 90% long-tenure loans for Hybrid Tugs at major ports to accelerate adoption.
- Regular provision of green shore power at ports for sustainable operations.
- Coastal & Inland Cargo Facilitation Center (CCFC) under IWAI – drive demand via outreach and collaboration with PSUs, trade bodies, private players, and rail/road ministries.
- Center for Marine Economy & Connectivity (IPA & RIS) – harmonize coastal shipping agreements with BIMSTEC countries to boost regional waterways movement.
- National Center for Excellence for Green Ports & Shipping (with TERI) – develop hydrogen hubs and green coastal vessels.

*Source: Industry Feedbacks

Coastal Shipping Act, 2025

An Overview of the Provisions and improvements

1. Simplified licensing

Moves the requirement for **Indian-flagged vessels** to obtain a general trading license for coastal operations, easing compliance burdens and promoting domestic participation.

2. Definition of coastal trade

Definition of '**Coasting Trade**' expands beyond goods and passenger carriage to include services like exploration, research, and other commercial activities (excluding fishing).

3. Integration of Coastal and Inland Waterways

Integrating **coastal and inland waterways** to create a **seamless multimodal transport network, reducing transshipment needs and improving efficiency.**

4. Database of coastal shipping

A **national database** is planned to be created for better real time information and support in better decision-making pertaining to coastal trading.

5. Strategic plan

Creation of **National Coastal and Inland Shipping** Strategic Plan biennially, aiming to improve route planning, forecast traffic, and foster sustainable growth

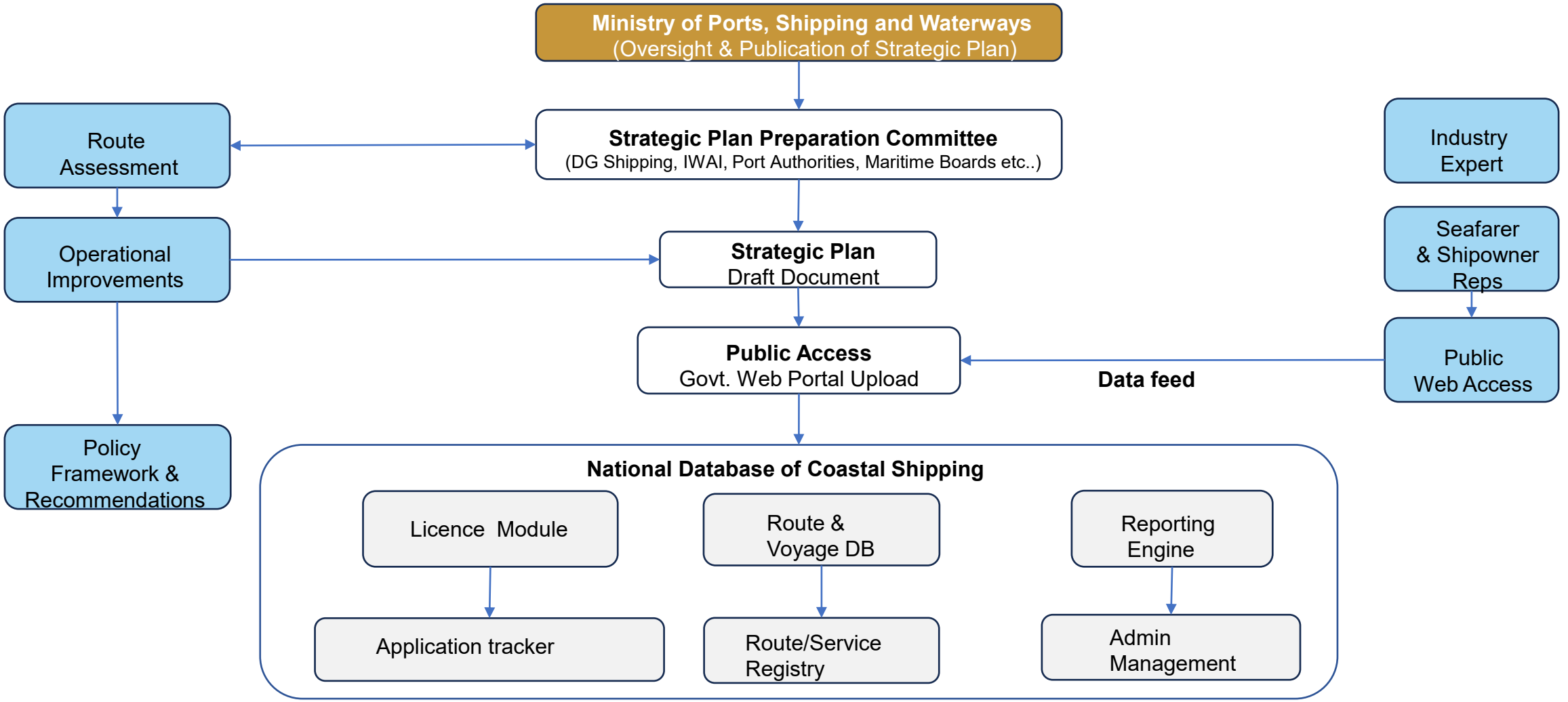
6. Revision in penalty and environmental standards

Penalties have been increased, and environmental standards have been included for enhanced compliances and promotion of sustainable growth

The Act promotes the use of **Indian-built vessels** and supports the domestic shipbuilding and repair industries, fostering self-reliance in the maritime sector

National Database for Coastal Shipping

The Proposed Setup (as per the Coastal Shipping Act, 2025)



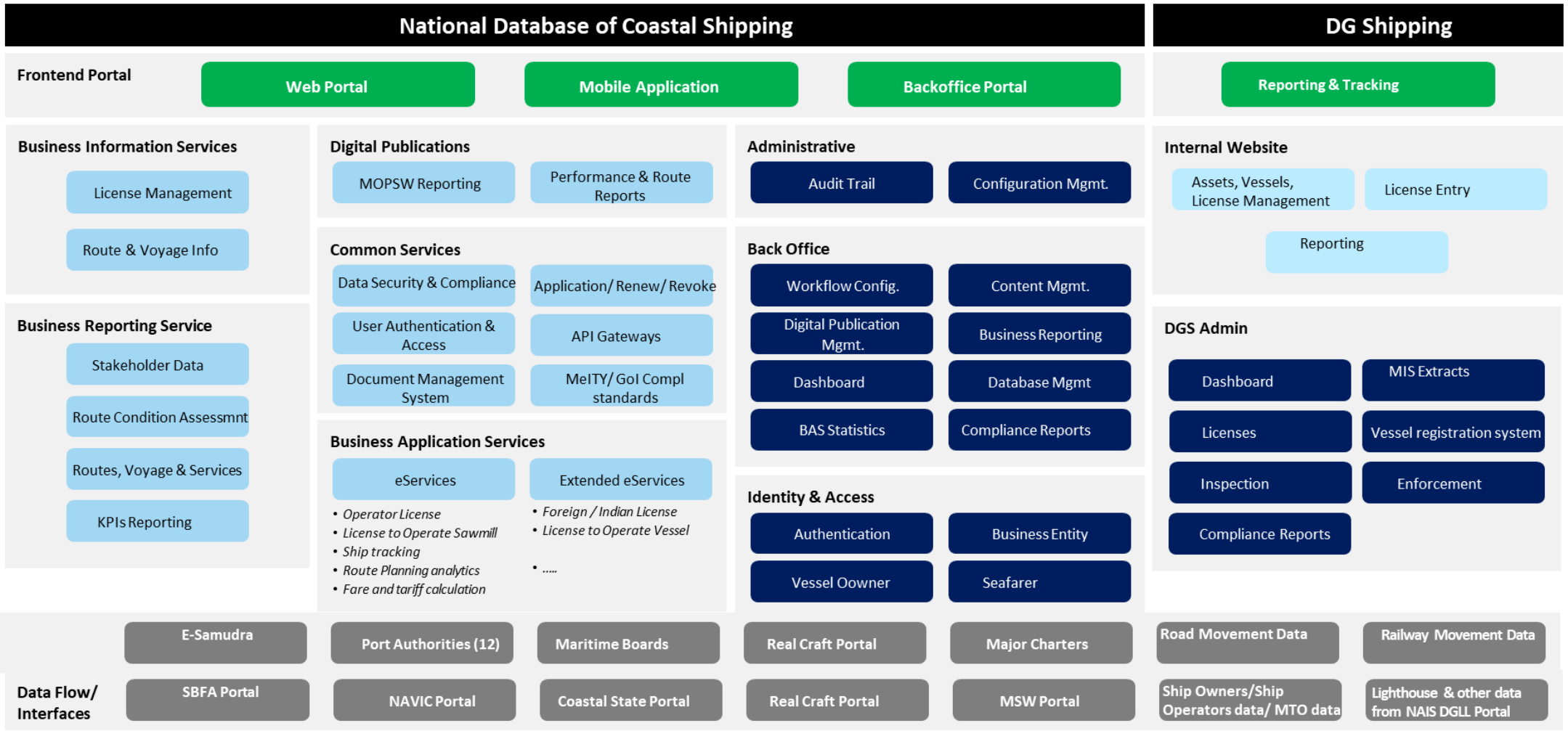
National Database for Coastal Shipping

Planned Data Points to be Integrated (Phase-I)

- Applications Received For Licence Under Section 4 (of the CS Bill)
- Licences Granted Under Section 4(of the CS Bill)
- Terms And Conditions Of The Licences So Granted
- Routes, Voyages And Services In The Coasting Trade Of India
- Requirement Of Applicants For Grant Of Licences Under Section 4(of the CS Bill)
- Expired And Revoked Licences Under Section 5(of the CS Bill)
- Information Reported To The Director-general Under Section 6 (of the CS Bill)
- Such Other Information As The Director-general May Deem Fit

National Database for Coastal Shipping

Tentative Functional Architecture of the Database



National Database for Coastal Shipping

Assessing the System / State readiness

Section	Description	Mandatory (Y/N)	Owner	Remarks
A. Governance & Sponsorship	Nodal authority designated (State Project Lead & Technical PoC)	Y		
	State participation in NDCS Steering/Working Groups	Y		
	Data-sharing agreement / MoU (scope, SLAs, security, IPR)	Y		
	Change-control alignment with NDCS	Y		
B. Legal, Policy & Compliance	Alignment with Coastal Shipping Act, 2025	Y		
	Information-security aligned to ISO 27001	Y		
C. Stakeholder & Process Readiness	Stakeholder map finalized (maritime board, minor ports, terminals etc.	Y		
	SOPs for State wise license/ voyage/ crew/ port-call data flows into NDCS	Y		
	Minimum stakeholder profiles prepared (≥10-15 key State stakeholders)	Y		
D. Data Inventory & Quality	Inventory: Licenses/Permissions (Coastal trade, SVL, passenger, special cargo, charter)	Y		
	Inventory: Vessel registry attributes (name, IMO, flag, GT/NT, build year, class, certificates)	Y		
	Inventory: Voyage/route data (ports of call, cargo types/quantities)	Y		
	Inventory: Crew-seafarer linkage to INDoS (where captured)	N		
	Quality: Completeness ≥ 98 % for mandatory fields	Y		
	Quality: Validity checks, deduplication, master-data alignment	Y		
	Data dictionary & lineage with update frequency & owner	Y		
E. Integration & API Readiness	Existing systems in use by the State	Y		
	Availability of APIs/			

National Database for Coastal Shipping

Interventions Sought from the State Government

- Nominate nodal officer and technical contact for NDCS integration
- Signing a data-sharing agreement or MoU with DG Shipping, if required
- Compliance with licensing and voyage processes aligned with the Coastal Shipping Act, 2025
- Provide access to complete inventory of vessel, license, and voyage data
- Provide access to Available Systems and necessary APIs for integration

THANK YOU

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