



# Ministry of Transport and Communications

## AYEYARWADY INTEGRATED RIVER BASIN MANAGEMENT PROJECT (AIRBM)

### Navigation related Disaster Risk Reduction

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Myanmar belong to the natural route for transportation connected North and south of Myanmar

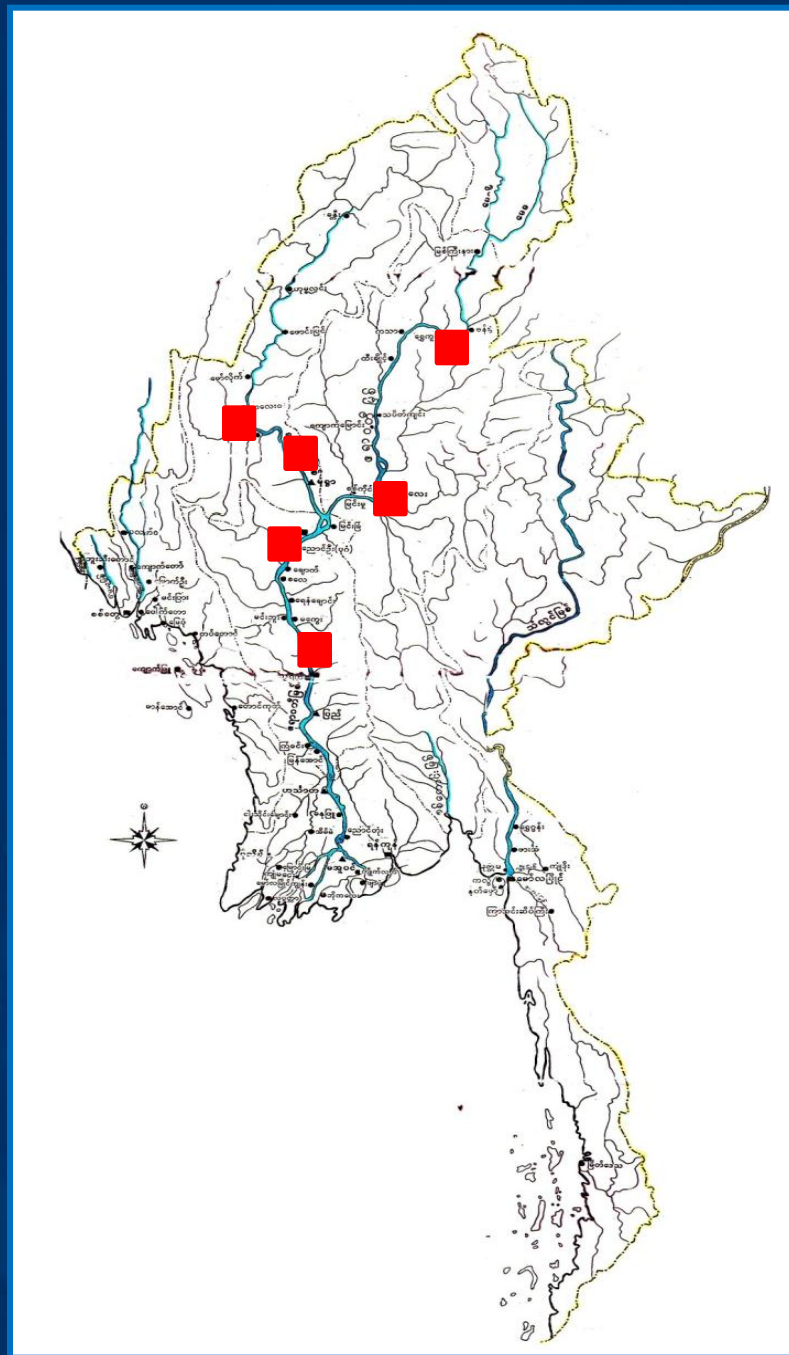
Trade is a strong economic stimulus for the country. That is an development principle that we have to deal with in the most sustainable manner.





## Inland river ports

1. Mandalay
2. Bhamo
3. Pakkoku
4. Magway
5. Monywa
6. Kalewa





- ❑ Inland Navigation is the **safest mode** of transportation.
- ❑ The number of casualties involved in accidents on board of vessels is far less than **traffic** incidents on the road





# Scale of economies:



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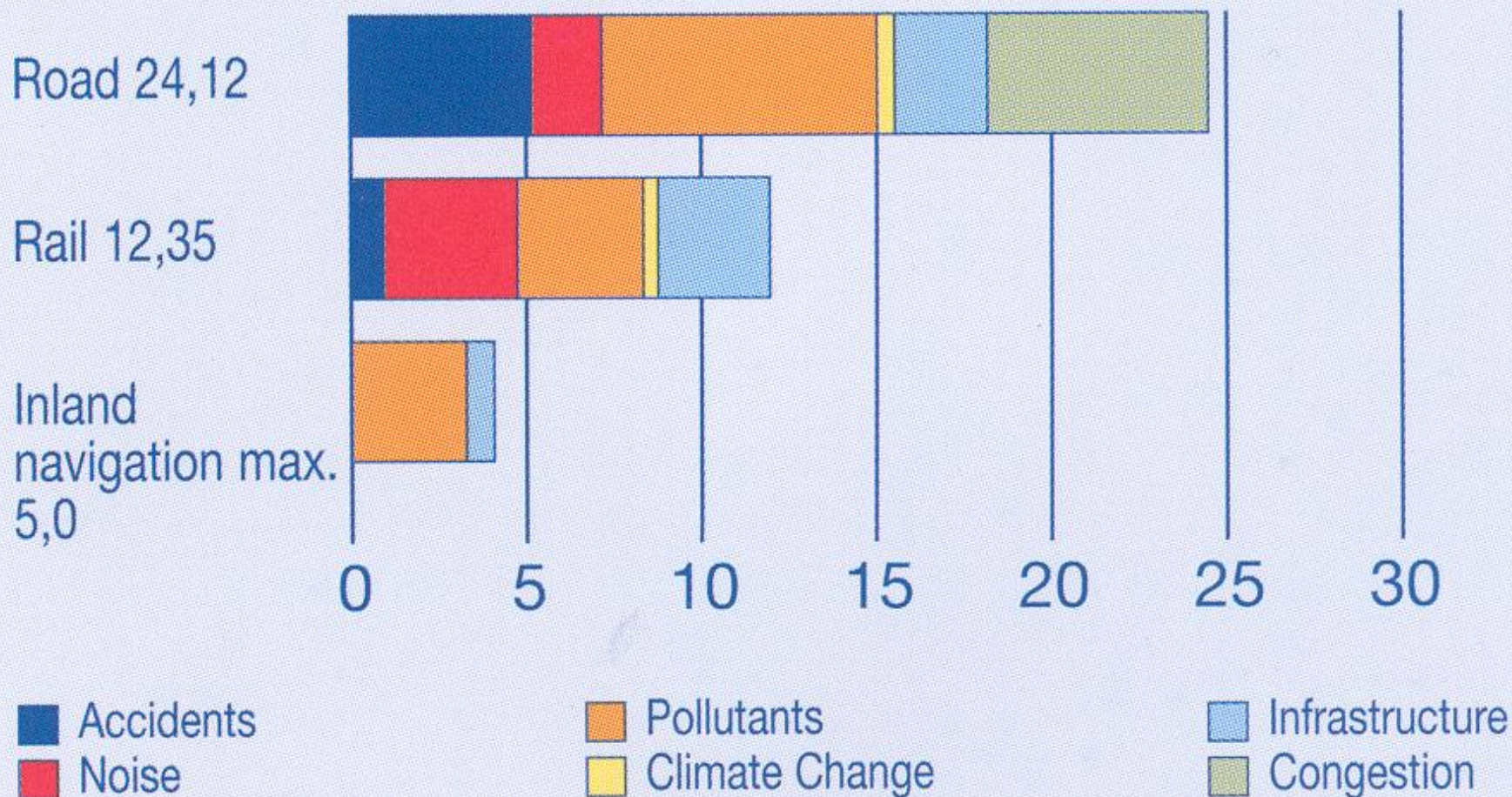




# Comparison with other modes of transportation

## Marginal average external costs of transport

by mode in €/1000tkm, *Source: European Commission 2010*







Maintaining 1 km of road is  
12 times more expensive than  
maintaining 1 km of waterway



BUT, despite all the potentials of being the most safe and cleanest way to carry cargo,

- ❖ the potential for fire,
- ❖ explosion on board a **petroleum tanker or in port** is **increasing** unless stricter controls are implemented and the safety of the waterways is improved.





# Tanker accident on the Rhine



MV Waldhof 13.1.2011



# The Costs of the Buncefield Incident

1.8 Billion (USD)

(11.12.2005, England)

Sector	Total Cost in million
	USD (\$) *
Site operators (compensation claims)	1227
Aviation	481
Competent Authority and Government response	29
Emergency response	14
Environmental impact (drinking water)	4
<b>Total</b>	<b>1755</b> <sup>12</sup>



The International Maritime Organization (IMO) estimates that more than **half of the goods transported today can be regarded as dangerous.**

Data from the US database showed that 97% of the events in the US were not even caused by accidents, such as a collision.

**Preparation of the goods for transport, packaging, stuffing containers, and loading** the ship were the main factors for the release of the dangerous goods. Main causes are ignition of incorrectly declared dangerous goods.





Another important cause is **fire**. The risk for fire even ranks second in maritime casualties after stranding and grounding. Fire aboard commercial vessels is leading quite often to total loss of the ship and crew. Fire together with grounding; represent more than 50 percent of all marine casualties.

Another very common cause is **human error**. Almost half of the accidents are caused by a human error. Human errors may be caused by poor training, carelessness or indifference.

And of course among the impacts to society, a major disaster cause **pollution**





## In the case of Myanmar:

we observe that transport of **dangerous cargo** by barge on the river systems in Myanmar is still a **risky business**, and environmentally unsafe.





This is a typical 1000 ton petroleum barge pushed by a tug boat.

About 60% of all cargo carried by barge between Yangon, Mandalay and Bhamo are petroleum products







Today, it is still only Diesel and Gasoline, but in the future for sure chemicals will be transported like Styrene, Phenols, Sulphuric Acid, etc.





# Ecology and waterway transport can coexist in a River Basin BUT it requires a serious commitment





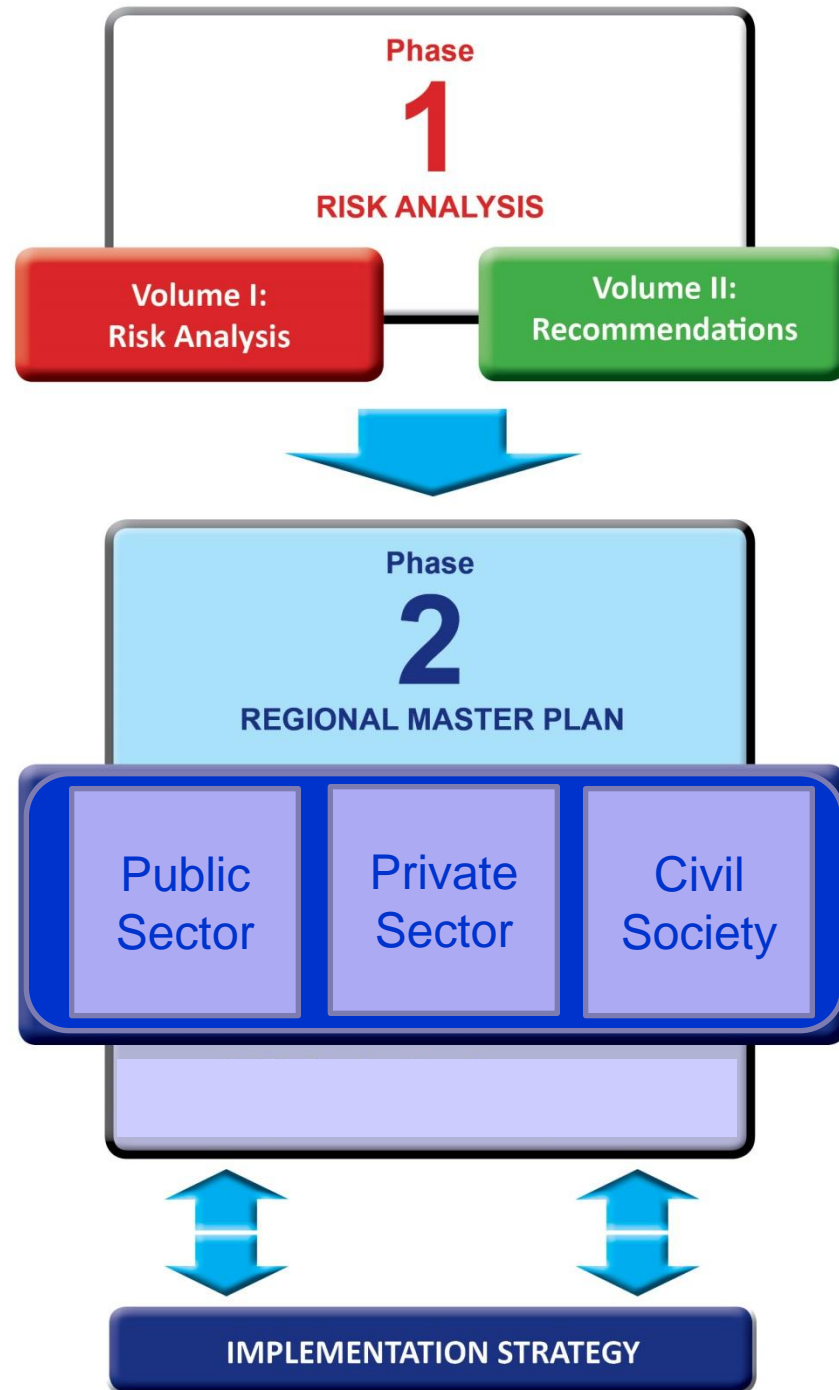
# The AIRBM Ayeyarwady Navigation Strategy

- The Objective of the Strategy is to improve the navigability and increase the trade opportunities, and to assist in developing effective and safe waterborne transport in a sustainable and protective manner for the waterway environment.
- The component **Safety and Environment** is crucial





# SUSTAINABLE MANAGEMENT OF DANGEROUS GOODS





# Risk Analysis

- There are many critical operations and activities for the safe operation of vessels
- The levels of risk associated with these operations and activities need to be investigated.
- **Some examples:**





# Which Shipboard Operations and Activities need to be investigated ?

## 1. MECHANICAL





## 2. STRUCTURAL





### 3. ELECTRICAL







## 4. PHYSICAL ENVIRONMENT





## 5. DANGEROUS GOODS





## 6. HUMAN FACTOR





# 7. MANAGEMENT





# Recommendations

1. To prepare and develop a **dangerous goods risk assessment** for activities and operations at selected Ports including port operations and tank trucks;
2. To review existing facilities for port and vessel wastes and develop **waste management plans**;
3. To establish a **Dangerous Goods Management Manual (DGMM)**, **Vessel Inspection Scheme (MVIS)** and **Waste Management Plan (WMP)** including safe work procedures, checklists, signage, segregation and required documentation;
4. To undertake **training and capacity building** for port management, employees and contractors on the safe handling of dangerous goods





# Recommendations

Before the formulation on the Master Plan are started, it is important to evaluate the training and practical achievements on the developed manual (DGM), Vessel Inspection Scheme (VIS) and Waste Management Plan (WMP).





Thank you for your kind attention!

