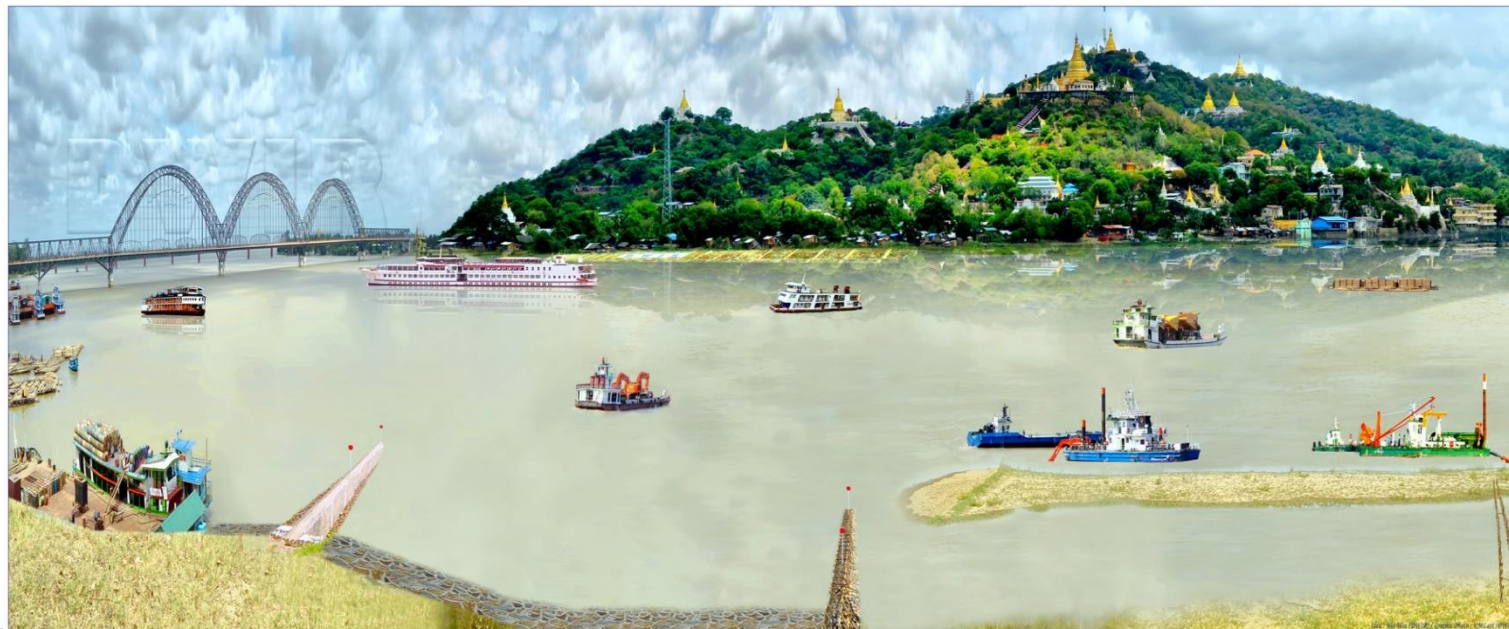




# Ministry of Transport and Communications

## Directorate of Water Resources and Improvement of River Systems



## River Conservation Activities in Myanmar

22<sup>nd</sup> Feb, 2018

MICC II, Naypyitaw

# Needs for Improvement of River Channels

1. Existing regular river training works are insufficient to meet the present situation of national demands.
2. Only few parts of the Master Plan for the development of the Ayeyarwady and lower Chindwin rivers have been implemented.
3. River training activities should improve both in performance and methodology.
4. Proper river Channel improvement leads to advantages not only for the navigation improvement but also for extreme events mitigation.
5. To improve the navigation of Chindwin river and Ayeyarwady river in terms of (2) meter and (3) meter least Available Depth respectively.
6. To harmonize the inland river channel infrastructure development and fleet optimization.
7. To enhance for the improvement of inland river transportation.
8. To apply the feasibility study and physical & mathematical model study at constraints for consideration of river training activities.

# Bank erosion due to river morphology changes

- Ayeyarwady river covers 55 % of Myanmar land area and has a discharge of 2300 cu.m/s in dry season and 32600 cu.m/s in rainy season. Sedimentation rate is 278 million ton per year and it is fifth of world highest sedimentation. (Royal Haskoning report 1987)
- According to satellite maps, 700 km of 2100 km river banks along Myitkyinar to Nyaungdone suffer serious erosion.

No.	Stretch	Location	Erosion L (km)	Area lost (sq - km)
1	Myitkyina – Bamaw	2	67.29	8.70
2	Bamaw – Hteegyaint	3	77.78	48.66
3	Hteegyaint – Mandalay	9	87.90	33.54
4	Mandalay – Chindwin Confluence	7	80.28	52.41
5	Chindwin Confluence – Magwe	9	135.98	99.03
6	Magwe – Pyay	5	31.95	8.41
7	Pyay – Nyaungdone	12	218.21	130.41
	Tot.	47	699.39	381.16

# Sedimentation





# Serious Erosion





# Alternative River Improvement Methods

## 1. River Bed Regulation / Canalization



## 2. Water Level Regulation



## 3. Discharge Regulation



## River conservation works by DWIR (comparison of 2 FY)

No. ·	Particular	2016 – 2017 FY (177) Places		2017 – 2018 FY (197) Places	
		No.	Amount	No.	Amount
<b>1</b>	<b>Direct method</b>				
	(i) Permanent structures				
	– Retaining wall/ revetment	118	83853 ft	149	131631 ft
	(ii) Temporary structures				
	– Myaw grid	33	28058 ft	16	13305 ft
<b>2</b>	<b>Indirect method</b>				
	(i) Permanent structures				
	– Groyne	120	86062 ft	92	57219 ft
	(ii) Temporary structures				
	– Steel Cable Groyne	2	3950 ft	–	–
	– Porcupine	5	670 ft	6	13040 ft
<b>3</b>	<b>Dredging</b>	13	2649615 cu. m	13	1767285 cu.m
	<b>Tot.</b>	<b>291</b>		<b>276</b>	



# Bank erosion protection works (Regional Government budget)

Near Ngamanaung Pagoda , North Dagon Tsp



Kywekusake village, Hleku Tsp



Aunggyi village, Oaktwin Tsp, Sittaung river



Sanpauk village, Pantaung Tsp





# Border Rivers Protection Work



Parchan river bank protection



Parchan river, (Sakephu village) protection



Thaungyin river bank protection, Myawady



Gawli creek bank protection, Wawlaymyaing

# Measures to be implemented for waterway conservation

## Ayeyarwady

No.	State/Region	From	To	Length (km)	Depth (ft)	Situation		
						Not need to be improved (km)	Improved (km)	To be improved (km)
1	Kachin/ Mandalay Sagaing	Bamaw	Hteegyaing	190	4.5	28	–	162
2	Mandalay – Sagaing	Hteegyaing	Mandalay	230	5	76	7	147
3	Mandalay	Mandalay	Nyaung Oo	191	5.5	84	23	84
4	Mandalay – Magwe	Nyaung Oo	Magwe	149	6	5	15	129
5	Magwe – Pyay	Magwe	Pyay	183	7	130	–	53
6	Bago–Yangon– Ayeyarwady	Pyay	Nyaungdone	268	7.5	142	12	114
	<b>Tot.</b>			<b>1211</b>	<b>–</b>	<b>465</b>	<b>57</b>	<b>689</b>



## Priority Work (2018 – 2019) to (2020 – 2021) (Ayeyarwady)

No	Stretch	Location s to be improved by Master Plan	Priority Location s	Priority (mil kyats)			
				First	Second	Third	Total
1	Bamaw- Hteegyaing	8	4	4121.400	672.800	–	4794.200
2	Hteegyaing- Mandalay	9	7	7490.500	–	–	7490.500
3	Mandalay- Nyaungoo	7	–	–	–	–	–
4	Nyaungoo- Magwe	7	4	6774.280	–	–	6774.280
5	Magwe-Pyay	9	3	2408.850	1172.270	–	3581.12
6	Pyay- Nyaungdone	13	7	9678.445	11871.280	3580.790	25130.51
	<b>Tot.</b>	<b>63</b>	<b>25</b>	<b>30473.475</b>	<b>13716.350</b>	<b>3580.790</b>	<b>47770.615</b>

# Measures to be implemented for waterway conservation

## Chindwin

No.	State/Region	From	To	Length (km)	Depth (ft)	Situation		
						Not need to be improved	Impro- ved	To be impro- ved
1	Sagaing region	Hkamti	Homelin	203	3	142	–	61
		Homelin	Mawlike	226	3.5	165	–	61
		Mawlike	Monywa	296	4	158	28	110
		Monywa	Chindwin confluence	87	3.5	15	12	60
	Tot.	Hkamti	Chindwin confluence	812		480	40	292



## Priority Work (2018 – 2019) to (2020 – 2021) (Chindwin)

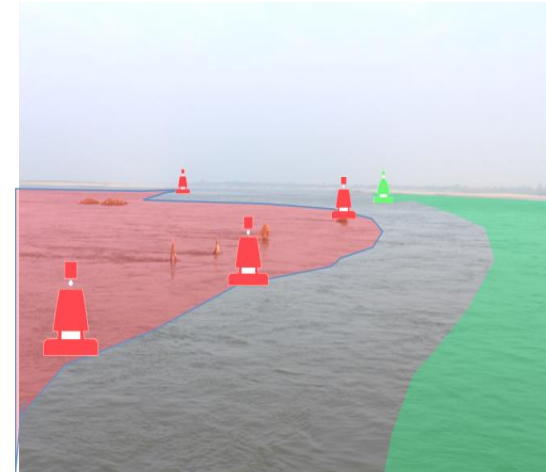
No.	Stretch	Locations to be improved by Master Plan	Priority Locations	Priority (mil kyats)			
				First	Second	Third	Total
1	Homelin – Mawlike	13	5	2514.180	–	–	2514.180
2	Mawlike– Monywa	1	9	4402.710	–	–	4402.710
3	Monywa – Confluence	6	5	4159.080	–	–	4159.080
	<b>Tot.</b>	<b>30</b>	<b>19</b>	<b>11075.970</b>	<b>–</b>	<b>–</b>	<b>11075.970</b>

# Ayeyarwady Integrated River Basin Management (AIRBM)

- **Project Duration - 2015 to 2020**
- **Project Financing Amount - 100 Million USD**
- **Components**
  1. Water Resource Management Institutions, Decision Support Systems and Capacity Building
  2. Hydro-meteorological Observation and Information Systems Modernization
  3. Navigation Enhancement on the Ayeyarwady River
- **Current implementation Status**
  - SOBA Synthesis report Vol.1 had been issued in 10.12.2017
  - DSS and Master plan Contract Negotiation
  - System Integrator Concept of Operations (CONOPS ) is implemented by DMH
  - Sub-Project 1 Design and EIA are under processing for Mandalay waterway



PERSPECTIVE VIEW





## Benefits of River Conservation

By improving constraint places in the river;

- ❑ Achieve adequate depth for maximum loading capacity of the vessels.
- ❑ Smooth and safety waterways navigation along rivers and creeks.
- ❑ Improve the navigation channel and to stabilize the inland river ports.
- ❑ Protect and maintain the waterways of border rivers so as not to lose State-owned land, and making arrangements thereof.
- ❑ Contribute to the development of State economy through improving water resources and river system.

THANK YOU  
FOR YOUR KIND ATTENTION

