




School of Maritime Design and Research

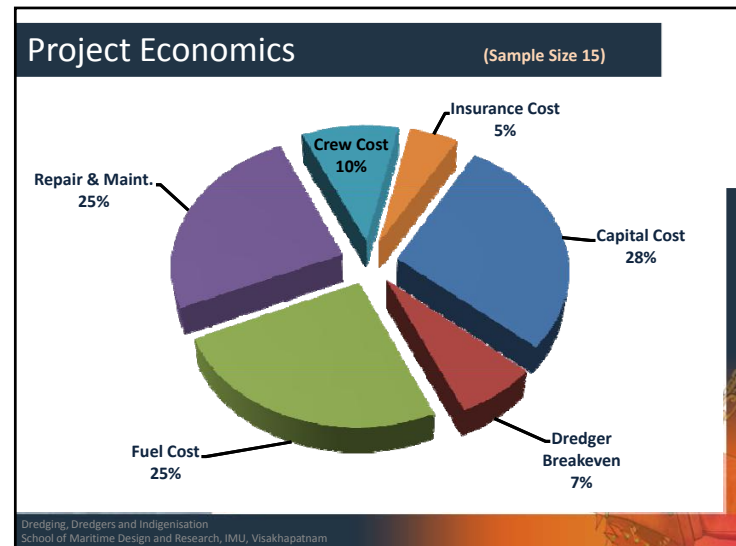
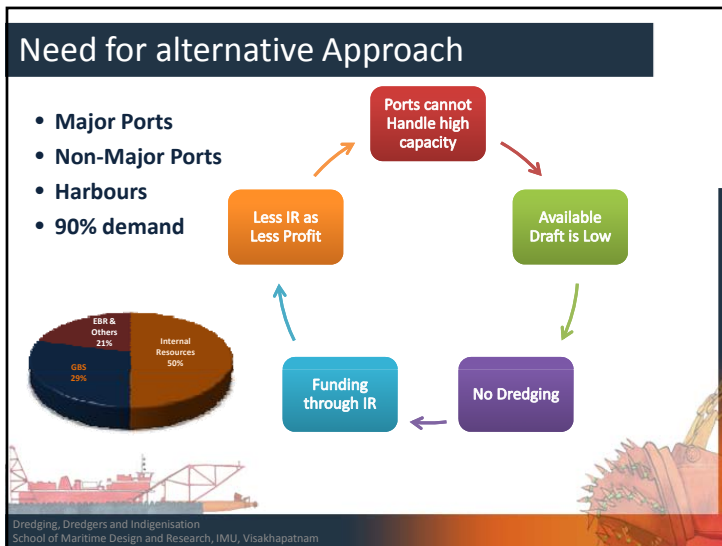
Dredgers and Indigenisation

Presentation by
Akula Nidarshan
 Scientist – B (ME)
 nidarshan.a@nsdrc.res.in

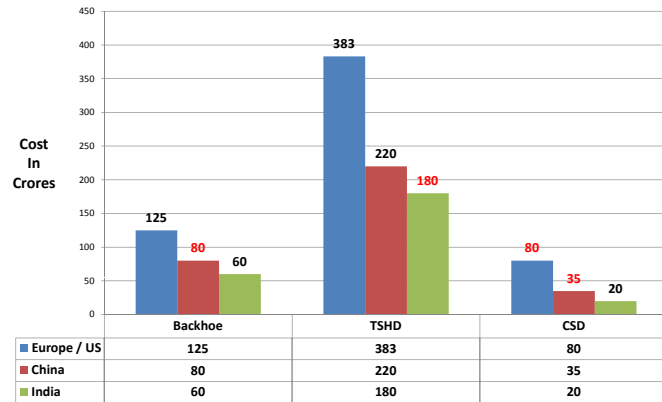
Port Drafts

Port	Berth	Channel	Port	Berth	Channel
Kolkata	7.1 to 13.7	7.9	Cochin	9.14 to 12.5	12.8
Haldia	Variable	6.7	NMPT	7 to 14	15.4
Paradip	11 to 13.5	12.8	Mormugoa	12 to 14.1	14.4
Visakhapatnam	9.75 to 17	10.7 & 20	Mumbai	6.1 to 14.3	10.9
Chennai	8.5 to 17.4	18.6 & 19.2	JNPT	12 to 13.5	11
Tuticorin	8.6 to 10.9	10.4	Kandla	9.1 to 12.5	11.6 & 23.5

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Initial Cost of Dredgers Globally



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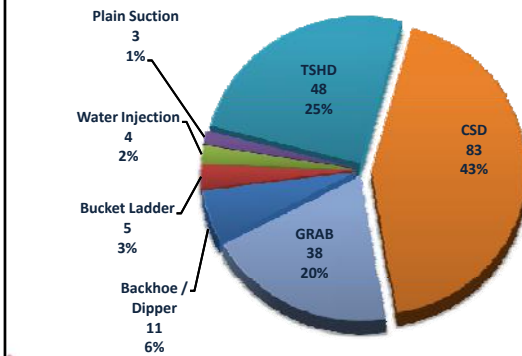
India's Dredger profile

36 Organizations have been identified
193 No. of Dredger owned by these organizations

- | | | |
|----------------------|--------------------|----------------------------|
| 1. DCI | 7. Navayuga Engg. | 13. Pluto Shipping |
| 2. IWAI | 8. A(kash)DAMS | 14. Rock and Reef Dredging |
| 3. Jaisu Shipping | 9. Ocean Sparkle | 15. Sahara Dredging |
| 4. Dharti Dredging | 10. Marg | 16. Sea Eagle / Seagull |
| 5. PMC – Adani Group | 11. Ocean Dredging | 17. Maldar |
| 6. Mercator | 12. ISPDL | 18. Meka etc. |

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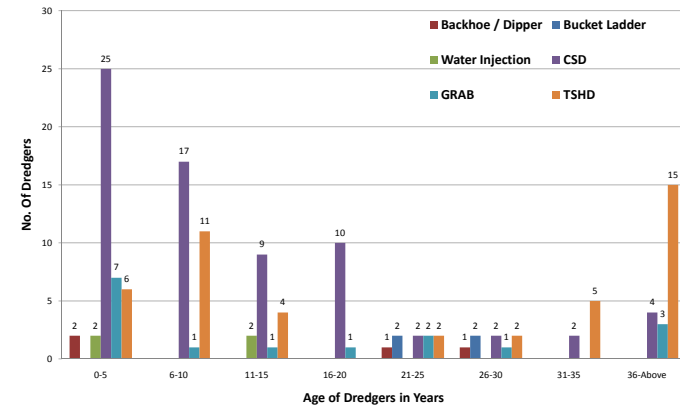
Dredger Distribution : Type



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Dredger Distribution : Age

(Analysis on 144 Dredgers)

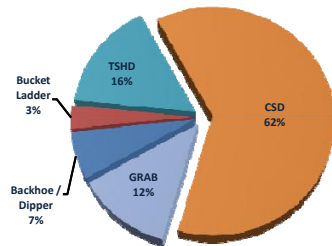


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No. of Qualifying Dredgers (Long Term)

- ❖ Dredgers with Age less than 30 years : 116
- ❖ Excluding Adani (PMC), Marg, Essar etc. : 100
- ❖ Dredgers if we exclude IWAI : 83
- ❖ Assuming IWAI (9) + Adani (8) : 100

Resultant Dredger Profile



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Dredger Capacities : Assumptions

- ❖ Average No. of working Days/yr @60% : 220 days
 - Idle Time due to no contract
 - Maintenance and Repair, Mob-De-Mob
 - Reduced dredging during to Monsoon
- ❖ TSHD as preferred choice for Maintenance Dredging
- ❖ Cutter Suction Dredgers as preferred choice for Capital (80%) + Maintenance (20%)
- ❖ Back-hoe and Grab Dredgers as preferred choice for Special areas (Capital + Maint.)
 - Near fishing harbors
 - Jetties/ berths with high traffic for inland transport
- ❖ Productivity of dredgers as following

Type of Dredger	Output (cum/hr) <i>insitu p</i>	Output (cum/hr) (std.)
TSHD	650 – 1200	900 – 2000
Grab	60 – 85	100 – 130
Back-hoe	120 – 150	160 – 200
CSD	200 – 850	350 – 1400

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Dredger Capacities

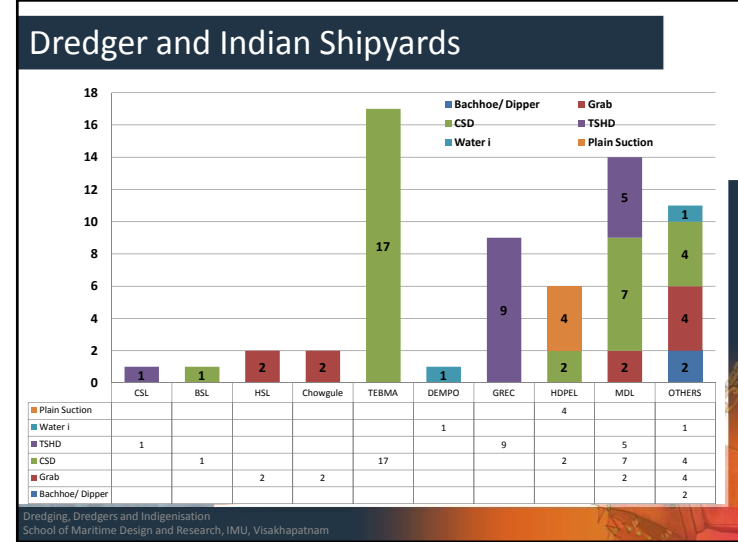
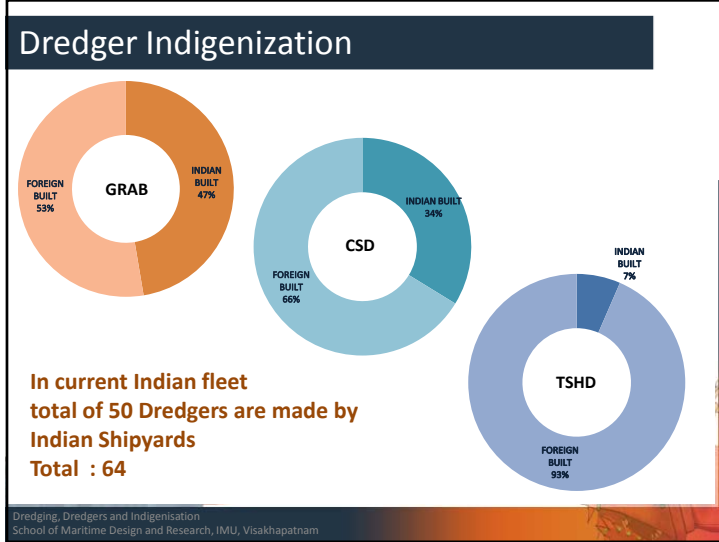
Type	Output	Current Profile & Capacity			Additional Capacity (12th Plan)			Additional Capacity (13th Plan)		
		No. of Dredgers	Capital	Maintenance	No. of Dredgers	Capital	Maintenance	No. of Dredgers	Capital	Maintenance
TSHD	650	6		102.96	3		17.16	11		51.48
	800	4		84.48	1		21.12	3		63.36
	1200	4		126.72	1		31.68	5		158.4
			14							
Grab	60	7	7.7616	3.3264	6	3.3264	1.4256			
	85	4	6.2832	2.6928	3	4.7124	2.0196			
Back-hoe	120	5	11.088	4.752	4	4.4352	1.9008			
	150	1	2.772	1.188	2	5.544	2.376			
CSD	200	29	122.496	30.624	8	4.224	1.056			
	350	17	125.664	31.416	1	7.392	1.848			
	600	8	101.376	25.344	2	25.344	6.336			
	850	2	35.904	8.976	4	71.808	17.952			
		Total Required	413.3448	422.4792	Total	126.786	104.874	Total		273.24
		Shortage	227.6552	113.5208						

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Additional Dredger Requirement

- ❖ Trailing Suction Hopper Dredger (TSHD)
 - 4 : 650 cum/hr
 - 4 : 800 cum/hr
 - 6 : 1200 cum/hr
- ❖ GRAB
 - 3 : 60 cum/hr
 - 3 : 85 cum/hr
- ❖ BACKHOE
 - 2 : 120 cum/hr
 - 2 : 150 cum/hr
- ❖ Cutter Suction Dredger (CSD)
 - 1 : 200 cum/hr
 - 1 : 350 cum/hr
 - 2 : 600 cum/hr
 - 4 : 850 cum/hr

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Technology Collaboration

1. Bharati Shipyards – Vosta LMG 2005-2006
2. MDL – Vosta LMG 2005-2007
3. Jaisu Shipping – Macaroni Marine/ Ellicott Dredgers
4. BEML – Vosta LMG – Tebma Shipyards 2011-2012

Disadvantages

- No technology transfer (production drawings only),
- Dependency on foreign suppliers,
- No maintenance by shipyard,
- No solution for operational issues,
- High cost of Design.

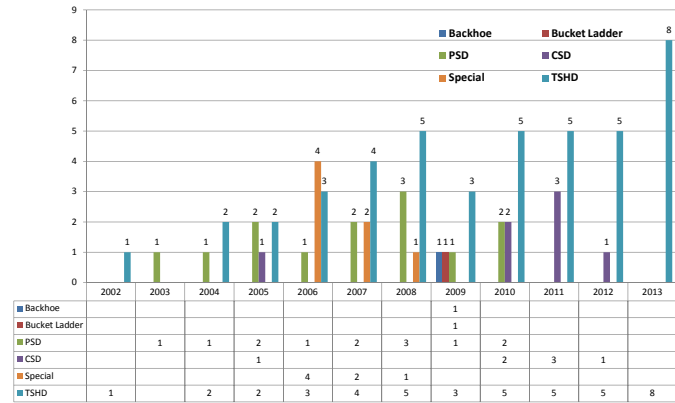
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Indigenization of Equipment (Non-Standardized)

- ❖ Dredge Pumps and Cutter Tooth from Coimbatore
- ❖ Reverse Engineered
 - Pump Casings, Impellers and Wear Plates
 - Bucket Wheel
 - Cutter Web/stem
- ❖ Hydraulic Rams, Actuators & Power-packs
- ❖ Makeshift Spares

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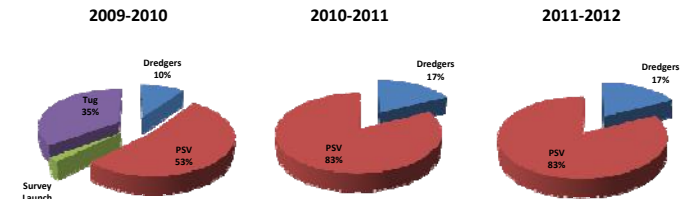
Dredgers and China



*Source: IHS Fairplay

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The TEBMA Story



- ❖ TEBMA made six (6) CSDs for IWAI
- ❖ Currently has orders of one (1) Grab hopper dredger for Indian Navy

*Source: TEBMA Annual Repots

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Government Initiative

- ❖ One of the Six high priority research projects
Standardised Tug, Dredgers and OV Design
- ❖ Special focus on ship-repair sector
Aim to provide 10% of world service
- ❖ 10% Tender Price Rule (proposed)*
Govt. and Allied Organizations
- ❖ 5% Import Duty on vessels bought abroad (proposed) *

*Source: GMB Website and LiveMint.com

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One of the ways to Indigenization

- Start with Indigenisation in Dredger Design**
- Build Dredgers with Indian Design + Foreign Equip.**
- Develop expertise in Equipment manufacture**
- A 100% Indigenous Dredger**

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Thank you All

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