

Are US Dredges World Class? World and US Market Comparison

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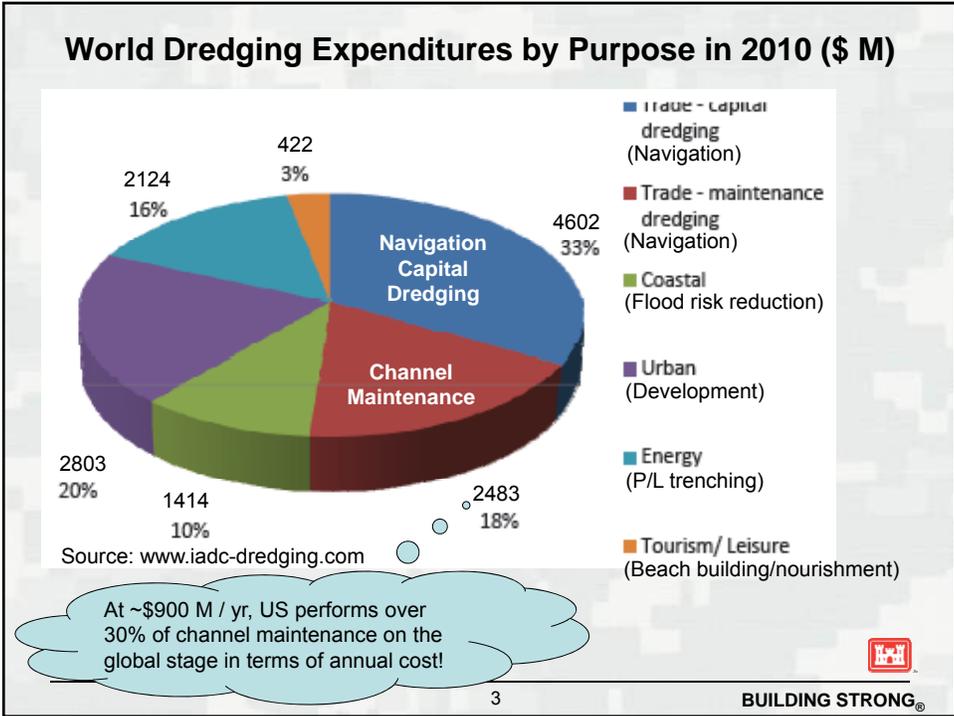
US Army Corps of Engineers
BUILDING STRONG®



Presentation Objectives

- Improve participant understanding of US and world dredging markets
 - ▶ Summarize dredging purposes
 - ▶ Discuss equipment sizes, capabilities, and limitations
- Presentation focuses on Trailing Suction Hopper Dredges (TSHDs)
 - ▶ Global mobility
 - ▶ Ease of “steel-to-steel” comparison with US dredges
- Address higher production and lower cost claims by non-US dredgers





Minerals Mining and Construction Materials Market

Characteristics:

- Dredge in a highly confined location
- Production bank (not skimming)
- Example: Sand and Gravel operations




Source: www.bmapa.org

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Land Creation

Characteristics:

- Borrow source
- Production bank
- Pumpout
- Example: Land creation for port expansion

Source: IHC Van Ord office display



Construction of Maasvlakte 2, Port of Rotterdam



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Hopper Dredge
RN WEEKS



Source: www.weeksmarine.com

**Flexible and
Specialized
Capability
Equipment
for Beach
Nourishment
and Land
Building**



Brevard County,
FL beach
nourishment

Source: ww3.brevardcounty.us

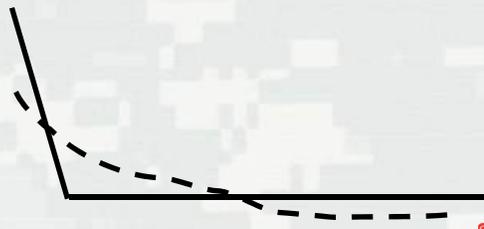


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Navigation Channels

- Long, narrow excavation areas
- Not often a production bank
- Constrained funding further reduces dredging areas, impacting production (limited depth, width, no advance maintenance)



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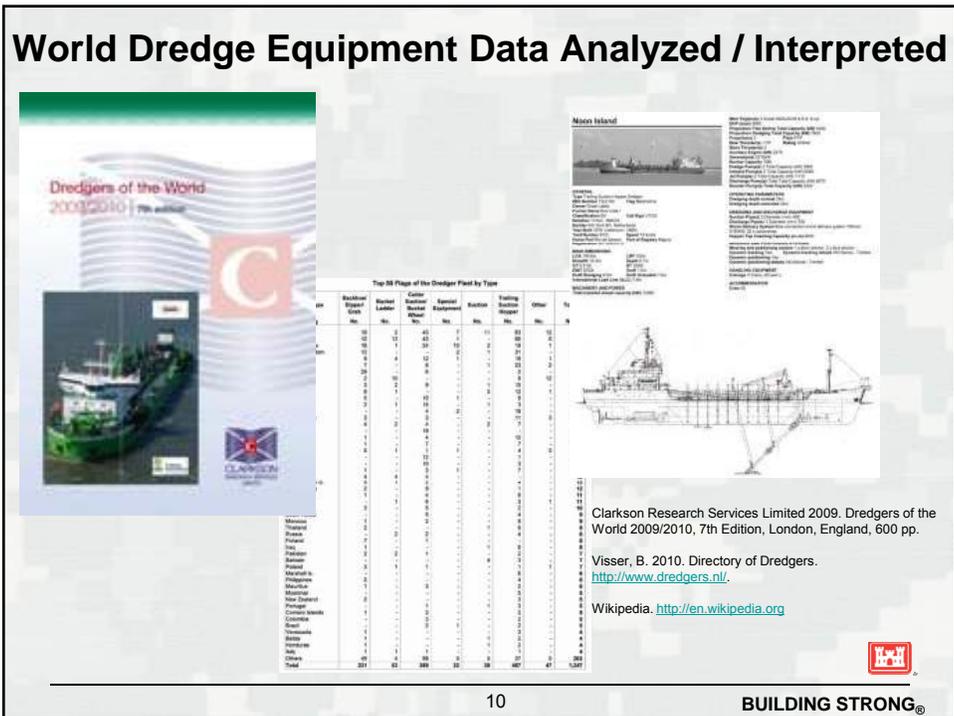
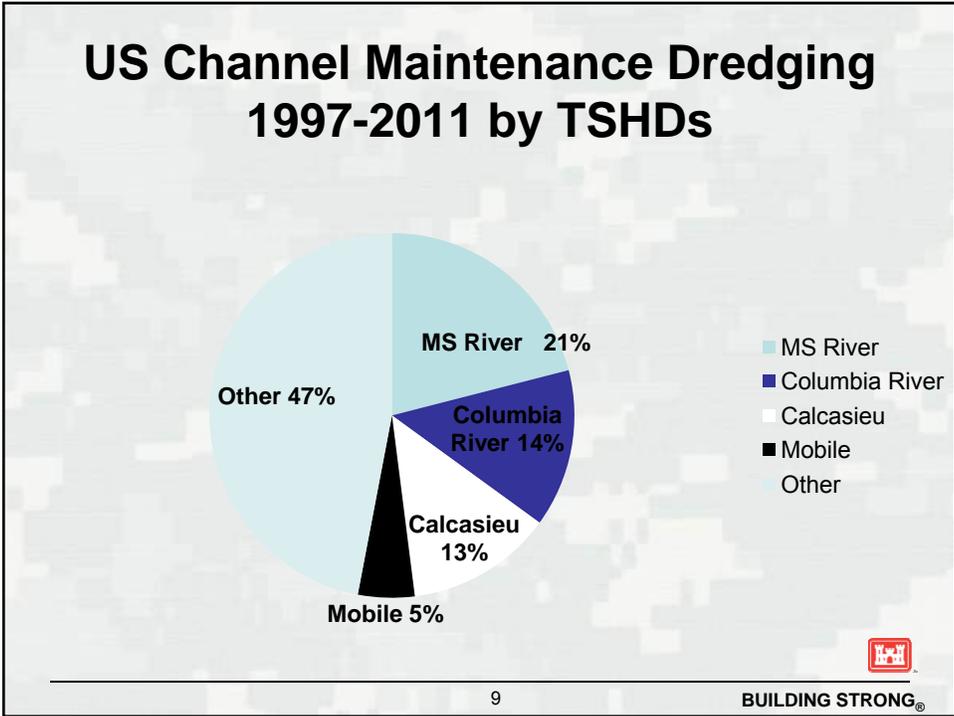

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Navigation Channel Characteristics

- Project Depth: 30-45 feet
- Project Width: 400-800 feet
- Dredged material placement: Ocean Dredged Material Disposal Site (ODMDS)
- Pumpout capability
 - ▶ Available on almost all US TSHDs
 - ▶ Presently very limited use in US

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Definitions

| Class | Length (ft) | Loaded Draft (ft) | Hopper Coaming Capacity (CY) |
|--------|-------------|-------------------|------------------------------|
| Small | 150-360 | 7-20 | Up to 3000 |
| Medium | 230-410 | 11-26 | 3000-6000 |
| Large | 300-660 | 16-39 | 6000-23000 |
| Jumbo | 490-720 | 36-48 | 23000-46000 |
| Mega | 660-760 | 44-50 | 46000-60000 |

- Hopper capacity in this case is defined as the geometric volume up to the coaming
- Statistic ranges shown are approximate
- Mega dredges: 4, all European
- Jumbo: 10 – 9 European, 1 Asia
- Large: ~100



Cristobol Colon
60,000 CY
capacity

Source: www.theartofdredging.com



US & World TSHD Comparison

- Age: US has relatively average to slightly older age range of dredges compared to dredges of other world regions
- Many TSHDs (Mega, Jumbo, and some Large) are not physically capable of channel maintenance dredging
- US has relatively competitive range of hopper coaming capacities compared to fleets of other world regions for US channel maintenance
- US has smallest fleet by world region to cover the range of physical characteristics



Other Considerations

- Relatively stringent environmental regulations in US
- Relatively high safety and occupational health requirements in US
- Relatively higher labor rates mandated in US
- Expertise of contractor management and crew to operate safely, efficiently, and effectively and meet project specs



Summary

- Global market involves significant amounts of mining and land creation
- US market is predominantly channel maintenance
- Mega, Jumbo, and some Large TSHDs are suboptimal for US channel maintenance
- US TSHDs are of average age and comparable size of world market for scope of US channel maintenance



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