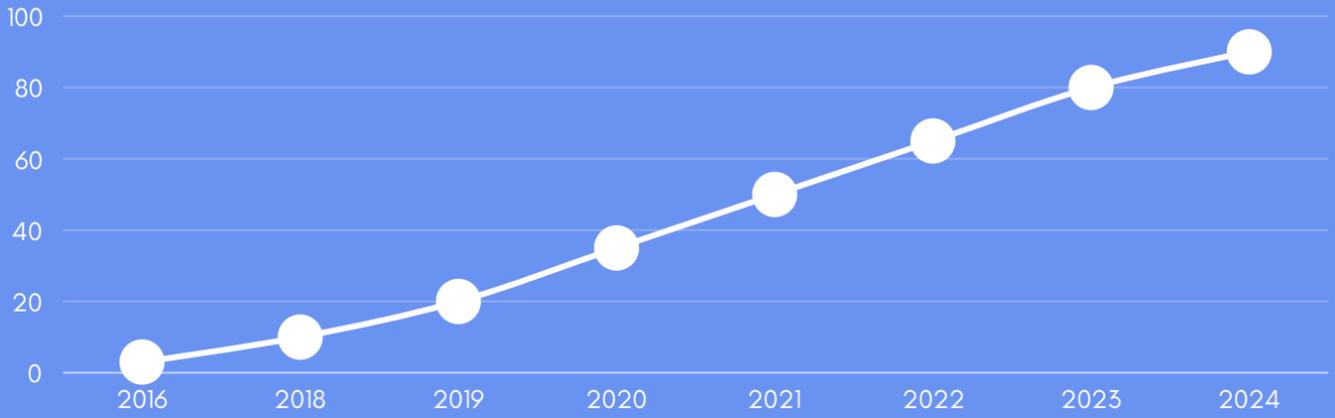


# BWTS Benefits & Insights

ShipUniverse | 2025



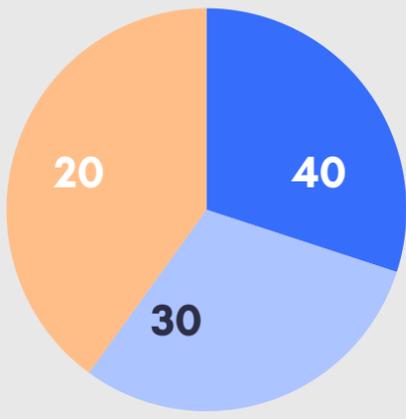
## Adoption Trends of BWTS Over Time by percentage



Global Adoption of BWTS (2016-2024)

Significant increase in BWTS installations observed, especially leading up to the 2024 compliance deadline.

## BWTS by Technology Type



- UV Treatment Systems 30%
- Chemical Treatment 40%
- Filtration and Cyclonic 30%

## Regional Challenges & Drivers

### Asia-Pacific

- Drivers: Major maritime activities, advanced shipbuilding industries.
- Challenges: Complex implementation due to high suspended particles in ballast water.

### Europe

- Drivers: Strong environmental advocacy, early compliance efforts.
- Challenges: Aging fleets requiring costly upgrades.

### North America

- Drivers: Stringent regulations, focus on protecting marine ecosystems.
- Challenges: High initial installation costs for BWTS.

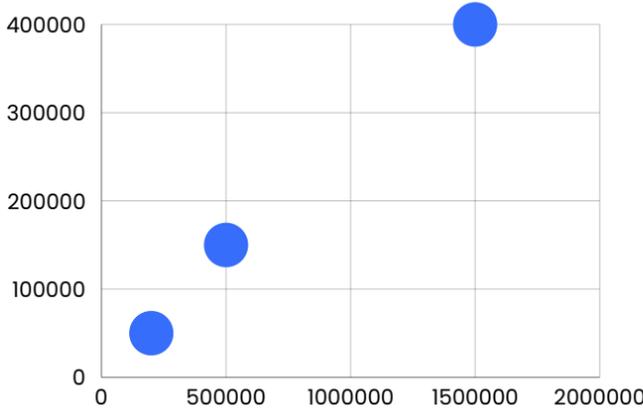
### Middle East & Africa

- Drivers: Strategic trade routes (e.g., Suez Canal), port infrastructure investments.
- Challenges: Limited access to advanced technology, varying regulatory standards.

### South America

- Drivers: Growing maritime trade in Brazil and Chile.
- Challenges: High installation costs, complexities in retrofitting older vessels.

## BWTS Installation Cost vs. Long-Term Savings



- x-axis (horizontal): Installation Costs (\$)
- y-axis (vertical): Annual Savings (\$)

### Small Vessel

- Installation Cost: \$50,000 - \$200,000
- Annual Savings: \$20,000 - \$50,000

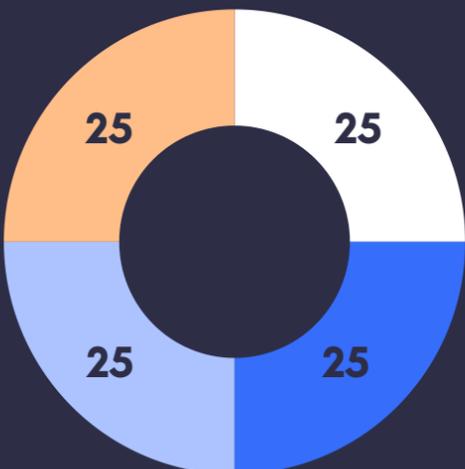
### Midsized Vessel

- Installation Cost: \$300,000 - \$1,000,000
- Annual Savings: \$75,000 - \$150,000

### Large Vessel

- Installation Cost: \$1,000,000 - \$4,000,000
- Annual Savings: \$200,000 - \$500,000

## Key Benefits of BWTS Implementation



**Compliance with International Regulations:** 25%  
Ensures vessels meet IMO standards, preventing invasive species spread and avoiding fines.

**Protection of Marine Ecosystems:** 25%  
Preserves biodiversity by stopping harmful aquatic organisms from entering new environments.

**Enhanced Vessel Marketability:** 25%  
Boosts global market appeal by meeting environmental standards and reducing penalties.

**Avoidance of Operational Delays:** 25%  
Minimizes delays during inspections, enabling smoother and more efficient operations.