

# **World Ocean Council: SMART Ocean-SMART Industries - Harnessing Ocean Opportunities for Seabed Data Collection**

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# The Multiple Use Ocean



# Growing Ocean Use

- Offshore oil and gas
- Shipping
- Mariculture/Aquaculture
- Mining / Seabed mining
- Fisheries
- Cruise and coastal tourism
- Dredging
- Submarine cables/pipelines
- Offshore wind energy
- Wave/tidal energy
- Ports/marinas
- Recreational boating/use
- Desalination
- Navy/military use
- Carbon sequestration

- Finance/Investment
- Insurance
- Maritime Legal

## Expanding...

- Kinds of use
- Levels of activity
  - Duration
  - Intensity
  - Frequency
- Location of activity
  - Geographical Extent
  - Frequency

# SHIPPING

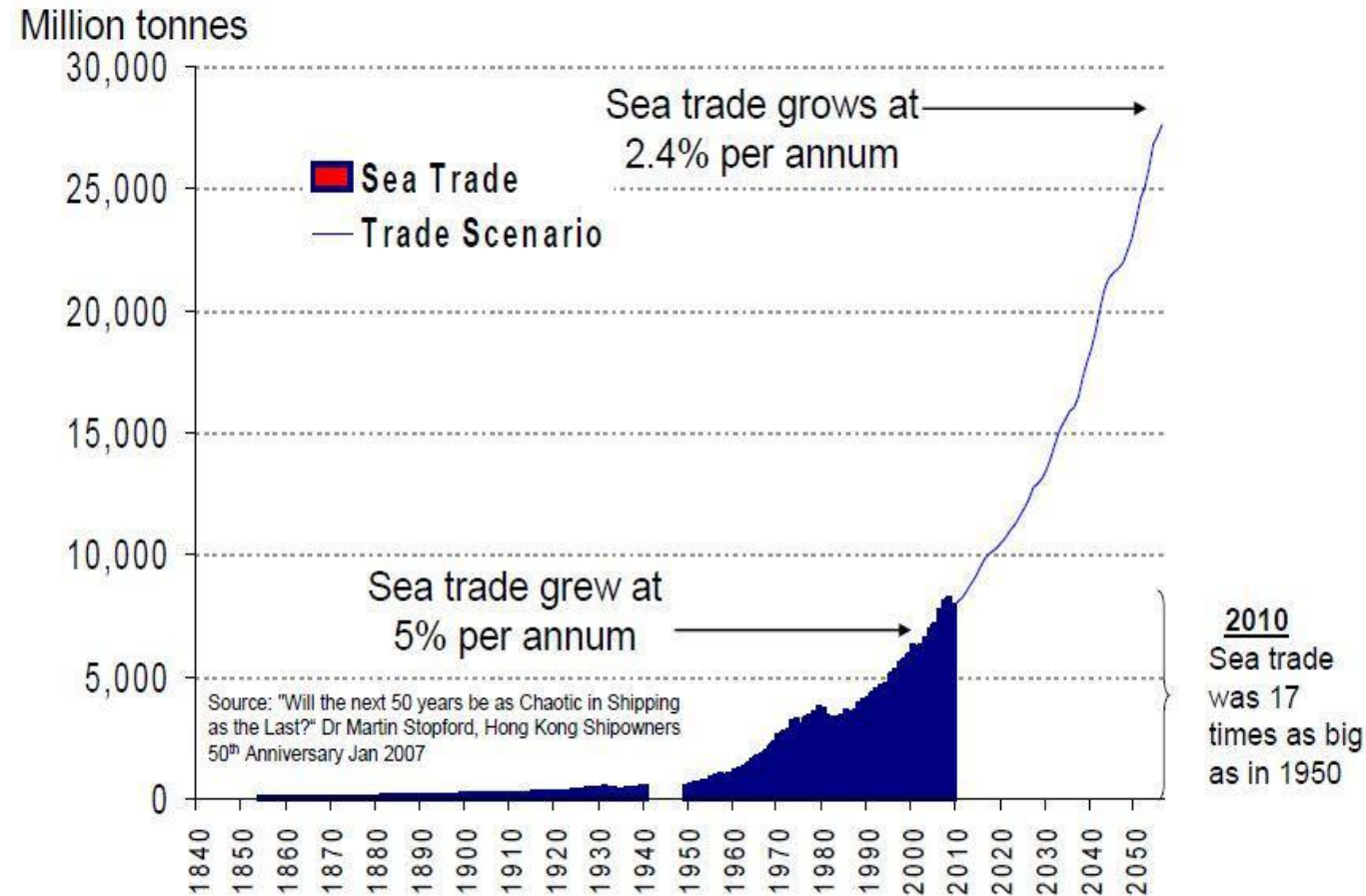
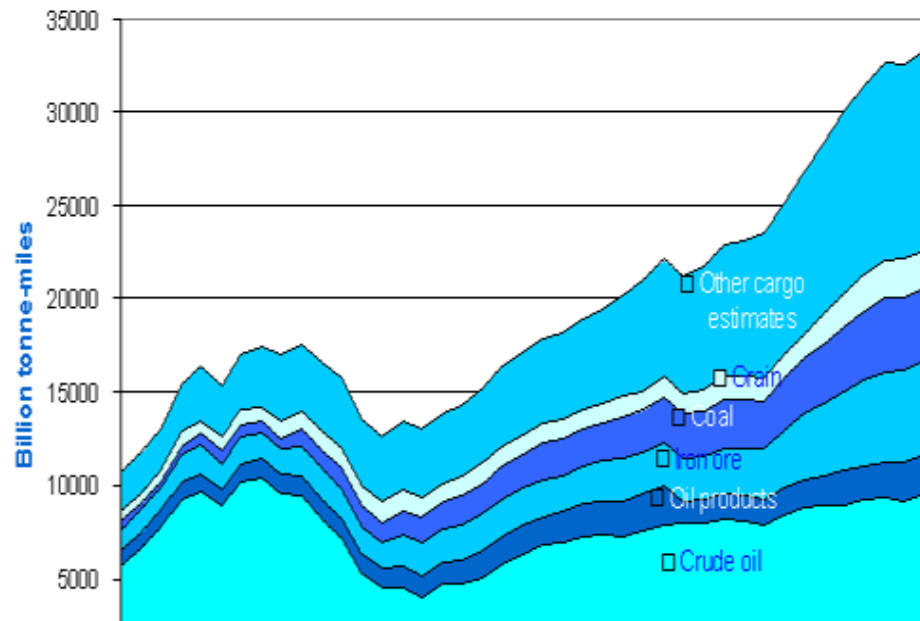
- 90% of global trade
- Container shipping has increased by 10% / year since 1985



50,054 ships (2010)

- Bulk carriers, container ships, tankers, passenger ships

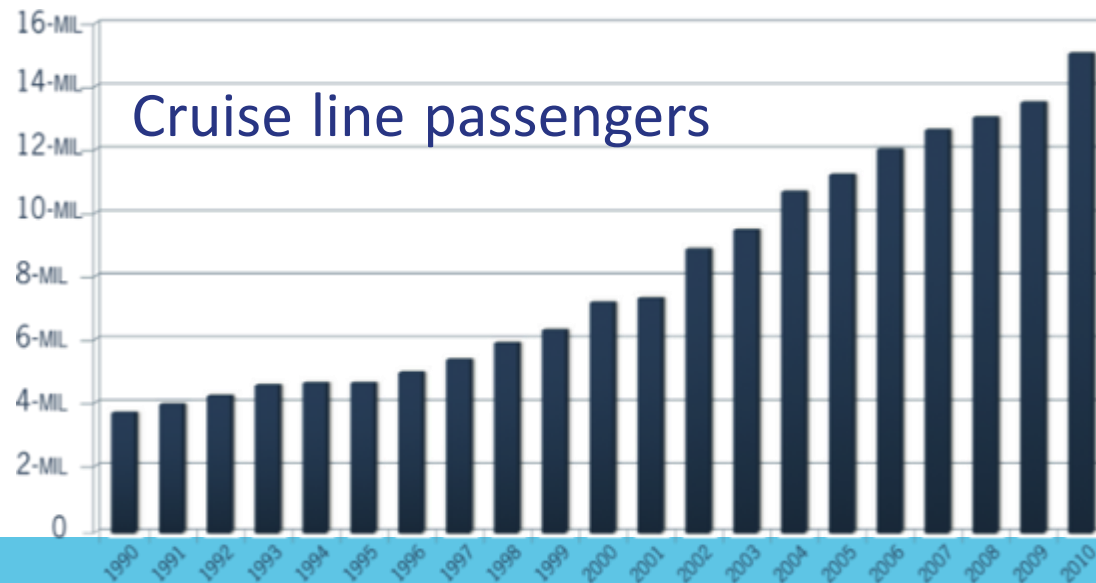
World seaborne trade 1969-2010



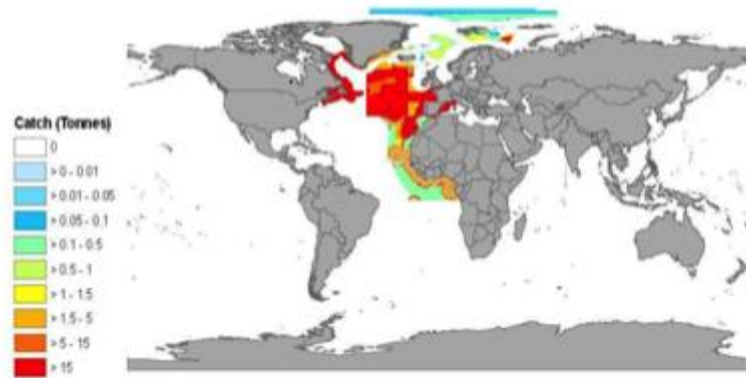


# CRUISE LINE TOURISM

- **14 million passengers in 2010**
- **Growing at 8.5% per year over the next decade**
- Global fleet: 341 ships (92 megaships, > 2000 berths)
- 53 ships built in last 5 years (40 megaships)
- Europe: up 12% from 2009, now 33% of global market
- Asia: up 10-40% from 2009 in various countries
- New destinations: Africa, Australia, Indonesia, Arctic

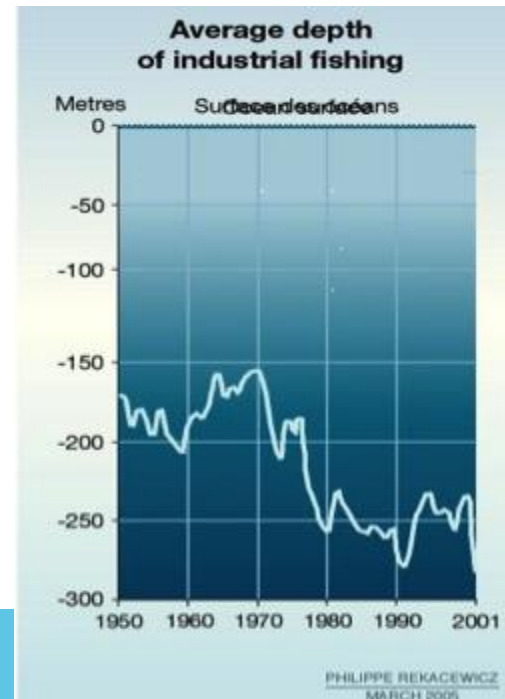
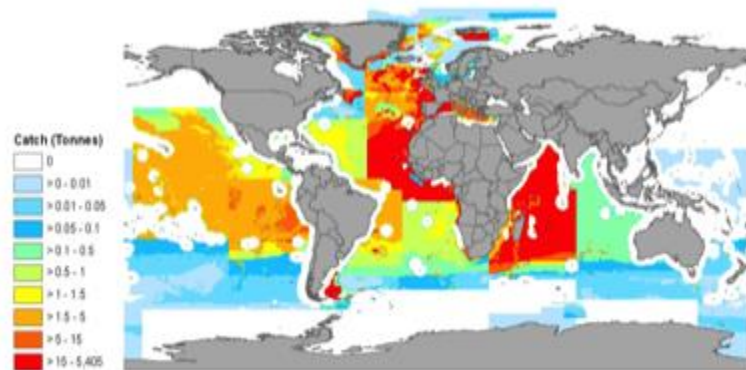


## Average catch areas: 1950s

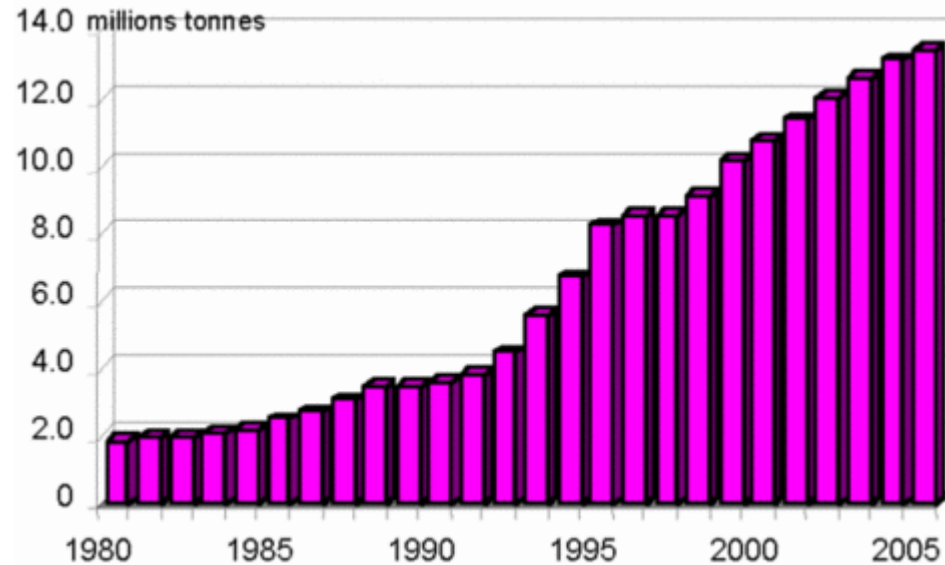


- 80 million tons (2008)
- \$ 80 billion value
- 35 million directly linked jobs
- Livelihoods for 300 million
- Further offshore, deeper

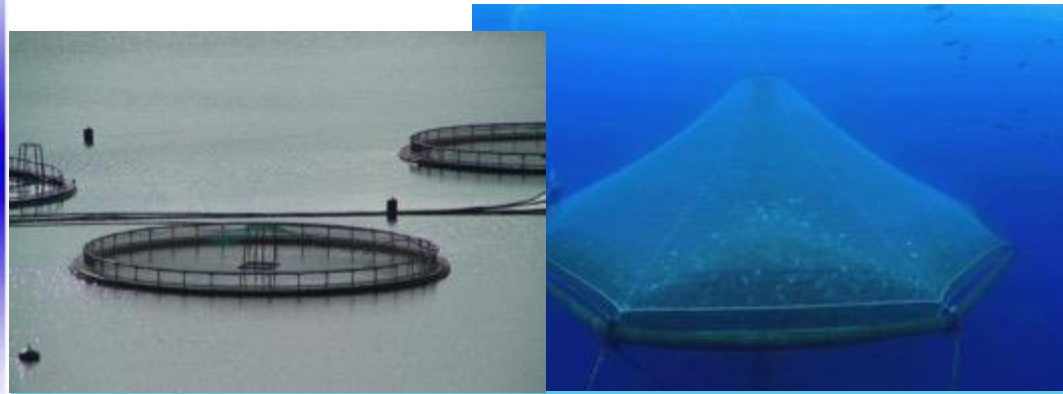
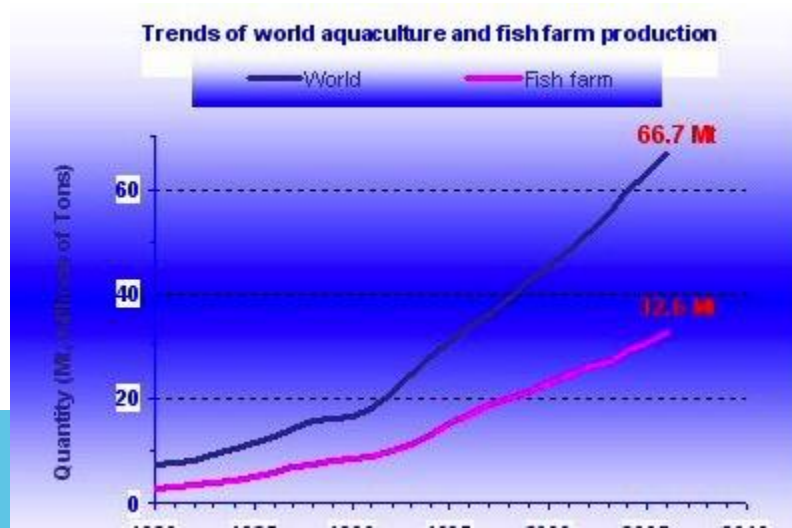
## Average catch areas: 2000s



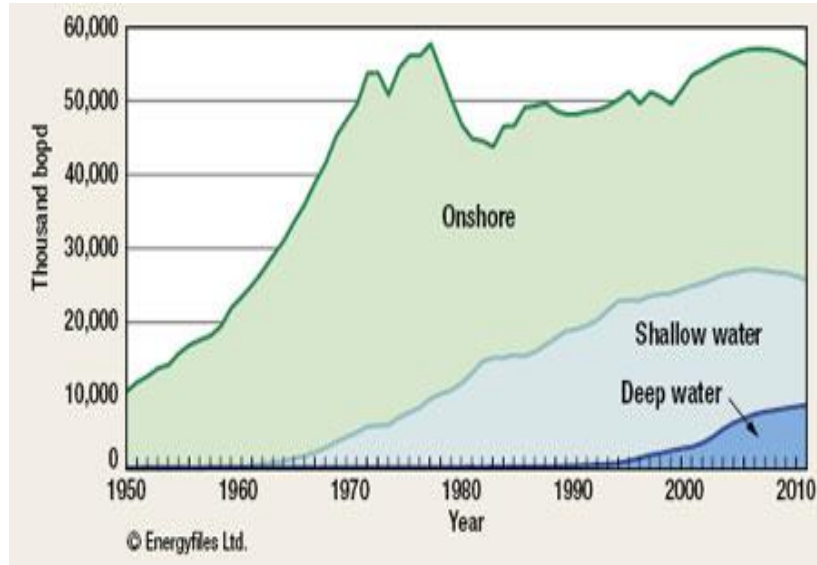
# AQUACULTURE



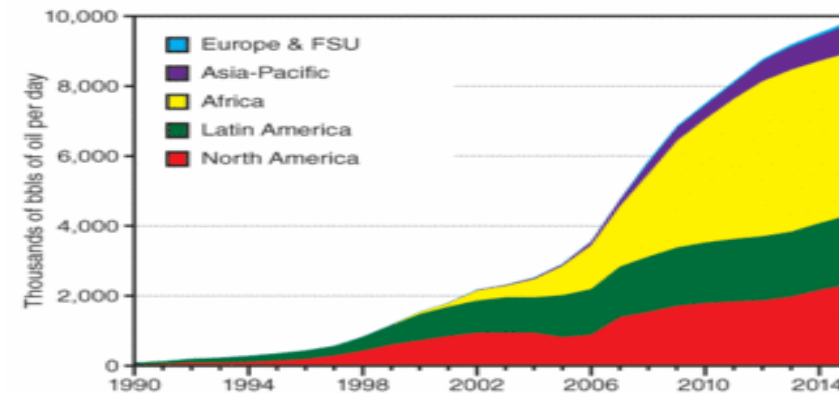
- Fastest growing food production system
- 7.5%/year growth over past twenty years
- By 2030, 65% of fish protein
- Further offshore, deeper
- By 2050, 30 Mt/year of extra aquatic products required to feed the planet



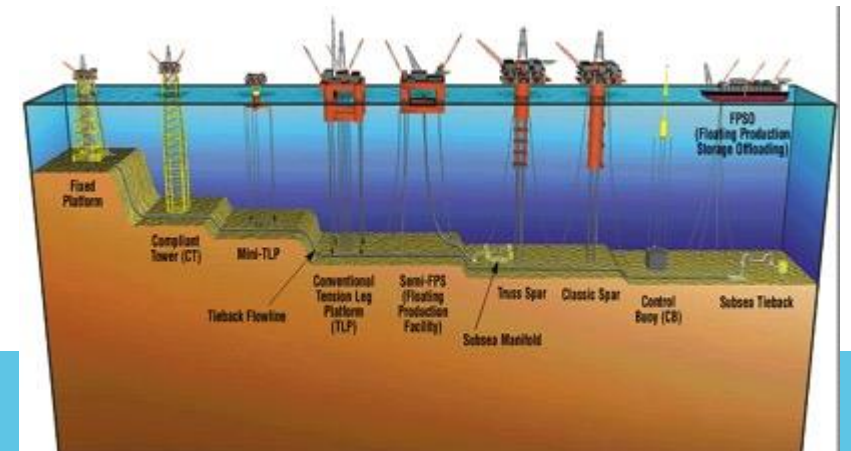
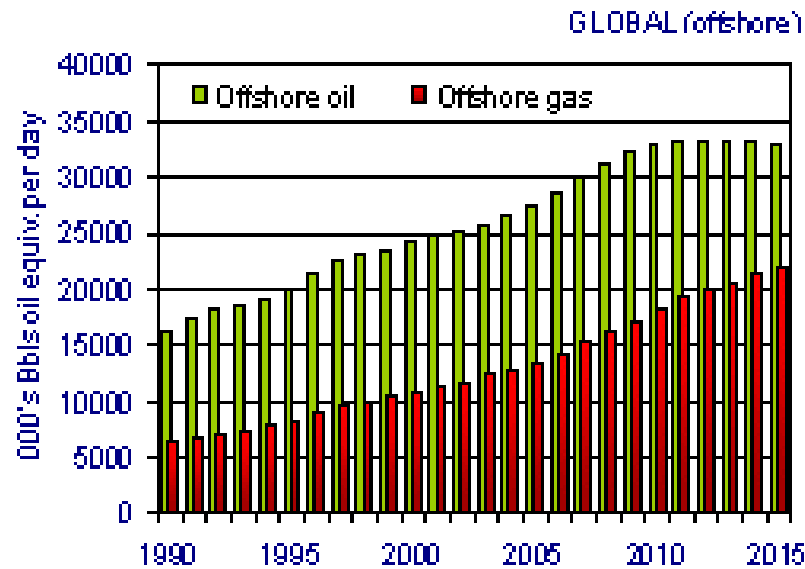
# OFFSHORE OIL AND GAS



Offshore production: Deep water oil from 1990



- Currently, 32% of global hydrocarbon production
- 45% of recoverable oil is offshore
- By 2035, deep-sea oil and gas production will double

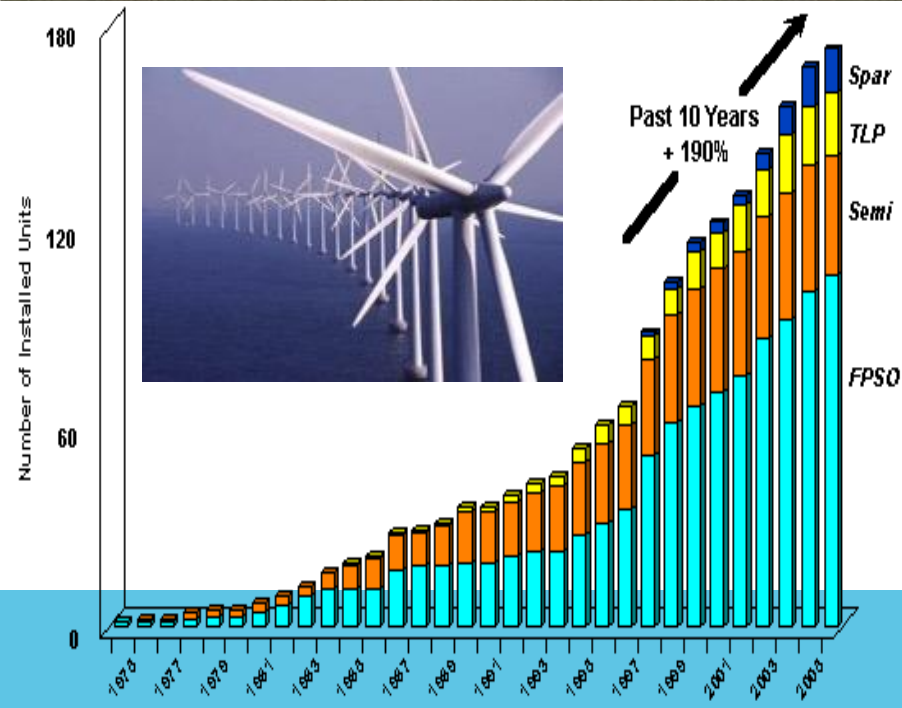




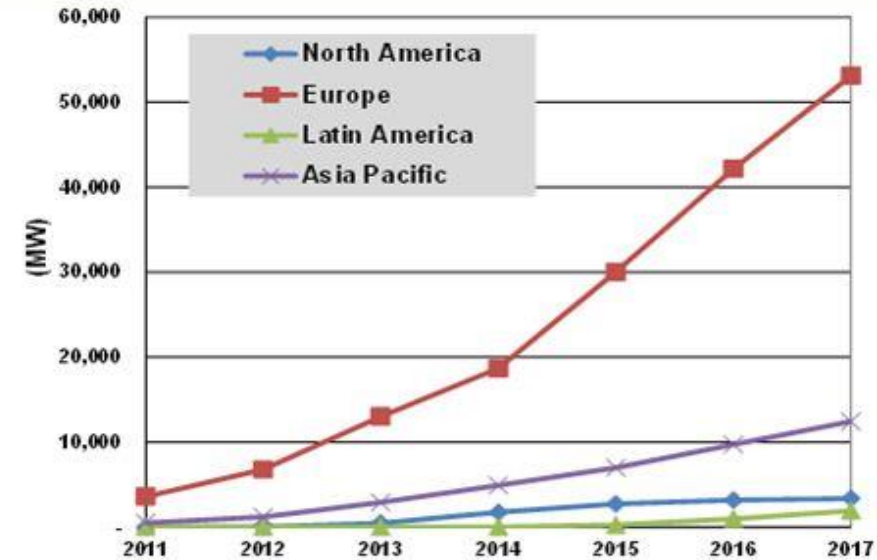
# OFFSHORE WIND ENERGY



The International Business Alliance  
for Corporate Ocean Responsibility



Offshore Wind Installed Capacity, Base Scenario, World Markets: 2011-2017



(Source: Pike Research)

- 2010 growth rate of 59%
  - Offshore farms in 12 countries
- By 2020 Europe will need:
- 20 turbine installation ships
  - 200-300 support vessels

## Ocean energy potential

- Wave: 45,000 TWh/year
- Tidal: 1,800 TWh/year
- Thermal: 33,000 TWh/year
- Salinity gradient: 20,000 TWh/year

## EU

- By 2020, 1% of E demand
- By 2050, 15% of E demand (188 GW)



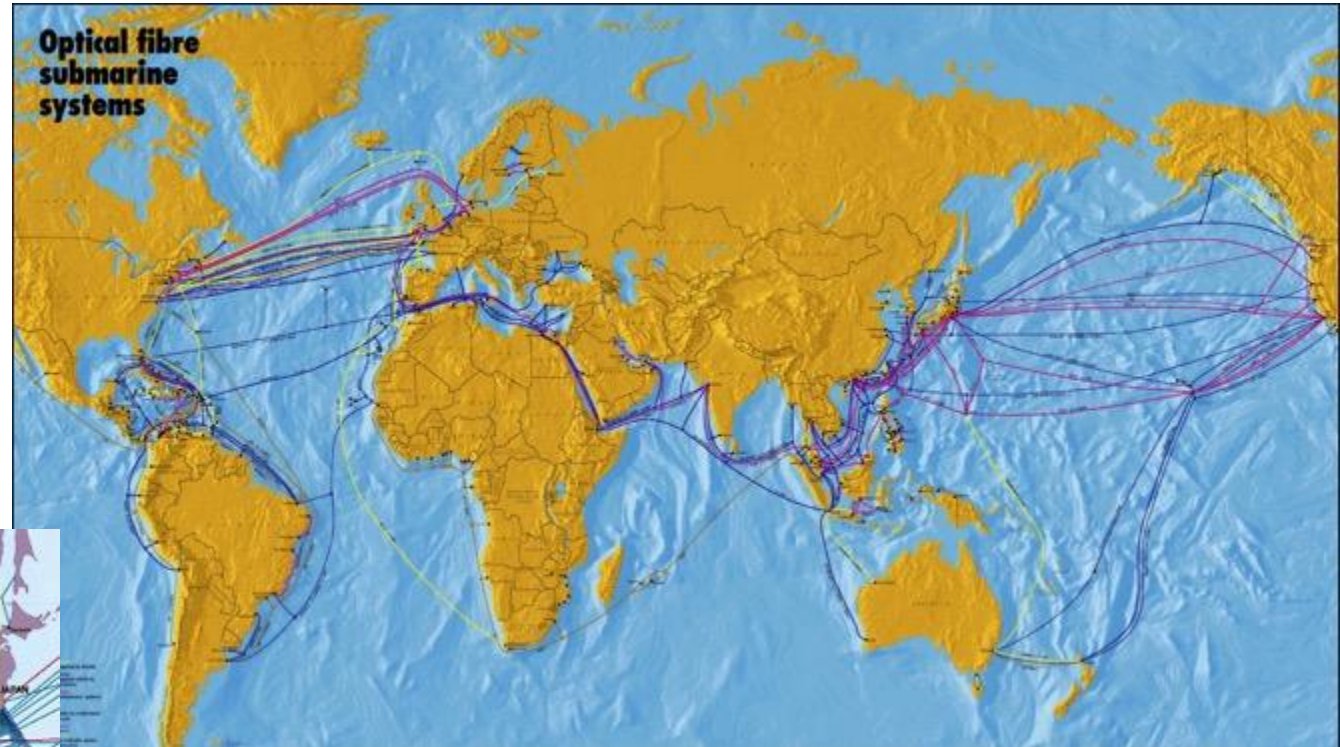


# SUBMARINE TELECOM CABLES

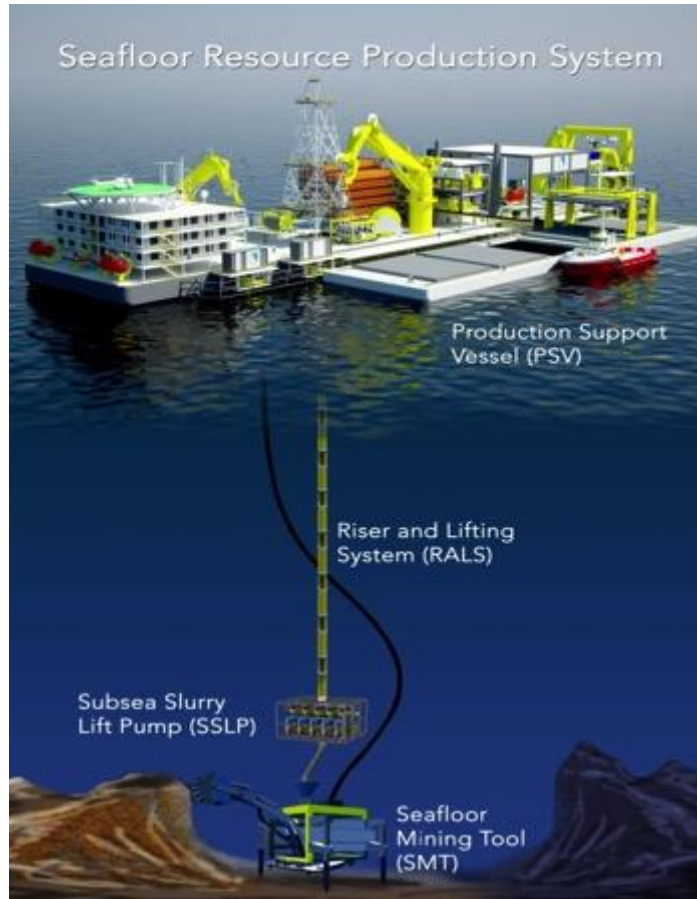


The International Business Alliance  
for Corporate Ocean Responsibility

- More than 1 million km of cables
- 98% of international internet traffic



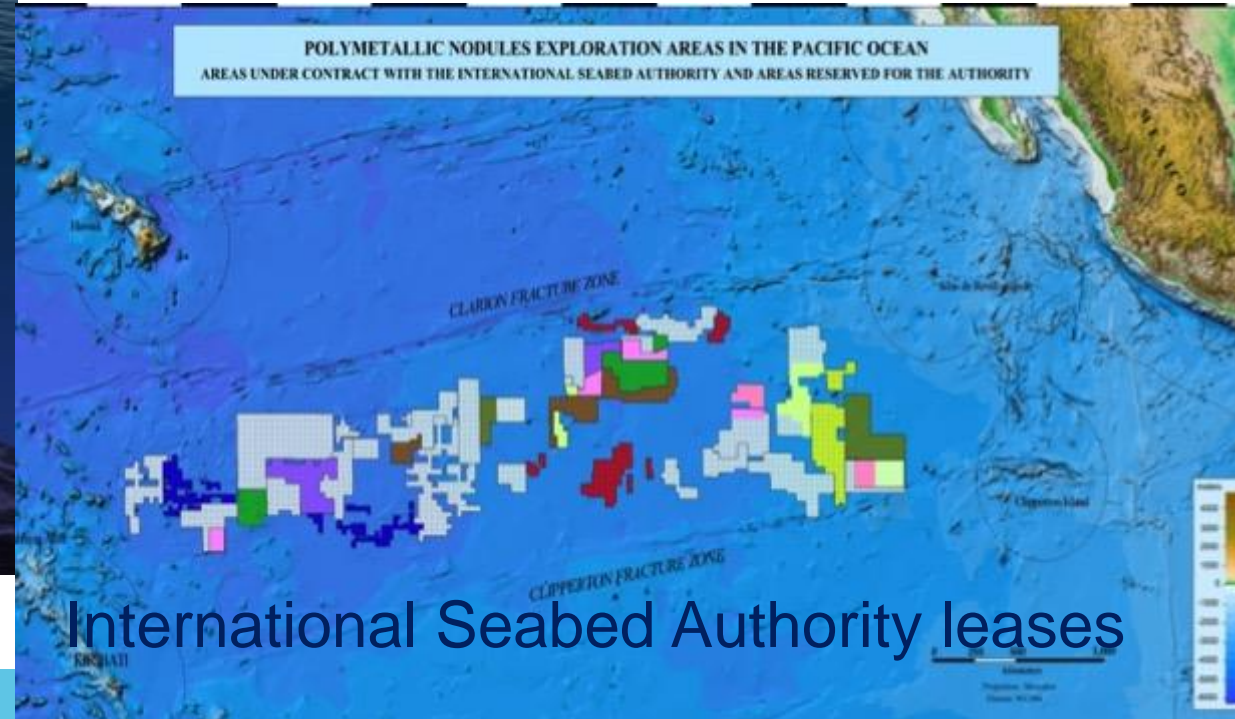
# SEABED MINING



By 2020, 5% of world's minerals

By 2030:

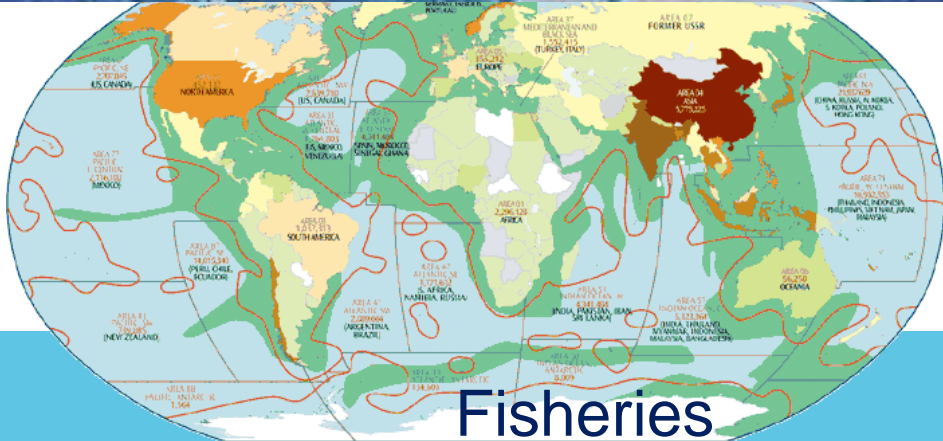
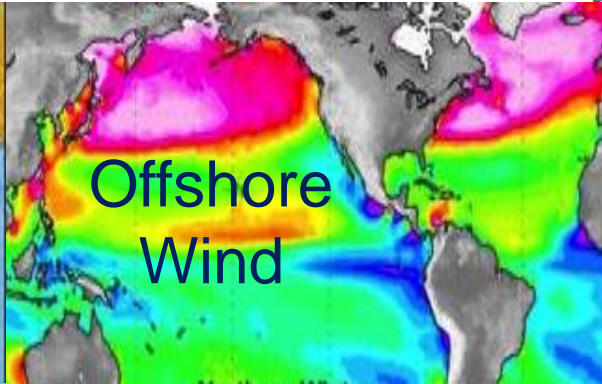
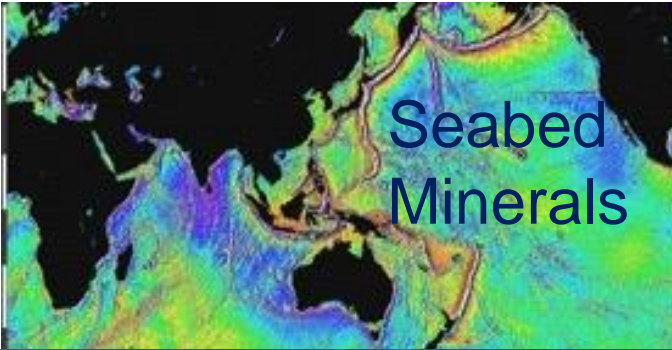
- 10% of world's minerals
- \$12 billion in economic value



International Seabed Authority leases



# Global Ocean Industry Activity

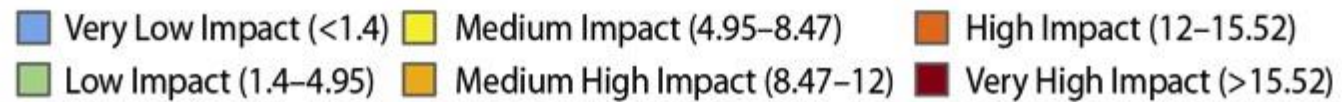
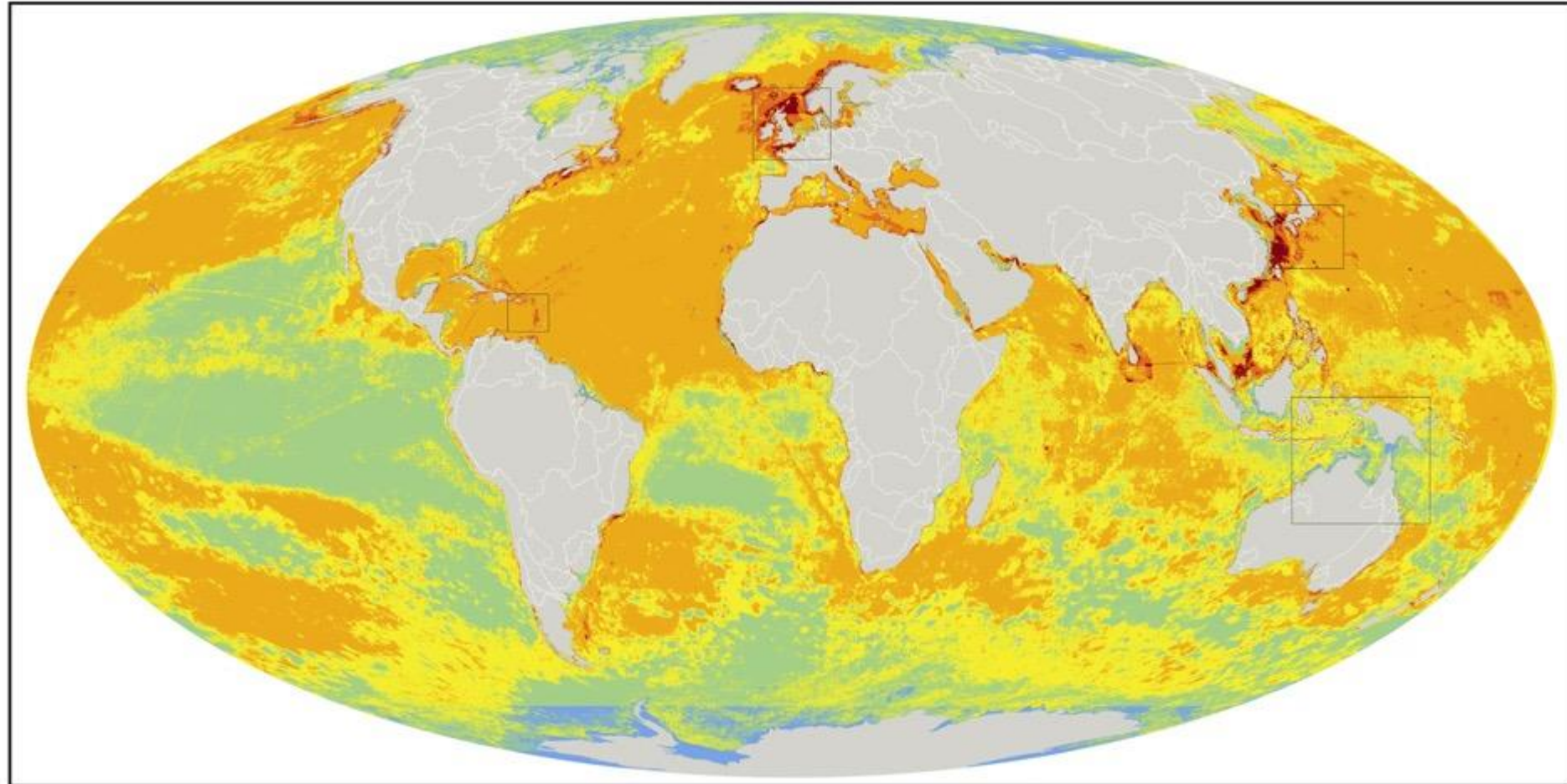




# Global Ocean Ecosystem Impacts



WORLD OCEAN COUNCIL  
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for Corporate Ocean Responsibility



# The Ocean Business Community Challenge



- Ocean industries require access and social license to use ocean space and resources
- Many of the **critical issues** creating impacts and affecting access and social license are **cross-cutting or cumulative**
- Sustaining ocean health and productivity requires **responsible use** and stewardship **by all users**
- Best **efforts by a single company**, or an entire industry sector, **are not enough** to secure ocean health
- Ocean **industries will benefit from collaboration** with other sectors to **create synergies** and **economies of scale** to address impacts and ensure access and social license
- **Need structure/process** for ocean industry leadership and collaboration

# World Ocean Council: Leadership & Collaboration



**World Ocean Council:** International, Cross-Sectoral Business Leadership Alliance

- **WOC: Bringing ocean industries together**, e.g. shipping, fisheries, aquaculture, tourism, oil/gas, offshore renewables, ports, investment, etc.
- **WOC: Catalyzing private sector leadership and collaboration in...**
  - Advancing “Corporate Ocean Responsibility”
  - Implementing responsible, sustainable ocean development
- **WOC: 75+ members worldwide; 35,000+ in global network**

**WOC Goal:** Healthy, productive global ocean and its sustainable use and stewardship by responsible ocean business community

**WOC: Creating business value for responsible companies**

- Access and social license for responsible ocean use
- Synergies and economies of scale in addressing issues
- Stability and predictability in ocean operations



# World Ocean Council: Members



A.P. Moller-Maersk A/S  
Agawa Partners  
Almi Tankers S.A.  
Arctia Shipping  
ANCORS  
Aquarium de Paris - Cinéaqua  
Baird Publications  
BHM Penlaw  
Blank Rome  
Cape Breton University  
CESI- Engineering & Environment Division  
China Navigation Company/Swire Pacific Offshore  
Class NK  
Cruise Lines International Association (CLIA)  
CSA Ocean Sciences Inc.  
DHI  
exactEarth  
ESRI  
FCG ANZDEC  
FOB  
Global Ocean Consulting, LLC  
Gulf Agency Company Ltd (GAC)  
Heerema Marine Contractors Nederland SE

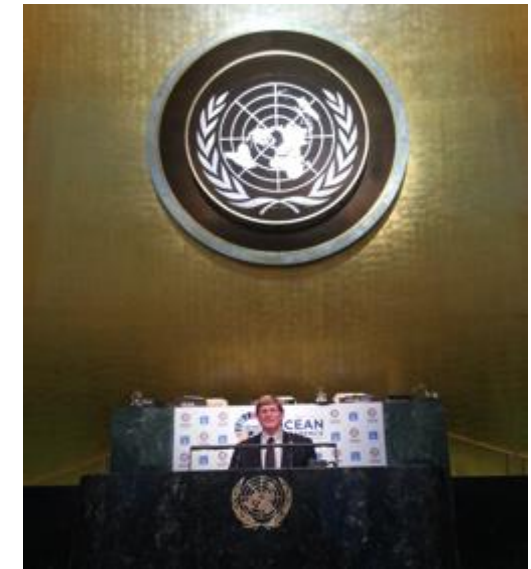
Heidmar, Inc.  
Helix Media  
Hepburn BioCare  
Holman Fenwick Willan LLP  
HR Wallingford  
IHC Mining  
Inmarsat  
Int'l Ass'n of Geophysical Contractors (IAGC)  
Int'l Chamber of Shipping (ICS)  
JASCO Applied Sciences  
L3 MariPro  
Liquid Robotics  
Lloyd's Register  
Louisbourg Seafoods  
Marine Acoustics, Inc.  
Marine Assets Corporation  
Maritime Executive  
Memorial University – Marine Institute  
Mitsubishi Heavy Industries  
Nautical Institute  
Nautilus Minerals, Inc.  
N America Marine Envi't Protection Ass'n  
Ocean Nourishment

Oldendorff Shipping GmbH & Co. KG  
OLRAC SPS  
Orange Marine  
Planet OS (formerly Marinexplore)  
Principle Power  
Qikiqtaaluk Corporation  
Resolute Marine Energy  
RightShip  
Royal Greenland A/S  
Sanford Limited  
Scottish Marine Institute (SAMS)  
Southall Environmental Associates (SEA)  
Stena Bulk AB  
SubCtech GmbH  
Sunburst Sensors  
Tai Chong Cheang (TCC) Steamship Co. HK  
Technip  
Thordon Bearings Inc.  
TierraMar Consulting  
Twin Dolphins  
University of Texas Marine Science Inst  
Vieira de Almeida & Associates (VdA)  
Windward Ltd.  
Woodside Energy

# WOC Partnerships and Formal Recognition



- **UNESCO Intergovernmental Oceanographic Commission (IOC) – MOU**
  - **UN Framework Convention on Climate Change (UNFCCC) – Accredited to attend COPs**
  - **UN Division of Ocean Affairs and Law of the Sea (DOALOS) – Close working partner**
  - **International Hydrographic Organization (IHO) – Official Observer**
  - **International Seabed Authority (ISA) – Accredited Observer**
  - **Convention on Biological Diversity (CBD) – Accredited to SBSTTAs and COPs**
  - **International Whaling Commission (IWC) – Accredited Observer**
  - **Group on Earth Observations (GEO) – Accredited Partner**
  - **Ocean Climate Platform – Member**
  - **International Standards Organization (ISO) – Underwater acoustics Sub-Committee**
  - **Int'l Chamber of Commerce (ICC), Global Business Alliance for Sustainable Dev't – Member**
- and others...



## Cross-Cutting Framework Areas for Leadership and Collaboration:

- Sustainable Development Goals (SDGs) for the Ocean Business Community
- Ocean Investment Platform
- Digital Ocean / Big Ocean Data / Ocean Cloud
- Young Ocean Professionals Network
- Regional Ocean Leadership Groups
- Sustainable Ocean Summit (SOS)

(6<sup>th</sup> SOS, Hong Kong, 14-16 Nov, 2018)



# SDGs and Ocean Business Collaboration

## What do the SDGs and the Ocean SDG 14 mean for the ocean business community ?

- For the ocean business community as a whole ?
  - Especially the broad, cross-cutting Ocean SDG targets:  
Reducing pollution, avoiding ecosystem impacts, increasing protected areas ?
- How can ocean industries provide leadership and collaboration to ensure the SDGs for the ocean...
  - ...are practical and implementable ?
  - ...support responsible economic activity ?
  - ...advance development that can be sustained ?

**How can industry, governments,  
and other ocean stakeholders  
best collaborate on ocean sustainable development ?**





# SDG 14: The Ocean SDG

**“Conserve and sustainably use the oceans, seas and marine resources for sustainable development”**



## Targets:

- Preventing and significantly reducing marine pollution of all kinds – by 2025
- Sustainably managing and protecting marine and coastal ecosystems to avoid significant adverse impacts – by 2020
- Conserving at least 10% of coastal and marine areas – by 2020.
- Minimizing and addressing the impacts of ocean acidification – no target date
- Restoring fish stocks by regulating harvesting, ending overfishing, illegal, unreported and unregulated (IUU) fishing – by 2020.
- Prohibiting fisheries subsidies which contribute to overcapacity, overfishing, and IUU fishing, and refraining new subsidies – by 2020.
- Increasing the economic benefits to small island developing states and least developed countries from the sustainable use of marine resources – by 2030.
- **Increase scientific knowledge, develop research and transfer marine technology**

# World Ocean Council Programs (part 1)

## WOC: Industry, Science and Sustainable Development

- **Ocean Governance, Policy and Planning**
  - UNCLOS/BBNJ, UNFCCC, SDGs, Convention on Biological Diversity ...
  - Marine Spatial Planning, Ocean zoning
- **Climate Change**
  - Ocean acidification
  - Ocean NETs: Negative Emissions Technologies and the ocean
- **Marine Pollution Reduction**
  - Plastics/Marine Debris and Port Reception Facilities
  - Biofouling/invasive species
  - Marine sound
- **Marine Biodiversity Conservation**
  - Marine protected areas
  - Ship strikes on marine mammals



## WOC: Industry, Science and Sustainable Development

- **Food Security**
  - Sustainable fisheries/reduced IUU fishing
  - Sustainable aquaculture
- **Energy Decarbonization**
  - Ocean renewable energy
- **Disaster Risk Reduction**
  - Port/coastal infrastructure adaptation and resilience
- **Improving Ocean Knowledge**
  - SMART Ocean - SMART Industries:  
Data from Industry Vessels/Platforms of Opportunity



# Increase Ocean Knowledge

## WOC SMART Ocean-SMART Industries (SO-SI) Program



Ensure a **wide range of industry vessels and platforms** are:

- **Providing routine, sustained, standardized information** on ocean and atmosphere
- Contributing to describing the **status, trends and variability** of oceanographic and atmospheric conditions
- **Improving the understanding, modeling and forecasting** of oceanic ecosystems, resources, weather, climate variability and climate change

The SO-SI program is working to:

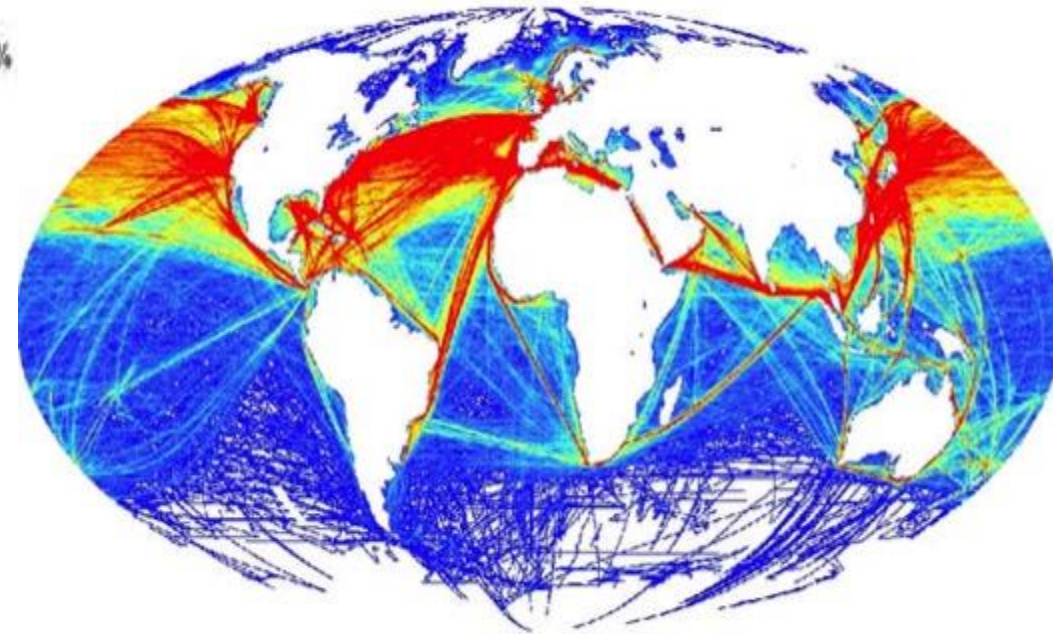
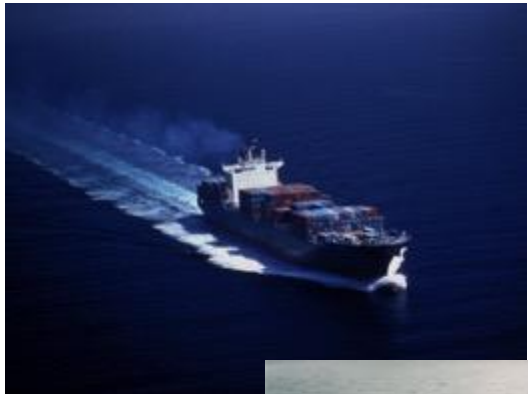
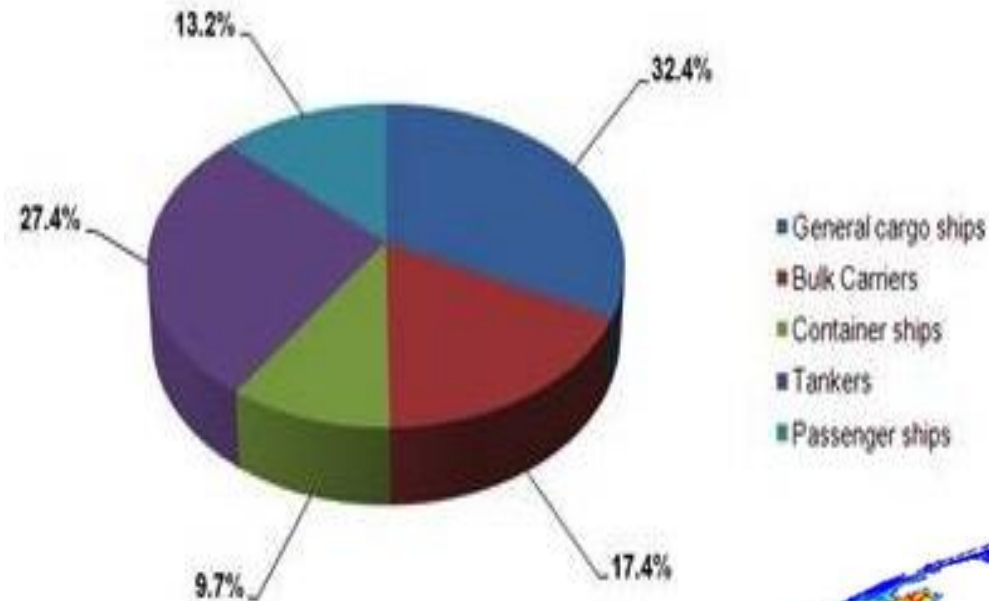
- **Foster, facilitate and broker interaction between scientists needing data and companies with vessels and platforms** that could collect data
- **Expand the number of vessels and platforms** that collect standardized ocean, weather and climate data
- **Improve the coordination and efficiency of data sharing** and input to national/international systems and existing programs



# Opportunities of Ships

## 50,054 ships (Oct 2010)

- Tankers: 13,175
- Bulk Carriers: 8,687
- Container ships: 4,831
- Passenger ships: 6,597



# Other Ship and Platform Opportunities

Oil and gas



Fisheries



Aquaculture



Ferries



Offshore wind energy



Wave/tidal energy



# Smart Ocean-Smart Industries: How it works



## WOC...

- Engages scientific institutions/organizations to identify:
  - Priority data collection needs and areas
  - Appropriate, cost-effective, ship-suitable technology
- Identifies and recruits companies:
  - With vessels/platforms operating in the priority areas
  - Interested/capable of hosting instruments
- Instigates and facilitates working relationship between the company and the scientific institution
- Monitors, coordinates and supports interaction between company and scientific institution
- Ensures industry data collection efforts are efficient, cost effective and contribute to national and international public science programs

# Smart Ocean-Smart Industries: Next Steps

- **Continue to develop pilot projects to put “Smart Industries” to work**
  - Country or company level focus, e.g. coastal resort company
  - Regional, e.g. Arctic
  - **Parameters, e.g. bathymetry**
  - Extreme weather or ocean events, e.g. hurricanes, tsunamis
- Define value proposition / rationale for industry and science
- Inventory existing facilities, ships or platforms of opportunity programs
- Define the “menu of options” for voluntary observations
- Define interface requirements for platforms / payload
- Develop the principles, practice and platform for industry data sharing and access
- **Continue convening SMART Ocean - SMART Industries at Sustainable Ocean Summit (6<sup>th</sup> SOS, Hong Kong, 14-16 Nov, 2018)**



# Advancing Multi-Sector Industry Collaboration in Ocean Sustainable Development – How?



**By working with and through an ocean business leadership organization that...**

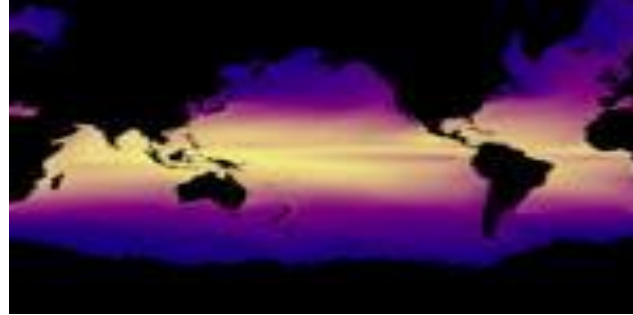
- **Is a unique, private sector boundary/intermediary organization**
- **Brings together a global, multi-industry leadership alliance on implementation**
- **Has as its core mission to work with industry on sustainable development**
- **Knows the business community** and has the working relationships with industry:
  - at individual, company and/or sector level
  - at national, regional and/or global scale
- **Knows the sustainable development issues** and how they relate to industry
- **Provides long term commitment** to engaging the business community
- **Is constantly expanding** its international ocean business network of companies informed and engaged on sustainable development, science and stewardship
- **Is a credible 3<sup>rd</sup> party business organization known and respected by industry and will be involved in ocean sustainable development over the long term**

# Advancing Multi-Sector Industry Collaboration in Ocean Sustainable Development – Why?



**A well-developed ocean business leadership organization will further ocean sustainable development by...**

- **Serving as the portal and bridge to the entire diverse global ocean business community**
- **Identifying and involving leadership companies** and industry organizations from a comprehensive network to participate in programs and projects
- Eliciting industry ideas and input early on, e.g. identifying priorities, designing projects, engaging additional sectors and companies, etc. - and then getting to work
- Bringing private sector partners together to develop and implement projects
- **Establishing the institutional basis for continued, sustained interaction with the ocean business community**, e.g. identifying additional companies to engage
- Developing specific, targeted workshops and seminars with industry
- **Identifying and facilitating access to where the private sector is gathering**, e.g. the annual WOC *Sustainable Ocean Summit*



# WOC Sustainable Ocean Summit (SOS)

## Hong Kong, 14-16 Nov 2018

[www.Oceancouncil.org](http://www.Oceancouncil.org)

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