



Promoting BlueTech
and Blue Jobs®

Promoting **BlueTech** in the CaliBaja Mega-Region

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Premise: “We should be developing solutions to the world’s problems and exporting them rather than importing problems from others”

Food: Aquaculture is critical to produce the protein needed by the world
Norway \$10 B fish industry / 70% aquaculture up from nothing in 1970
The southern CA Bight is probably the best spot in the world

Water: Clean water needed worldwide. CA is a powerhouse.

SD likely has the largest U.S. water tech cluster (EPA & “The Water Cluster”).

Energy: Current, tidal, wave, wind – SD can build / deploy elsewhere

Medicine: [BioMarine](#) incredible potential; Canada, NC, Norway, Portugal

Minerals: Deep sea mining for rare earth minerals just beginning

Real estate: Floating Infrastructure critical. Louisiana & Venice ports

The Coastal and Ocean Economies Compared to the U.S. Economy (NOAA info)

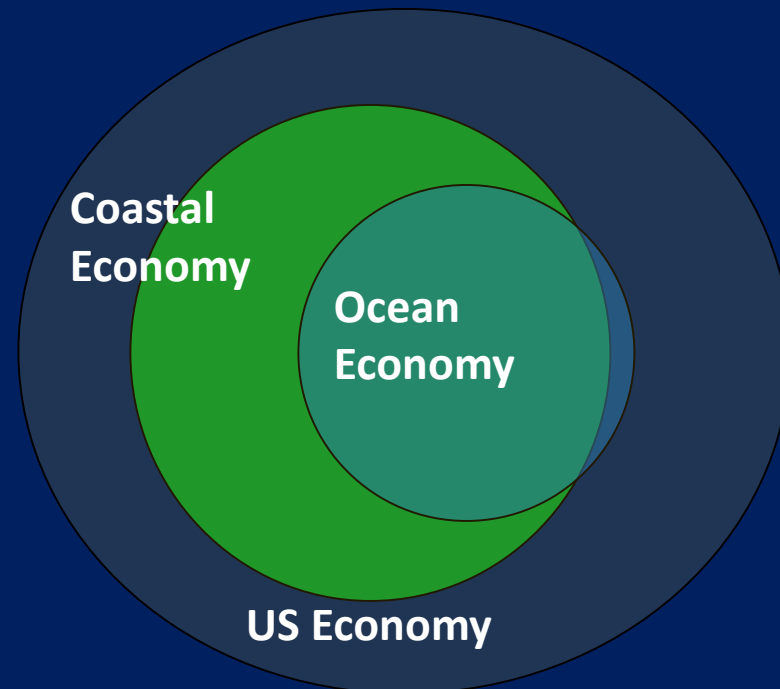
National GDP > \$14 trillion

Coastal GDP ~ \$6.6 trillion

Ocean GDP ~ \$300 billion

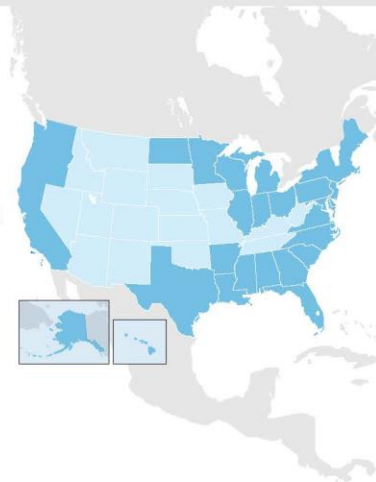
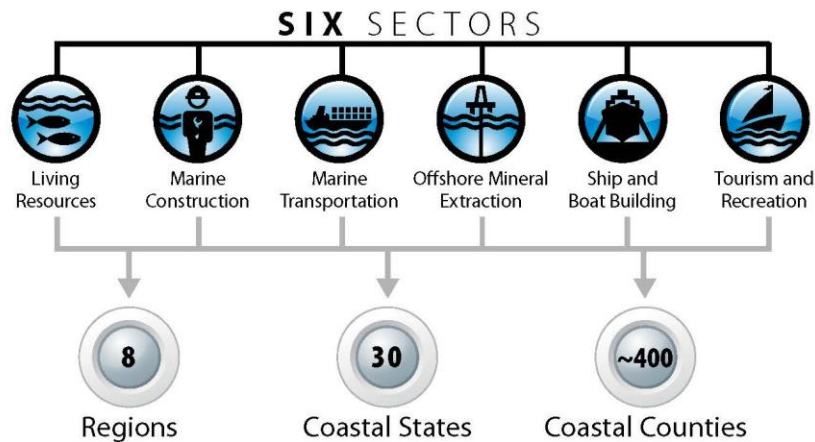
**Economic Activities
Using Ocean Resources
as an Input**

Based on 2011 data



Economics: National Ocean Watch (ENOW)

What is the Ocean and Great Lakes Economy?



www.csc.noaa.gov/enow

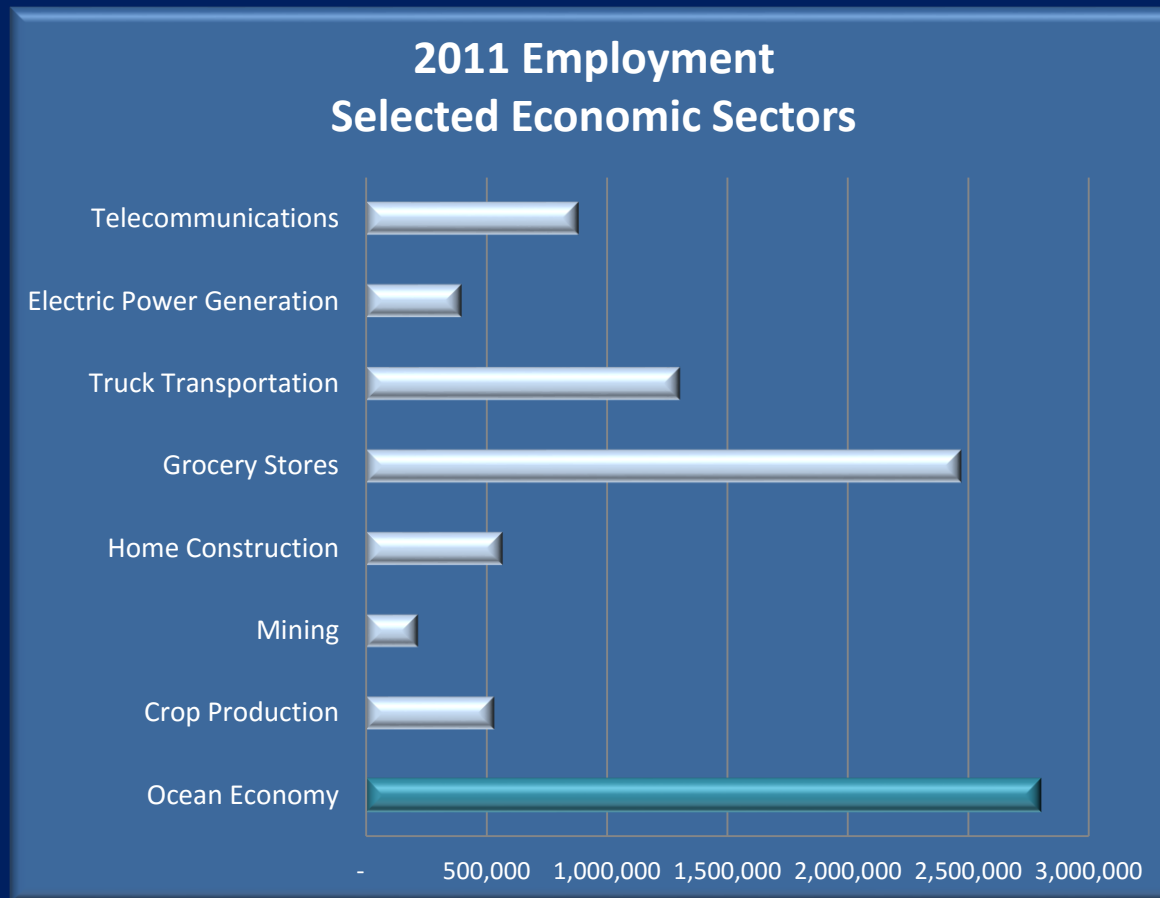
2005 – 2011



NOAA Coastal Services Center
LINKING PEOPLE, INFORMATION, AND TECHNOLOGY



Relative Size of the U.S. Ocean Economy



Courtesy of NOAA Coastal Service Center, Charleston, SC

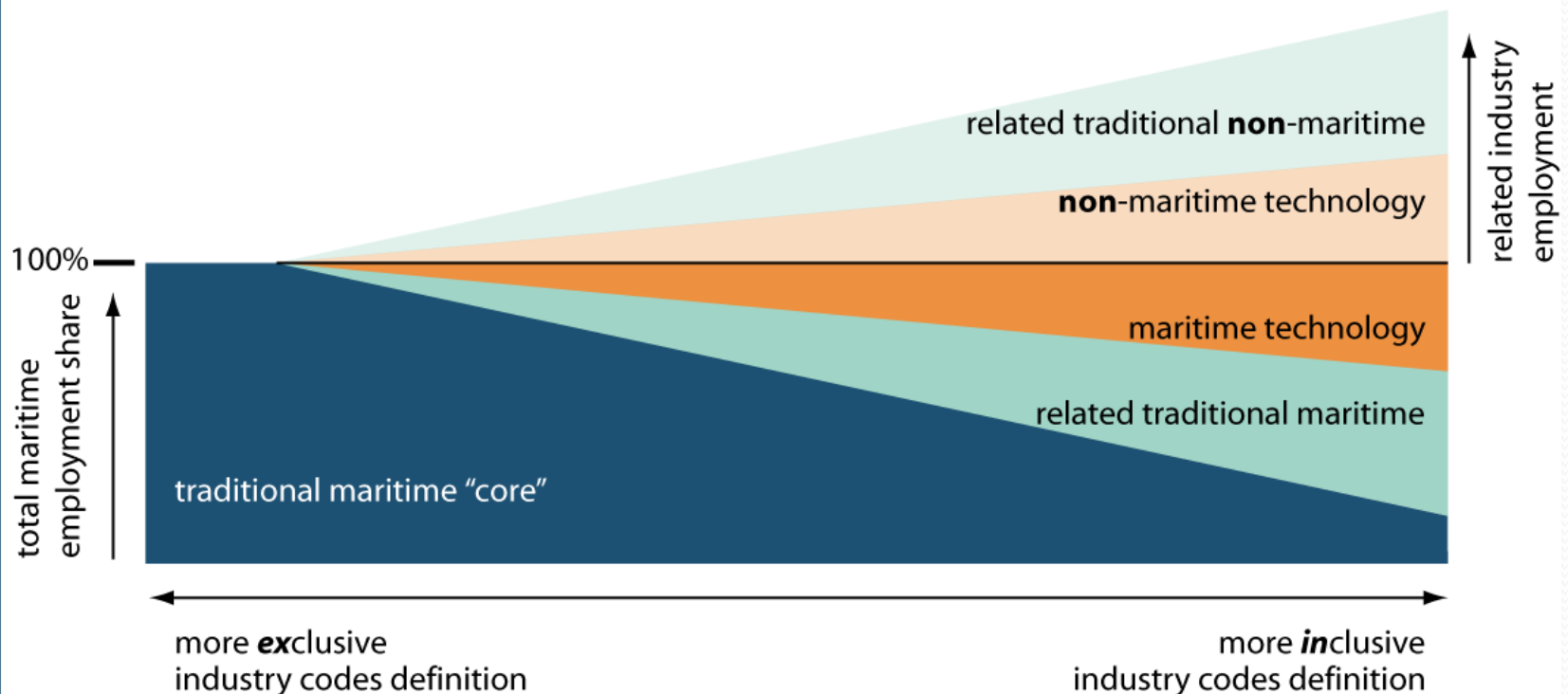


OFFICE FOR COASTAL MANAGEMENT
DIGITAL COAST



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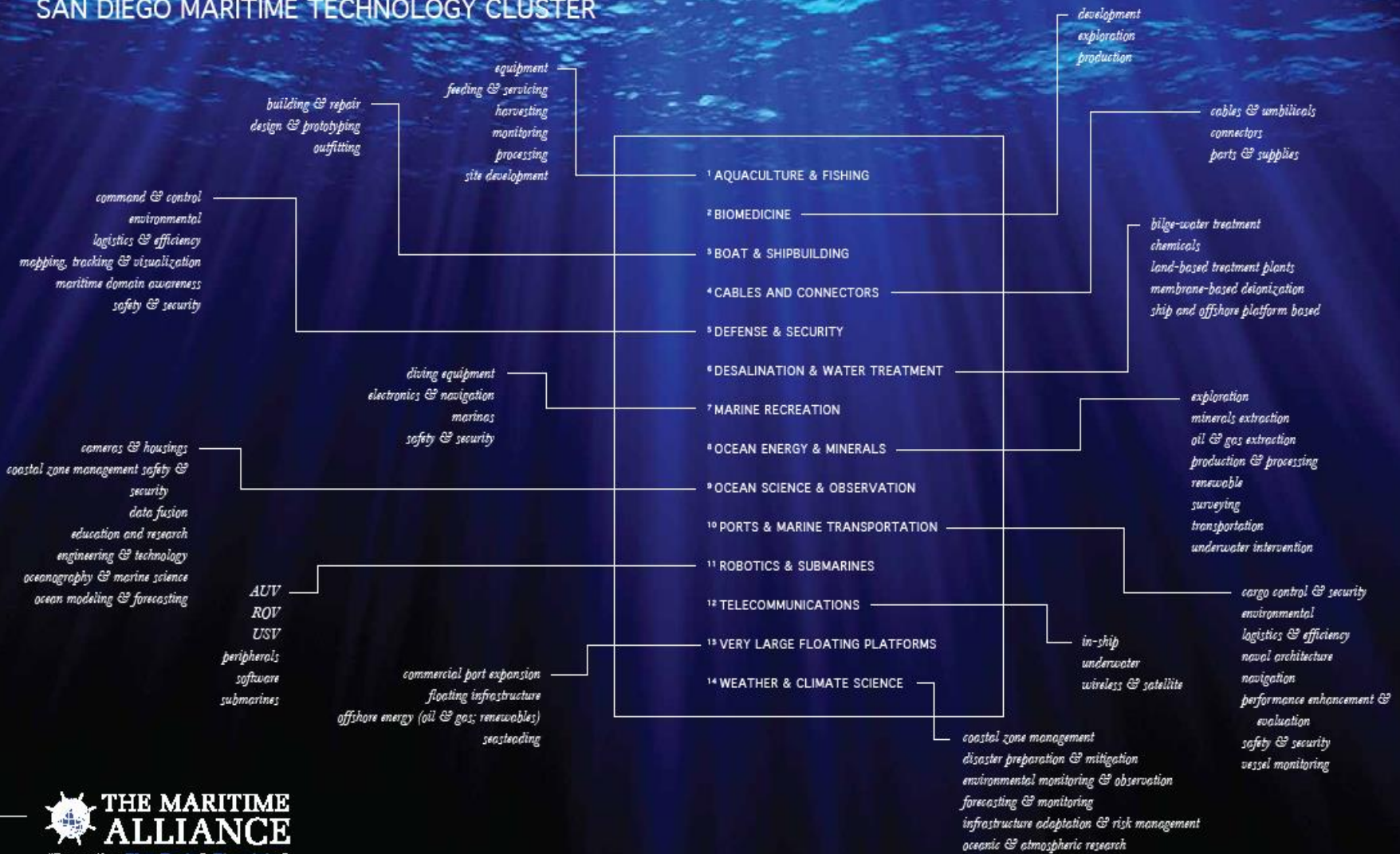
Graphic 1. Visualizing the San Diego Maritime Industry



note: Selected codes came from a variety of sources, described below. The assignment of industry codes as tech / non-tech, as well as to sub-clusters was conducted by ERISS, which bears sole responsibility for them.

source: ERISS; World Trade Center San Diego, *Maritime Economic Impact and Cluster Analysis*; The Maritime Alliance; Info-USA; Dun and Bradstreet; CorporateWiki.

SAN DIEGO MARITIME TECHNOLOGY CLUSTER





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The importance of **Blue Clusters** – **Blue Jobs in San Diego** (Sept. 2011)

- *San Diego Maritime Industry Report 2012* (San Diego, July 2012)*
 - 1,431 companies and organizations (200+ NAICS codes)
 - 700+ self-report maritime focus (350+ report over 75%)
 - 45,778 jobs and \$14 billion+ annual direct sales only
 - Maritime technology industries (as a sub-group):
 - Fastest growing segment with 18,948 jobs
 - \$6.2 billion annual revenue



“SD’s Maritime Industry Cluster, and its functional sub-set, the maritime technology or “**Blue Tech**” industry set, create one of the most unique regional economies in the world...Current industry codes and official occupational classifications are generally ill-suited to fully capturing the uniqueness of the SD maritime cluster and, especially, **Blue Tech**.” (p. 4).

* Sponsored by San Diego Workforce Partnership, San Diego Regional EDC and **The Maritime Alliance**



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SD Regional EDC information on industry clusters (Feb. 2016 presentation)

- *Advanced manufacturing 2,800 manufacturers with 100,000+ workers*
- *Sports & Active Lifestyle Industry 4,000+ jobs*
- *ICT 64,000 jobs & \$8.5 billion “in GDP annually”*
- *Defense Industry 108,000 employees & \$28.7 billion annually*
- *Aerospace Industry 35,000 jobs*
- *Cybersecurity 3,500+ jobs & \$1.5 billion “in total economic impact”*
- *Cleantech Industry 8,000 jobs*
- *San Diego Lifesciences 34,000 jobs & \$14.2 billion “in direct economic impact”*
- ***Maritime Industry*** (2011 numbers) **46,000 direct jobs & \$14 billion revenue**
 - **Fast growth / high exports / blue & white collar jobs / does not rely on VC & market**



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The importance of **Blue Clusters**: developing a regional **Blue Voice**

A critical role is developing a **Blue Voice** in a region (hard to do!)

The **TMA Foundation** (501c3) tag line is “Fostering Innovation through Collaboration”.

TMA (501c6) is the organizer of the SD **BlueTech** cluster. It’s tag line is “Promoting **BlueTech** & **Blue Jobs**”.

Common Mission to promote the creation of **sustainable, science-based ocean and water industries** representing a balance of conservation and economic development.



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San Diego regional strengths

1. Three inherent attributes (USD Prof. David Shirk comments)
 - The ocean
 - The border
 - The weather
2. Additional important attributes
 - Largest **BlueTech** (Ocean & WaterTech) cluster in the U.S.
 - Regional focus
 - Economic development & elected officials that “get it”
 - OceanSTEM, **Blue Economy** workforce development
 - Southern California Bight
 - Last major shipbuilding on the West Coast
 - Available land to develop (primarily in south county)
 - Ability to partner with companies/universities in Baja California



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San Diego **BlueTech Cluster** – Updates

1. **BlueTech Vision** resolution from City, County & Port of San Diego
2. Helped prepare 1st ever study of economic value of ocean observation for NOAA IOOS (final study http://www.ioos.noaa.gov/ioos_in_action/ocean_enterprise_study.html)
3. **San Diego BlueTech Week** scheduled for Nov. 7-11, 2016 including 8th annual **BlueTech Summit** and **Blue Economy Workforce Development Day**
 - Clusters and companies expected from 6-8 countries
 - CoE sessions on Big Data, **BioMarine**, **Maritime Robotics**, and **WaterTech**
4. Cross members with Organization of American States' Inter-American Committee on Port
5. Co-sponsoring Nov. 15-17, 2016 **SpaceCom** conference in Houston
6. **Oceanology Intl. North America (OINA)** starts in SD on Feb. 14-16, 2017
7. Possible launch of **San Diego Intl. Water Week** on Feb. 14-16, 2017



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CaliBaja Mega-Region opportunities

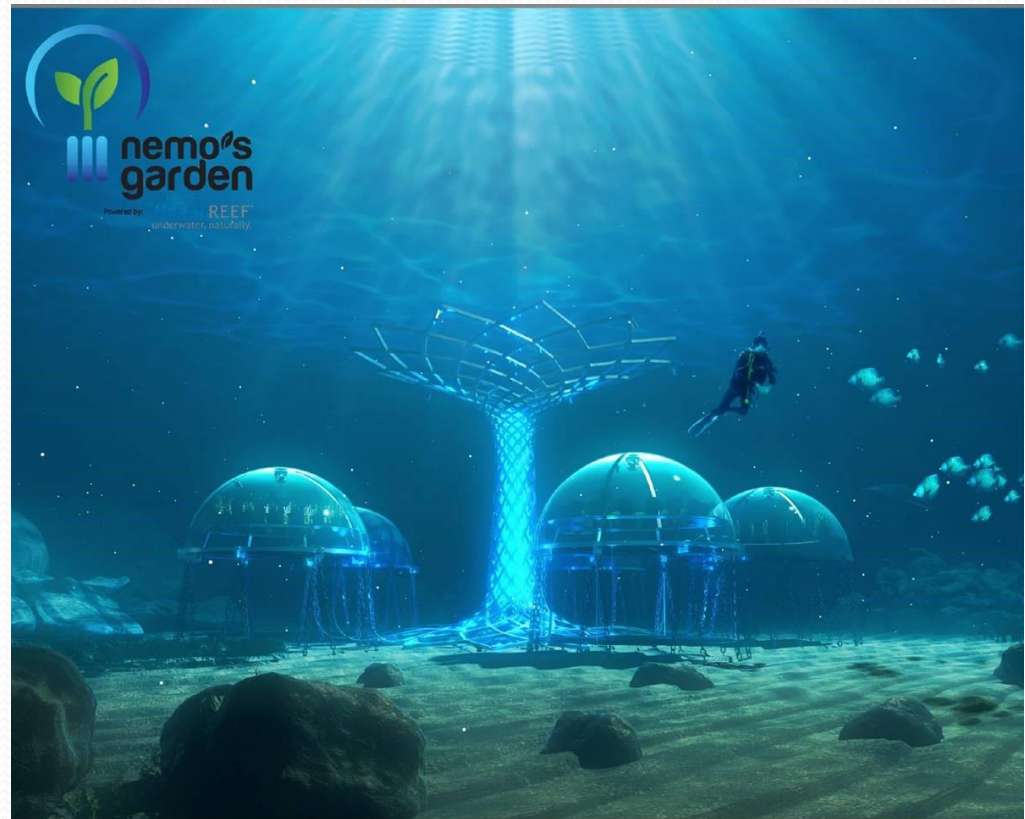
1. Bilateral recognition of the opportunity
2. Fund **Blue Economy** and **BlueTech** + Supply Chain studies
3. Develop a **Blue** cluster in northern Baja (possibly a chapter of **TMA**)
4. Identify possible common projects (e.g. Nemo's Garden)
5. Develop world-class events (e.g. OINA)
6. Help promote creation of common testing facilities (deep ocean, etc.)
7. City, County & State agencies as technology test beds
8. Promote Marine Spatial Planning (MSP)
9. Promote OceanSTEM / maritime workforce development
10. Develop marine engineering and maritime technical training
11. Promote access to capital (VC, bank, government, etc.)



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Nemo's Garden (as an example)

Pioneering a new way of "gardening": the symbolic "tree of life" is surrounded by underwater greenhouses that creates a self-sustaining habitat to grow herbs and vegetables. This is an new way to grow food for islands and other locations with limited fresh water supplies. Opportunity to test and validate in Baja before launching in U.S.





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Oceanology Intl. North America (OINA) opportunities:

1. Help OINA become **Oceanology International Americas** as THE show for the Americas
2. CICESE / UABC outreach to attract companies, government agencies, media, researchers, universities across Americas to OINA
3. Help develop interesting tracks at the conference
4. Possible Spanish language track at the conference
5. Combine visit to San Diego with visit to Ensenada
6. Exhibit and sponsor events at OINA
7. Speak at OINA
8. Promote Tech Transfer at OINA
9. Attract manufacturers to invest in the region



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